

**A HOLISTIC APPROACH FOR FOSTERING
COMMUNITY ENGAGEMENT IN THE DECISION-
MAKING OF RISK-SENSITIVE URBAN PLANNING
AND DEVELOPMENT**

MALSHA DEVINDI HEMBA GEEKIYANAGE

Ph.D. Thesis

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MALSHA DEVINDI HEMBA GEEKIYANAGE

**Thesis Submitted in Partial Fulfilment for the
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**School of Science, Engineering and Environment,
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List of Publications and Presentations from the Study

Peer-Reviewed Journal Articles

- **Geekiyanage, D., Fernando, T., & Keraminiyage, K. (2023).** Modelling Interrelationships of the Factors Impeding Community Engagement in Risk-Sensitive Urban Planning: Evidence from Sri Lanka. *Sustainability*, 15(20), 14662. <https://doi.org/10.3390/su152014662>
- **Geekiyanage, D., Fernando, T., & Keraminiyage, K. (2021).** Mapping participatory methods in the urban development process: a systematic review and case-based evidence analysis. *Sustainability*, 13(16), 8992. <https://doi.org/10.3390/su13168992>
- **Geekiyanage, D., Keraminiyage, K., Fernando, T., & Jayawickrama, T. (2021).** Factors influencing acceptance or rejection regarding being the host community for post-disaster resettlements in developing countries. *International Journal of Disaster Risk Reduction*, 53, 101973. <https://doi.org/10.1016/j.ijdr.2020.101973>
- **Geekiyanage, D., Fernando, T., & Keraminiyage, K. (2020).** Assessing the state of the art in community engagement for participatory decision-making in disaster risk-sensitive urban development. *International Journal of Disaster Risk Reduction*, 51(101847). <https://doi.org/10.1016/j.ijdr.2020.101847>

Refereed conference proceedings

- **Geekiyanage, D., Fernando, T., & Keraminiyage, K. (2023).** Enablers of community-inclusive decision-making for risk-sensitive urban planning: A TISM and MICMAC analysis. In *Proceedings of the 39th Association of Researchers in Construction Management (ARCOM) Conference*, Leeds, UK, 4-6 September 2023. (Accepted for publication)
- **Geekiyanage, D., Fernando, T., & Keraminiyage, K. (2022).** An A-Priori framework for community transformation through inclusive risk-sensitive urban development. In Perera, S. and Hardie, M. (Eds), *Proceedings of the 45th Australasian Universities Building Education Association (AUBEA) Conference*, Sydney, Australia, 23-25 November 2022, 619-629. <https://doi.org/10.26183/a6pq-mg06>

Presentations at Research Symposiums and Workshops

- Received the 'People's Choice Award' at the 3MT Thesis Competition held at the University of Salford - June 2023.
- A guest lecture on "Analysing factor interdependencies using the total interpretive structural modelling and MICMAC analyses" at a research workshop organised by the National Building Research Organisation (NBRO), Sri Lanka - May 2022.
- A guest lecture on "Systematic literature review" at a research workshop organised by the National Building Research Organisation (NBRO), Sri Lanka - Mar 2022.
- A guest lecture on "Systematic literature review" for Postgraduate research students at Northumbria University, UK - Feb 2022.
- A guest lecture on "Systematic literature review" for Postgraduate research students at the University of Moratuwa, Sri Lanka - Feb 2022.
- A presentation on "Factors influencing host community decision for internally displaced communities" at the Transcend Seminar Series organised by ThinkLab, University of Salford, UK - Jan 2022.
- A research presentation entitled "Holistic approach for transformative and risk-sensitive urban development: A conceptual framework" at the Research Symposium 2021 jointly organised by the High Commission of Sri Lanka (SLHC) in the UK and the Association of Professional Sri Lankans (APSL) in the UK (Received the Best Research Award: 3rd Place).

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Dedication

To my beloved husband, Amila Liyanage, who has been my unwavering source of strength and support throughout this journey.

Declaration

I declare that the research presented in this thesis has been conducted solely by me. This thesis has not been previously submitted to this or any other institution for the purpose of obtaining a degree or any other qualification.

Abbreviations

ABCD	:	Asset-Based Community Development
ADB	:	Asian Development Bank
ADPC	:	Asian Disaster Preparedness Centre
ANP	:	Analytic Network Process
CBDRM	:	Community-Based Disaster Risk Management
CBDRR	:	Community-Based Disaster Risk Reduction
CBO	:	Community-Based Organisation
CBPR	:	Community-Based Participatory Research
CBSD	:	Community-Based System Dynamics
CCA	:	Climate Change Adaptation
CCAT	:	Community Coalition Action Theory
CCB	:	Community Capacity Building
CCI	:	Comprehensive Community Initiative
CCSSL	:	Climate Change Secretariat Sri Lanka
CDC	:	Community Development Committee/Council
CEA	:	Central Environmental Authority
CEF-DM	:	Center for Excellence in Disaster Management & Humanitarian Assistance
CIA	:	Central Intelligence Agency
CIDA	:	Construction Industry Development Authority
CIMO	:	Context-Intervention-Mechanism-Outcome
CIP	:	Community Indicator Project
CoPI	:	Community of Practice and Interest
CRED	:	Center for Research on The Epidemiology of Disasters
CSO	:	Civil Society Organisation
DC	:	Divisional Council
DDMC	:	District Disaster Management Centre
DDMCU	:	District Disaster Management Coordination Unit
DfID	:	Department for International Development
Dis. Sec.	:	District Secretariate Office
Div. Sec	:	Divisional Secretariate Office
DM	:	Disaster Management
DMC	:	Disaster Management Centre
DoI	:	Irrigation Department
DoM	:	Department of Meteorology
DoNP	:	Department of National Planning
DoS	:	Survey Department
DoT	:	Department of Telecommunications
DRM	:	Disaster Risk Management
DRR	:	Disaster Risk Reduction

DSD	:	Divisional Secretariat Division
ECHO	:	European Civil Protection and Humanitarian Aid Operations
ECLIPSE	:	Expectation-Client Group-Location-Impact-Professionals-Service
EM-DAT	:	Emergency Events' Database
FGD	:	Focus Group Discussion
FRM	:	Final Reachability Matrix
GCE A/L	:	General Certificate of Education Advanced Level
GCE O/L	:	General Certificate of Education Ordinary Level
GDP	:	Gross Domestic Product
GIS	:	Geographic Information System
GMB	:	Group Model Building
GN	:	Grama Niladhari/Village Office
GND	:	Grama Niladhari Division
GT	:	Grounded Theory
GTM	:	Grounded Theory Methodology
HDI	:	Human Development Index
IAP2	:	International Association for Public Participation
IASC	:	Inter-Agency Standing Committee and the European Commission
IDP	:	Internally Displaced Person
IGO	:	Inter-Governmental Organisation
INGO	:	International Non-Governmental Organisation
IPCC	:	Intergovernmental Panel on Climate Change
IPSSL	:	Institute of Policy Studies of Sri Lanka
IPSSL	:	Institute of Policy Studies of Sri Lanka
IRM	:	Initial Reachability Matrix
ISM	:	Interpretive Structural Modelling
IT	:	Information Technology
JICA	:	Japan International Cooperation Agency
KAP	:	Knowledge, Attitudes, Practices
KII	:	Key Informant Interview
KOICA	:	Korea International Cooperation Agency
LA	:	Local Authority
LCGD	:	Land Commissioner General's Department
LGA	:	Local Government Agencies
LUPPD	:	Land Use Policy Planning Department
M&E	:	Monitoring and Evaluation
MAXQDA	:	Max Qualitative Data Analysis
MC	:	Municipal Council
MEAL	:	Monitoring, Evaluation, Accountability, and Learning
MICMAC	:	Cross Impact Matrix Multiplication Applied to Classification
MoD	:	Ministry of Defence

MoE	:	Ministry of Environment
MoEdu	:	Ministry of Education
MoFESNP	:	Ministry of Finance, Economic Stabilisation & National Policies
Mol	:	Ministry of Irrigation
MoMM	:	Ministry of Mass Media
MoNPEA	:	Ministry of National Policies and Economic Affairs
MoPHPL	:	Ministry of Public Administration, Home Affairs, Provincial Councils and Local Government
MoTH	:	Ministry of Transport and Highways
MoTL	:	Ministry of Tourism and Lands
MoUDH	:	Ministry of Urban Development and Housing
MoWS	:	Ministry of Water Supply
MSC	:	Most Significant Change
MSME	:	Micro, Small, and Medium Enterprises
NBRO	:	National Building Research Organisation
NCDM	:	National Council for Disaster Management
NDMC	:	National Disaster Management Committee
NDMCC	:	National Disaster Management Coordination Committee
NDRSC	:	National Disaster Relief Services Centre
NGO	:	Non-Governmental Organisation
NIE	:	National Institute of Education
NPPD	:	National Physical Planning Department
NUA	:	New Urban Agenda
NWSDB	:	National Water Supply and Drainage Board
OECD	:	Organisation for Economic Co-Operation and Development
PB	:	Participatory Budgeting
PC	:	Provincial Council
PGIS	:	Participatory Geographic Information Systems
PICO	:	Population-Intervention-Comparison-Outcome
PM&E	:	Participatory Monitoring and Evaluation
PRA	:	Participatory Rural Appraisal
PRISMA	:	Preferred Reporting Items for Systematic Reviews and Meta-Analyses
PWG	:	Policy Working Group
RDA	:	Road Development Authority
RICSL	:	Right to Information Commission of Sri Lanka
RSUD	:	Risk-Sensitive Urban Development
RSUP	:	Risk-Sensitive Urban Planning
RSUPD	:	Risk-Sensitive Urban Planning and Development
RTI	:	Right to Information
SA	:	Stakeholder Analysis
SCDC	:	Scottish Community Development Centre
SCT	:	Social Cognitive Theory

SD	:	System Dynamics
SDG	:	Sustainable Development Goals
SEM	:	Structural Equation Modelling
SLLDC	:	Sri Lanka Land Development Corporation
SLRD	:	Sri Lanka Railways Department
SLSI	:	Sri Lanka Standards Institute
SLT	:	Social Learning Theory
SLTB	:	Sri Lanka Transport Board
SMoHE	:	State Ministry of Higher Education
SNA	:	Social Network Analysis
SPICE	:	Setting-Population-Intervention-Comparison-Evaluation
SPIDER	:	Sample-Phenomenon of Interest-Design-Evaluation-Research type
SSIM	:	Structural Self-Interaction Matrix
TISM	:	Total Interpretive Structural Modelling
ToC	:	Theory of Change
ToPB	:	Theory of Planned Behaviour
UC	:	Urban Council
UD	:	Urban Development
UDA	:	Urban Development Authority
UK	:	United Kingdom
UN	:	United Nations
UNDESA	:	United Nations Department of Economic and Social Affairs
UNDG	:	United Nations Development Group
UNDP	:	United Nations Development Programme
UNDRR	:	United Nations Office for Disaster Risk Reduction
UNISDR	:	United Nations International Strategy for Disaster Reduction
UNU-EHS	:	United Nations University Institute for Environment and Human Security
UP	:	Urban Planning
UPD	:	Urban Planning and Development
UPPR	:	Urban Partnerships for Poverty Reduction Project
URA	:	Urban Redevelopment Authority
USA	:	United States of America
USAID	:	United States Agency for International Development
USDA	:	Urban Settlement Development Authority
VDMCC	:	Village Level Disaster Management Committee
WB	:	World Bank
WHO	:	World Health Organisation

Abstract

In the face of increasing extreme climate events, communities are often excluded from decision-making during pre-disaster and urban planning, despite their tacit knowledge and experience in disaster response and recovery. This marginalisation poses a significant challenge in creating safe, resilient, and equitable cities (SDG 10 and 11). To address this, there is an urgent need for governments to introduce and enforce processes that allow citizens, including vulnerable communities, to participate in development planning. Based in Sri Lanka, this study provides a holistic approach to fostering community engagement in risk-sensitive urban planning and development (RSUPD). The study adopts the constructivist grounded theory strategy, in conjunction with systematic reviews, followed by multiple qualitative analyses. Through 17 expert interviews and focus-group discussions involving 27 community participants, six key themes such as barriers, enablers, stakeholders, best practices, participatory methods, and community transformation indicators were identified with their relationships. The total interpretive structural modelling and matrix of cross-impact multiplication applied to a classification found that the absence of legal provisions for inclusive planning and political corruption are critical barriers to community engagement in RSUPD, while digital telecommunication infrastructure is a driving enabler. The two-mode social network analysis and stakeholder analysis shows that there is a need for the state agencies responsible for urban development and disaster management being accountable for promoting community engagement at the national level, while non-governmental and inter-governmental organisations have more power in empowering locals and therefore, they should enter into partnerships to play an active role in implementing inclusive RSUPD. The study introduced a tool with 40 participatory methods establishing that the lead agency should select engagement methods based on project phases, purpose and objective(s) of intended engagement, community context, scale, and local experience level, facilitating fair and effective engagement. Moreover, the KAP model provides practitioners with a strategy and 97 indicators for assessing locals' knowledge, attitude and practice prior to and after engaging in RSUPD initiatives. By integrating all seminal findings, the study produced a four-stage holistic approach: setting-up community engagement through stakeholder collaboration and resource mobilisation; developing the participatory intervention; implementing the framed intervention; post-engagement community change evaluation. The verified approach comprised eight elements: a problem statement and goals, community context, inputs, activities, outputs, outcomes, impacts, and

assumptions, ensuring its practical implementation at the ground. This study enhances understanding by presenting self-explanatory conceptual models for barriers and facilitators of participatory RSUPD. It outlines stakeholder roles and partnerships, offers an approach to engagement methods in RSUPD, connects community transformation with participatory development, and employs diverse analysis techniques to establish a grounded theory. Overall, this holistic and recursive approach provides valuable practical guidance for implementing participatory development practices and evaluation by clarifying and detailing how community transformation and consequent system changes can emerge through inclusive development.

CHAPTER ONE

INTRODUCTION

1.1 Background

At present, 55% of the world's population is living in urban areas, and it is projected to be 68% by 2050 (United Nations Department of Economic and Social Affairs [UNDESA], 2019). As a result of improper land-use planning to accommodate the rising urban population, inevitable adverse impacts have resulted, mainly climate-induced disasters such as floods, landslides, storms, heatwaves, and droughts (Adelekan et al., 2015; Bhatta & Pandey, 2020; Sharma et al., 2011). Therefore, the vulnerable communities who live in cities and urban peripheries are experiencing ever-increasing disaster risks such as deaths, displacements, and property loss. Other deliberating outcomes of cities exposed to disaster risks include a threat to livelihoods and unemployment, a decline in social status, food insecurity, depleting health and sanitation, threat to education, security threat, growth of informal settlements, increasing fragmentation, exclusion and inequality, and low productivity (Badri et al., 2006; Robinson, 2003).

Since the Sendai Framework for Disaster Risk Reduction (DRR) 2015-2030 came into prominence, many initiatives (e.g., early warning, rescue, emergency relief, reconstruction, rehabilitation) have been launched to make progress in DRR in cities (United Nations Office for Disaster Risk Reduction [UNDRR], 2015). However, it is argued that while considerable efforts have been made to prepare for, respond to, and recover from disaster events, less focus has been placed on taking measures to reduce the potential risks and impacts of these disasters before they occur (Fraser et al., 2017; Leck et al., 2018). Disaster risk mitigation requires acknowledging the development processes and climate change as major root causes of disasters. Thus, properly assessing anticipated development and climate-induced disaster risks is vital. This has been highlighted in the United Nations' Sustainable Development Goals (SDG) Target 11.b¹ and, subsequently, in the Paris Agreement Article 8². Despite these global

¹By 2020, substantially increase the number of cities and human settlements adopting and implementing integrated policies and plans towards inclusion, resource efficiency, mitigation and adaptation to climate change, resilience to disasters, and develop and implement, in line with the Sendai Framework for Disaster Risk Reduction 2015-2030, holistic disaster risk management at all levels.

² The role of sustainable development in reducing the risk of loss and damage.

documents acknowledging the need for a comprehensive approach that integrates DRR, Climate Change Adaptation (CCA), and urban planning (UP) at all levels (i.e., from the national to the local level), this integration has been lacking in many countries (Leck et al., 2018; Thomalla et al., 2018).

In order to mainstream DRR and CCA measures into stand-alone development practices, there is an urgent need to promote collaborative risk-sensitive urban planning (RSUP) approaches (Thomalla et al., 2018; United Nations Development Programme [UNDP], 2020). Risk-informed development entails transforming the development agenda from within and fully institutionalising the risk management process within the policymaking, planning, project-cycle and investment planning processes to implement DRR and CCA measures (UNDP, 2020). This includes the development of land use plans that encourage compact, sustainable, and resilient communities and the creation of green spaces and infrastructure that can absorb and redirect water during floods (Asian Development Bank [ADB], 2018). RSUP also involves the creation of early warning systems and emergency response plans and the provision of education and training for communities on how to prepare for and respond to disasters. The literature (Bhardwaj & Gupta, 2021; Leck et al., 2018; Liang et al., 2022; World Bank [WB], 2017) suggests that transitioning towards risk-sensitive urban planning & development (RSUPD) requires participatory development approaches.

Participatory development refers to a process where development initiatives are planned and executed with the active involvement of the community (WB, 2017). Despite the life experience of vulnerable groups facing catastrophic events, considerably less attention has been given to involving them in developing risk mitigation plans and risk-informing developments. For instance, local communities are primarily involved in adaptation (31.6%) rather than in mitigation (6.2%) of disaster risks (Nahayo et al., 2016). Scholars (Dias et al., 2018; Shand, 2018) argued that involving local communities in urban planning and development (UPD) helps to build a deeper understanding of local risks and vulnerabilities and the specific needs and priorities of different groups. This information can be used to inform the development of RSUPD strategies. It seeks to empower people by giving them a voice in the development process and allowing them to take control of their own development (Thomalla et al., 2018). Thus, the communities are likelier to feel a sense of ownership and commitment to the outcomes.

However, engaging communities in the decision-making for RSUPD is constrained by the context of the community and the relevant agencies themselves. Key obstacles to community participation in urban DRR and adaptation planning include (1) communities' lack of understanding of UPD processes and their trivial experience in inclusive decision-making (Harden et al., 2015; Protik et al., 2018; Swapan, 2016), (2) centralised power structures (top-down governance) and professional silos (Lima, 2019; Shand, 2018; Tantoh & Simatele, 2018; Ziervogel et al., 2017), (3) lack of clarity, transparency and confusing expectation in exiting participatory development approaches (Harden et al., 2015; Roma Support Group, 2011), and (4) limited resources (Deshpande et al., 2019). The situation in developing countries is worse compared to developed states as not much participative decision-making is evident due to poverty and inequality, limited access to information, lack of trust in government and institutions, traditional power structures, and resistance to change (AbouAssi & Trent, 2012; Christie et al., 2012; Deshpande et al., 2019; Enshassi et al., 2016; Kita, 2017; Meredith & MacDonald, 2017; Nahayo et al., 2016; Swapan, 2016).

Given the above-mentioned constraints, it is evident that community engagement is mostly limited to the inform and consult levels (Fung, 2015; Zou et al., 2011). That is also predominantly observed in the UP stage overlooking most of the other phases of the development cycle (Walters, 2018). Thus, informed community participation through collaboration and co-decision-making is rarely evidenced. Scholars have noted that while there are numerous participatory methods available, they are not always suitable for different contexts and communities, and their effectiveness may vary depending on the specific goals and objectives of the community engagement process (Bergstrom et al., 2012; Glass, 1979; Gosman & Botchwey, 2013). In addition, limited guidance is available on selecting and using participatory methods effectively at different stages of the RSUPD process (Rowe & Frewer, 2000). This gap reflects the need for clear and evidence-based guidance on how to effectively engage communities in the RSUPD process, especially concerning selecting appropriate methods and tools that can effectively address different community engagement purposes and stages of the development process.

The literature further asserts that community-inclusive development initiatives will only be completed if their outcomes are evaluated. In the context of engaging communities in the decision-making for RSUPD, the outcomes will be resilient and equitable cities as well as transformed communities (Mäenpää et al., 2017; Shand, 2018; Taylor et al., 2018). Community transformation is an outcome of transformative community

engagement that has been elaborated as a logical and sequential process that begins with knowledge development followed by a shift in attitudes (i.e., beliefs and values) and consequently pave the way for behavioural changes in individuals, neighbourhoods, and the population at large (Calder & Beckie, 2013). While many studies have presented indicators to measure the resilience of cities, only a handful of studies have stressed the importance of measuring community change outcomes (Calder & Beckie, 2013; Ibrahim et al., 2017; Tremblay et al., 2017; Zhang & Liao, 2020). Therefore, a model of indicators to measure community change is far less evident in DRR or UPD (Luger et al., 2020; Van Empel, 2008).

In light of the above-outlined knowledge gaps in community-inclusive RSUPD, there is a growing need for an integrated approach to facilitating community engagement in mainstreaming DRR and adaptation planning into UP. This approach should involve a multi-level stakeholder collaborative process that includes vulnerable communities in order to build consensus for action towards achieving RSUPDs. Developing a framework for promoting community-inclusive decision-making for RSUPD will, therefore, have implications for promoting safe, resilient, inclusive and equitable cities while creating systemic changes that initiate a positive transformation of communities.

1.2 Justifications for the Study

Even though numerous investigations have been conducted on constraints to community engagement (Alawadi & Dooling, 2015; Deshpande et al., 2019; Walters, 2018; Wheeler, 2016) and participatory methods (Gaillard et al., 2016; Perrone et al., 2020; Varol et al., 2011; Voinov et al., 2018), the status quo lacks a thorough account on ways in which communities can enter and engage throughout the process of RSUPD. Since community engagement is an exceptionally context-specific subject, there is a strong need to investigate barriers to and enablers for inclusive decision-making and applications of participatory approaches to mainstreaming DRR and CCA into city-making in a more contextualised approach. It may provide an opportunity to study why and how community engagement has been hindered in a particular society with respect to its inherent characteristics, infrastructure, and processes.

Furthermore, the stakeholder contribution (i.e., including communities, industry practitioners and external parties) towards promoting community engagement in RSUPD needs to be better investigated and understood. By understanding the contributions of different stakeholders, it is possible to identify the parties responsible

for overcoming and strengthening specific barriers and enablers, respectively (Organisation for Economic Co-operation and Development [OECD], 2015; Pagano et al., 2019); Xue et al. (2020). This leads to establishing stakeholders' roles and responsibilities for promoting community engagement in RSUPD and thereby can develop institutional frameworks, including measures and strategies to create development projects that are more inclusive and equitable to the needs of the communities they serve.

Moreover, there is a lack of guidance in selecting participatory methods as fitting to different phases of RSUPD, community context, and purposes of community engagement alike. A tool that outlines the criteria for selecting engagement methods and the reasoning behind the selection can help to increase the transparency and accountability of the engagement process (Gosman & Botchwey, 2013; Rowe & Frewer, 2000). By using a tool to select the most appropriate method for a given situation, it is possible to ensure that the right level of detail, participation, and feedback is provided to the community, leading to a higher-quality engagement process.

Additionally, there is a need to establish directions to evaluate the level of community transformation through participatory RSUPD. Community transformation indicators should, therefore, develop to facilitate identifying areas for improvement (Gaillard et al., 2016) and the development of targeted interventions to address any issues or challenges that arise (Kirshen et al., 2018a). By measuring the level of community change, stakeholders can see the impact of their involvement in promoting community engagement and understand how their contributions have helped to shape the development project. This can lead to more effective and sustainable community engagement in the future with enhanced transparency and trust in the decision-making process.

Accordingly, an integrated approach covering (1) barriers to, (2) enablers for, (3) methods to, and (4) stakeholder contribution to community engagement with (5) indicators for transformative community engagement in RSUPD is timely and will have policy implications. The above-elaborated knowledge gaps should, therefore, address logically and grounded in order to facilitate a holistic approach to implementing community-inclusive decision-making in building risk-sensitive and equitable urban environments. The study will also serve as a valuable basis for future research in inclusive DRR, CCA, and sustainable UPD.

1.2.1 Problem statement

Systematic integration of participatory methods is required to transform vulnerable communities by allowing them to explore, collaborate and learn complex interdependencies in mainstreaming DRR and CCA into UPD and become confident in influencing agency-made decisions. This study, therefore, is dedicated to investigating the broader research problem of “how communities, including vulnerable groups and community-based organisations (CBOs), can empower and positively transform to play an active role in mainstreaming DRR and CCA in support of RSUPD?”

1.3 Research Aim and Objectives

The study aims to construct a holistic approach that could apply to empower communities to engage in and influence the decision-making of RSUPD to achieve safe, resilient, and equitable developments.

The following outlines the objectives established for the current study to accomplish the set aim.

1. To investigate the factors impeding and facilitating community engagement in the decision-making of RSUPD and analyse their interdependencies;
2. To identify the stakeholders and analyse their degree of interest and power in contributing to fostering community engagement in the decision-making process in RSUPD;
3. To evaluate the applicability of participatory methods to engage communities in different circumstances in the process of the RSUPD;
4. To develop indicators to evaluate the level of community transformation resulting from community engagement in RSUPD;
5. To construct a grounded theory depicting a holistic approach for promoting community entry and engagement in RSUPD decision-making; and
6. To verify the validity of the developed approach.

1.3.1 Research questions

Towards accomplishing the above-mentioned research objectives, the following research questions were established. Accordingly, the first objective was investigated by addressing two research questions:

- Q1. What are the critical barriers to community engagement in RSUPD, and how do they influence each other?
- Q2. What are the vital enablers of community engagement in RSUPD, and how do they influence each other?

The second objective was investigated by answering to:

- Q3. Who can influence community engagement in the decision-making of RSUPD?
- Q4. How can relevant stakeholders contribute to influencing community engagement in RSUPD?

The third objective was achieved by investigating the following:

- Q5. Which participatory methods are appropriate to achieve community engagement during the different phases of RSUPD?
- Q6. Which criteria influence the proper selection of participatory methods?

The fourth objective was achieved by investigating the following:

- Q7. What indicators can be used to evaluate the intended community transformation after engagement in RSUPD?

The fifth and sixth objectives were achieved by integrating the findings of the above research questions into a grounded theory and verifying the proposed holistic approach.

1.4 Overview of the Research Methodology

Initially, systematised literature reviews were conducted to explore the state-of-art literature, mainly on prevailing barriers and enablers to community-inclusive RSUPD, methods for participatory decision-making, and community transformation. The researcher is looking into the core research problem in a social constructivism philosophy together with a qualitative methodological choice. A constructivist grounded theory strategy was employed to answer the research problem, where Sri Lanka was chosen as the field of investigation. Sri Lanka was selected considering its decades of experience with natural disasters and rising trends of urban sprawl and disaster-induced resettlements (Das, 2008). Chapter Four provides a thorough account of selecting Sri Lanka as the study context.

Primary data were obtained from multiple sources. Mainly, semi-structured interviews and focus group discussions (FGDs) were administered to a fair sample (until the theoretical sampling was achieved) of industry experts and community participants, respectively. Industry experts include practitioners from disaster management (DM), CCA, UPD, and community development (CD). The field data were further collected through observations recorded as photographs, video/audio clips and field notes. The data collection was basically on collecting the current situation of community engagement: (1) barriers and enablers; (2) stakeholders and their role; (3) success and failure factors of existing participatory methods/tools/strategies; (5) knowledge and experience in community transformation, in the community-inclusive decision-making of RSUPD projects.

The empirical data collected were analysed using multiple qualitative data analysis techniques. Initially, the transcribed data were inductively coded in line with the rigorous qualitative data coding strategy (i.e., initial, focused, and theoretical) introduced in the grounded theory. A computer-aided qualitative data analysis tool: MAXQDA was used for data coding to identify the patterns of similarities and dissimilarities among interviewees' statements regarding how communities need to contribute to developing a risk-sensitive and transformative UPD approach. Following the data coding, total interpretive structural modelling (TISM) was first used to establish pairwise contextual relationships within the identified barriers and enablers. Following the TISM, MICMAC analysis was conducted to identify the driving barriers and enablers. Secondly, a two-mode social network analysis (SNA) was performed to analyse the stakeholders' contribution towards promoting inclusive RSUPD. Thirdly, a participatory methods selection tool was developed using Excel by incorporating coded data. Subsequently, a model to assess community transformation through engagement in RSUPD was developed.

As the final outcome of the study, a grounded theory was constructed by integrating the findings of the above-mentioned data analyses. The constructed holistic approach was demonstrated as a theory of change (ToC) to provide a blueprint for how community engagement can be promoted in building risk-sensitive and equitable urban environments. The holistic approach addresses the differential access to power, knowledge and resources and ways to engage and empower locals in influencing development decisions. Finally, the key elements within the proposed Holistic approach were verified by seeking expert opinions.

The research methodology adopted in this study is graphically illustrated in the research process shown in Figure 1.1. The entire process followed in this research is explicitly discussed in Chapter Three.

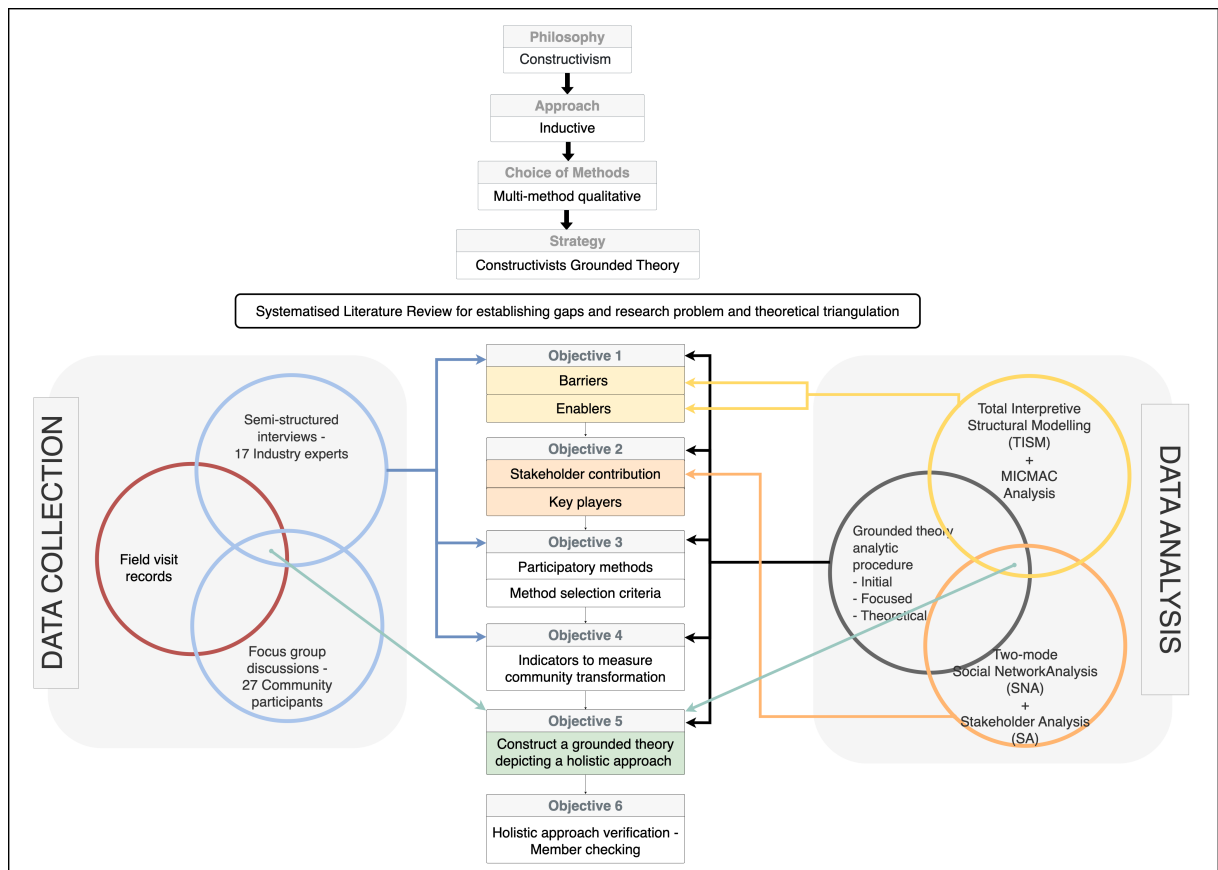


Figure 1. 1: Research process adopted for the study

1.5 Scope and Limitations

The study focuses on mainstreaming community engagement into RSUPD. It entails community engagement and its application in the RSUPD process from urban policymaking to post-development and thereby proposes a holistic approach for community-inclusive RSUPDs to transform current procedures. The holistic approach was developed to demonstrate a theory constructed and grounded in Sri Lanka. The primary data collection was limited to a single country due to the highly contextual nature of the study focus which is community engagement.

The study considered the perspectives of both industry practitioners and communities in Sri Lanka but in different samples subjected to theoretical sampling and saturation. Given the time constraints and impracticability of covering the entire public and the study-related practitioner population, even in a single country, a sample of 17 industry

experts and 27 community participants was drawn. The experts were selected to include representation from different scales (i.e., national, provisional and local government, NGOs, international organisations, IGOs, academic institutions, private sector). Community participants were also drawn from five risk-informed projects in Sri Lanka. Each project has shown a different degree of community engagement as not much participatory development has been undertaken in Sri Lanka, which is one reason for conducting this investigation in Sri Lanka.

In addition, the proposed holistic approach was verified through expert opinion as the study timeframe was insufficient to conduct empirical validation by applying the developed approach to a real-world community-based RSUPD scenario. Furthermore, as the holistic approach includes the element of community transformation inspired by a participatory intervention, at least six months is expected to witness and evaluate behavioural change in a given community.

1.6 Contribution to Knowledge

The study contributes to the theory by investigating a timely problem of ways in which communities can be effectively engaged in the decision-making of RSUPD. The study identified the key constructs (i.e., barriers and enablers, stakeholder contributions and key players in different settings, participatory methods, and a community transformation model) for a participatory development approach and contextual relationships among them. The study thereby developed a theory of change depicting a holistic approach for engaging communities in the course of RSUPD decision-making. It contributes to the practice by introducing a verified and transferrable blueprint for engaging with communities in development initiatives. Practitioners and community champions can implement the proposed framework to empower communities and promote equitable outcomes. The study further informs policy implications in community engagement provisions for several development domains, including urban planning, adaptation and development, DRR, and CCA. The overall work, therefore, contributes to the knowledge of accomplishing UN SDG 10 (Target 10.3 - Ensure equal opportunities), SDG 11 (Target 11.3 - Inclusive and sustainable urbanisation; Target 11.5 - Reduce adverse effects of natural disasters), and the Sendai framework's guiding principal g - Inclusive risk-informed decision-making for DRR.

1.7 Structure of the Thesis

Chapter One provides a background to the research study. It presents the existing knowledge gaps, the problem the study addressed, the research aim, objectives and questions investigated, an outline of the research methodology adopted, the scope of the study, and an overview of key contributions made from the study.

Chapter Two consists of four parts that present a synthesis of state-of-the-art literature related to the study. Part I explains the definitions and key concepts related to community-inclusive RSUPD, whereas the rest of the parts present the theoretical underpinnings and groundworks on community engagement in UPD and DRR, present barriers and enablers for community entry and engagement in development decision-making, participatory methods/tools available for inclusive development, and community transformation. Towards the end, the chapter established the knowledge gaps to investigate in line with the research objectives and questions.

Chapter Three presents the methodology adopted for the research study. The chapter comprises the theoretical background of present methodological frameworks, philosophical assumptions, research approach, methodological choice, research strategies, time horizons, data collection and analysis techniques, and verifying procedures. The chapter provides justifications for the study context and the research design adopted for the study.

Chapter Four provides an account of the grounded theory analytic procedure followed for qualitative data coding. The chapter presents the three-phase coding procedure consists of initial, focused and theoretical coding following the approach to theory building introducing the six themes that emerged from the grounded theory analytical procedure. A conceptual design to the holistic approach developed from the study is also presented in this chapter.

Chapter Five consists of the data analysis and findings related to the first objective. It presents the TISM and MICMAC analyses conducted for analysing the barriers to and enablers of community engagement in the decision-making of RSUPD. Following this, a discussion was made to compare and contrast the key findings with the literature.

Chapter Six provides the data analysis and findings related to the two-mode SNA and SA in achieving the second objective. The chapter highlights the stakeholders of RSUPD and their similarities in terms of interest, power, and resources when it comes to addressing the barriers and enablers discussed in Chapter 5. Additionally, the

chapter discusses the stakeholder contributions and best practices found for key players identified through the SA. A discussion is also made to illustrate the prominent comparisons with the literature.

Chapter Seven presents the analysis and findings pertaining to the third objective. The analysis conducted to identify the participatory methods and to develop a tool for selecting participatory methods for engaging communities in the course of RSUPD decision-making is thoroughly discussed with empirical evidence. A link to the resulting Excel tool has also been provided for accessibility. In the end, a discussion is made to highlight the valuable contributions.

Chapter Eight addresses the fourth objective. It explains the empirical analysis and findings related to the proposed strategy for assessing the level of community transformation from engagement. A model of KAP indicators is presented with an extensive list of knowledge, attitude, and practice variables introducing a practical way to evaluate a change in a community. The discussion, in the end, made possible comparisons with the literature.

Chapter Nine presents the final part of the data analysis and findings for achieving the study's last two objectives. The chapter presents the approach to theory building by integrating the research findings from Chapters 5 to 8, the narrative of the developed holistic approach, details of the verification exercise and the results. A graphical presentation of the outcome of the study: a holistic approach for fostering community engagement in the decision-making of RSUPD is provided. Finally, a comprehensive discussion was made to triangulate the study outcome with the literature.

Chapter Ten, at last, conveys a reflection of the problem addressed in the study and the context, and presents the salient conclusions from the study by evaluating the accomplishment of the study objectives and aim. The chapter emphasises how the current study supersedes the previous studies and contributes to the theory and practice. It also identifies the limitations of the research and further research prospects.

1.8 Summary and Link

The chapter provides an opening to the research study. The research background lays the foundation for the study by explaining the prevailing situation of study focus and linking the study-related elements such as RSUPD, participatory development, and community transformation. The justification for the study highlighted the need for

conducting the research. Subsequently, it established the broader problem statement. Thereby, stated seven research questions formed for the study, followed by the research aim and six objectives. A social constructivist philosophical stance shapes the study, where a constructivist grounded theory strategy was employed to address the research questions. Multiple qualitative data collection and data analysis techniques were selected for constructing a theory for fostering community engagement in RSUPD decision-making, grounded in Sri Lanka.

The second chapter, accordingly, synthesises the process of systematically searching, gathering, synthesising, and reporting literature to establish the status quo on the study scope. Thus, it provides a comprehensive account of the research background and the study justifications.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter provides a comprehensive, systematised literature review conducted to understand the state-of-the-art literature related to the research focus. The chapter consists of four parts:

Part I : The Concepts

Synthesises the theoretical underpinnings of RSUPD, inclusive development, and community engagement.

Part II : Barriers and Enablers

The systematised literature review conducted on existing barriers and enablers to community engagement in RSUPD projects.

Part III : Participatory Methods

A comprehensive account of current methods and tools available for community engagement and their applications in typical inclusive UPD.

Part IV : Community Transformation

Critiques on the community transformation literature to illustrate gaps in the literature on transformational community engagement.

The chapter ends by establishing the knowledge gaps in the current literature while linking the research objectives and questions with elements to be investigated to address the identified knowledge gaps.

PART I

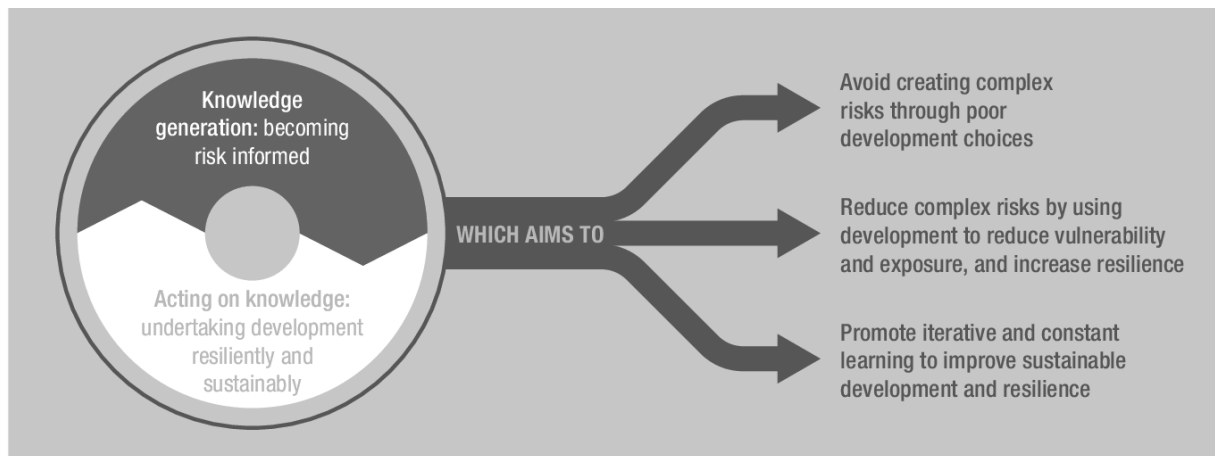
2.2 Moving from Risk to Resilience: Risk-Sensitive Urban Development

The global and national development targets are in danger of being compromised by the fast-changing climate and rising susceptibility to catastrophe risk. The previous 20 years have seen an almost doubling in disasters and economic losses. 7,348 catastrophe occurrences between 2000 and 2019 affected 4.2 billion people, claimed 1.23 million lives, and caused damages to the global economy of over US\$2.97 trillion (Center for Research on the Epidemiology of Disasters [CRED] & UNDRR, 2020). According to the Intergovernmental Panel on Climate Change (IPCC, 2012), a changing climate would both make people more vulnerable to other natural hazards, including earthquakes, tsunamis, and landslides, as well as increase the frequency of catastrophes that are already responsible for the bulk of yearly disaster losses.

Disaster and climate risks are largely rooted in inappropriate or “flawed” development (Roy, 2018). Disasters and the effects of climate change can jeopardise development goals and accomplishments, but development decisions also influence sensitivity to these risks (Organisation for Economic Cooperation and Development [OECD], 2009; Roy, 2018). Development decisions (for example, inappropriate land-use planning or the absence of a building code) can enhance or decrease susceptibility and exposure to disasters since many hazards turn into disasters. Also, the current DRM practices in urban settings are found to be standalone, and a minority concern has been given for mainstreaming those with urban development planning (Pelling et al., 2018; Leck et al., 2018; Thomalla et al., 2018). Therefore, it is crucial to move towards “prospective” risk management as a fundamental tenet of sustainable development since it helps prevent the emergence of new hazards, addresses underlying vulnerabilities, and enables adaptation to climate change (Aysan & Lavell, 2014; United Nations University Institute for Environment and Human Security [UNU-EHS], 2008).

Acknowledging rising disaster trends and gaps in current standalone development practices, four global frameworks came into prominence. Namely, the Sendai Framework for DRR, the SDGs, the Paris Agreement, and the New Urban Agenda (NUA) introduced strategies to inform policies and measures for DRR, CCA and sustainable development. Risk-sensitive development is a common underlying

principle that binds these global frameworks. These global standards, therefore, challenge policymakers, industry practitioners, researchers and citizens to extend their focus from accounting for risk status towards understanding and acting on the processes that can enable a transition to more risk-informed and transformative urban development (Thomalla et al., 2018). The standard definition for risk-sensitive development is “the process of integrating DRR and adapting the climate-smart measures into development planning across all sectors of development that help to protect development outcomes and investment made towards achieving development goals” (UN, 2015). Risk-informed development, therefore, aims to achieve several development outcomes, as shown in Figure 2.1, such as (1) protection from the effects of hazards and climate change, (ii) prevention of existing and future levels of climate and disaster risk, (iii) reduction of vulnerability to hazards, and (iv) support for resilience-building and climate change adaptation (UNDP, 2020).



*Figure 2. 1: Core aims of risk-sensitive urban development
(Source: Opitz-Stapleton et al., 2019)*

Risk-sensitive development is required to reduce risks accumulated in cities and to consider risk better when planning new developments (Jones & Preston, 2011). This includes urban land-use planning, building design and construction, enhanced infrastructure access and maintenance, risk awareness, and planning for emergency response and reconstruction, including social safety nets and insurance.

The transition pathway from urban risks to risk-sensitive cities, however, is challenging and a topic currently in global research. It has been highly constrained by donor priorities, fragmented city governance, and inadequate monitoring of hazards, impacts and vulnerability. Donors' priorities significantly shape disaster risk management (DRM) agendas at all scales. It is evidenced that many governments with emerging

economies are receiving major loans from multiple international agencies (e.g., UN and WB), which have mainstreamed disaster risk consideration in development initiatives (WB, 2015). Yet, most such funds have been allocated to policy formation and implementation that are often focused on disaster response (Fraser et al., 2017). Thus, considerably fewer funds have been allocated to reduce risks through community-inclusive RSUPD, capacity building, or infrastructure upgrading. Furthermore, urban governance is highly fragmented, with unclear and sometimes conflicting roles and responsibilities between actors. In cases where multi-level governance remains fragmented, top-down agendas often shape cities' decisions - with inadequate attention to local risk and development priorities (Solecki, Pelling, & Garschagen, 2017). Moreover, institutional gaps relating to weak capacities, inadequate resources, lack of systematic coordination and divisions between formal and informal systems are a priority blockage to data collection mechanisms and hazard-monitoring capabilities in urban settings (Pelling et al., 2017; Thomalla et al., 2018). The lack of city-wide risk data covering the whole spectrum of risks is a key limitation to informed risk-related decisions, including development planning (Leck et al., 2018).

These constraints notwithstanding, there are opportunities for movement towards transition and transformation in risk management and development. Achieving RSUPD will require more inclusive governance, community networks collaborating with development authorities, locally accountable leadership and community-based risk data and monitoring. Notably, multi-level governance can offer the potential for a transition from risk to risk-informed UD when organised civil society collaborates with government development authorities and other actors (Pelling et al., 2018) in driving demand-led and inclusive planning for risk. Citizen-led approaches for risk-related data collection have been shown to be critical for advancing early warning of hazards (Fraser et al., 2017; Pelling et al., 2018). Fundamental shifts in institutional thinking (i.e., from predominant top-down, short-term views to inclusive, longer-term perspectives) and professionals-silos are also required to impact transition in the UD sector (Ziervogel et al., 2017). The emerging need for making safe, equitable and risk-sensitive urban settings, therefore, elaborates the necessity and urgency of employing inclusive urban planning, development and adaptation approaches.

2.3 Inclusive Urban Planning and Development

In recent years, there has thus been a growing call for "inclusive development" to meet current development needs and challenges. Although inclusive development is gradually finding its way into the UPD discourse, its ascendancy has yet to be accompanied by great conceptual clarity. A clear-cut definition of inclusive UPD is, therefore, non-existent.

The idea of "inclusive development" emerged in the second half of the 20th century focusing on different levels, including individuals, state, and international relations (Gupta, 2015). Whereas some scholars define inclusive development as a "process that occurs when social and material benefits are equitably distributed across divides in society" (Hikey, 2015, p. 3), others focus on the "voice and power to the concerns and aspirations of otherwise excluded groups" (Johnson & Anderson, 2012). Inclusive development also has an "integral focus on the achievement of equity and the rights of citizenship" (Hickey, 2013). This general definition broadly represents the concept of inclusive development, knowing that these benefits necessarily comprise economic and material gains and enhanced well-being widely experienced.

There is a general agreement that inclusive development focuses on the equitable sharing of the benefits of growth and the related distribution of well-being across divides within societies, income groups, genders, ethnicities, religions, religious groups or others. Inclusive development brings dimensions of well-being beyond simply income, while inclusiveness focuses on the distribution of well-being. It equally values and incorporates the contributions of all stakeholders, including marginalised groups, in addressing development issues (Leck et al., 2018). It promotes transparency and accountability and enhances development cooperation outcomes through collaboration between civil society, governments and private sector actors (Musahara, 2016). Inclusive development is also expanded to include human rights, participation, non-discrimination, and accountability (OXFAM, 2014).

Notably, inclusive development goes beyond sustainable development. While sustainable development focuses on achieving social, economic and environmental sustainability, inclusive development approaches evidence on making built environments with enhanced well-being and equitable power of communities (Figure 2.2). Implementing inclusive developments, therefore, requires the integration of (1) developing epistemic communities and social movements via sharing community

knowledge and ideas by employing instruments of inclusive practice, (2) transforming governance into interactive governance to enable empowerment, and (3) adopting appropriate governance instruments (Gupta et al., 2015).

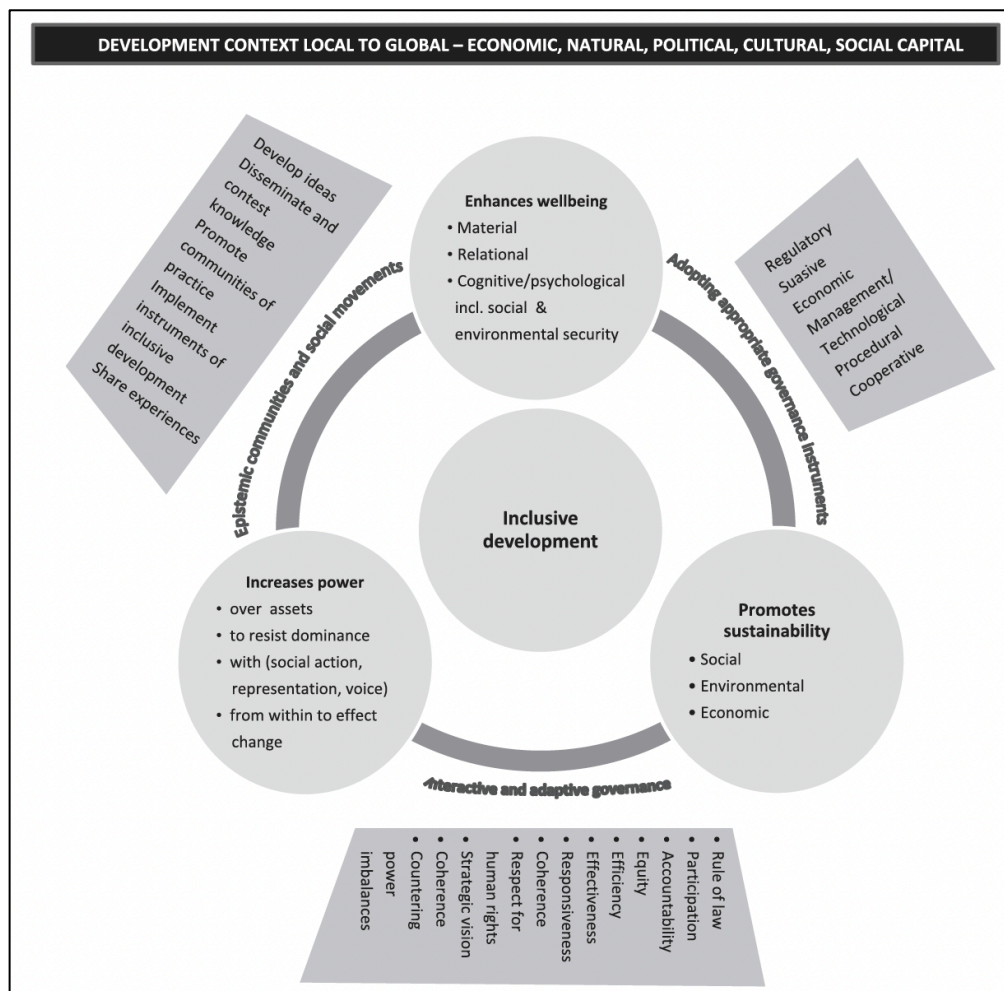


Figure 2. 2: Inclusive development: Components and conditions (Source: Gupta et al., 2015)

In RSUPD practices, Inclusive approaches account for the economic, social and environmental dimensions and structural factors that hinder the poorest from participating in the UPD processes (Shand, 2018; Ziervogel et al., 2016). Such inclusive approaches in development demand community actions at all stages (planning, design, implementation /construction, and monitoring and evaluation) of a development project. This process is often described as 'mainstreaming community engagement', which evolves from Community-based disaster risk management (CBDRM) (Shand, 2018) and is urgently required to adopt in city-making. Community engagement is a broad and dynamic philosophy highly shaped by the domain of application and the context of a given community, thus, explicitly discussed in the next section.

2.4 Community Engagement

A community is a group of individuals who share common interests, values, and often geographical location, and interact with one another regularly, forming social bonds and connections. One could think it is similar to society, but a society is a broader concept that encompasses multiple communities and refers to a large and complex network of individuals and institutions that coexist within a particular geographical area or share a common culture, norms, and systems of organisation and governance (Tönnies, 2013). Communities can vary widely based on various factors, including their common interests, characteristics, and purposes. Communities can be mainly classified as place-based, interaction-based, and community of practice and interest (CoPI) (Räsänen et al., 2020). Place-based communities are spatially defined entities, including the totality of individuals and social structures within a geographical location whereas interaction-based communities focus on network of interactions between people. CoPIs consists of network of specialised or professional actors that engage in common actions. In this study, the place-based communities who share the same geographical, administrative and political boundaries (i.e. like a village community, a local council or a neighbourhood) is considered.

Different industries, professions, organisations, business units within a single organisation, and even people within those units have different understandings of what constitutes 'community engagement' (Butteriss, 2016). Thus, 'community engagement' is a fraught term with many parents. On the one hand, it is aligned with the commercial world of 'brand engagement'; at the other end of the spectrum, it is firmly rooted in "participatory development practices". According to the UN, community engagement is,

“a two-way process by which the aspirations, concerns, needs and values of citizens and communities are incorporated at all levels and in all sectors in policy development, planning, decision-making, service delivery and assessment; and by which governments and other business and civil society organisations involve citizens, clients, communities and other stakeholders in these processes” (UN, 2005, p. 1).

The UN asserted that community engagement is critical to effective, transparent, and accountable governance in the public, community, and private sectors, in which effective engagement generates better decisions, delivering sustainable economic, environmental, social and cultural benefits. Effective community engagement enables the free and full development of human potential, fosters relationships based on mutual

understanding, trust and respect, sharing responsibilities, and creating more inclusive and sustainable communities (UN, 2005). In line with the UN definition, the National Standards for Community Engagement in Scotland, one of the leading guides for community development, defines community engagement as “a purposeful process which develops a working relationship between communities, community organisations and public and private bodies to help them to identify and act on community needs and ambitions” (Scottish Community Development Centre [SCDC], 2015, p. 6). As observed, both definitions highlight the healthy integration of public and private bodies with community groups for effective engagement.

While the use of alternative terms such as ‘civic engagement’, ‘citizen engagement’ and ‘public involvement’ for community engagement is evident from different geographical boundaries, ‘public engagement’ and ‘public participation’ are the closest terms to ‘community engagement’. Accordingly, for the International Association for Public Participation (IAP2), public participation means “involving those who are affected by a decision in the decision-making process” (International Association for Public Participation [IAP2], 2018, p. 2). Supporting this, Stuart (2012) opined that it might help to think about community engagement in three broad contexts:

1. Community engagement in community development, with a particular focus on strengths-based approaches to working with communities (e.g., asset-based community-driven development)
2. Community engagement in service delivery, particularly schools, health and families
3. Community engagement in planning and decision-making, with quite an emphasis on the spectrum of public participation.

Mainstreaming community engagement in UPD decision-making is an avenue for encouraging inclusive approaches to fill the gap between DRM and UD, resulting in risk-sensitive urban development (RSUD). This type of community engagement is primarily evident in the form of vertical engagement and is generally initiated from the top down, even if a bottom-up process is adopted. Examples include a local council seeking community involvement in reducing energy use, a charity attempting to engage community members in fund-raising activities, and a state government wanting community involvement in planning. Vertical community engagement in planning and decision-making evidence in numerous levels under different continuums of

community participation evolved over time, which is essentially reviewed in the next section.

2.4.1 Levels of community participation

Academic researchers from diverse disciplines have produced different models for community engagement in order to widen the public and private sectors' understanding of public participation. A powerful concept underlying much of the literature is a 'continuum of community engagement'. Engagement strategies can be ordered along a continuum ranging from least to most involved.

In 1969, (Arnstein) devised a ladder of citizen participation based on the distribution of power between governments and citizens. The ladder, as depicted in Figure 2.3, consists of eight rungs under three levels of public participation: (1) the first two rungs, namely manipulation and therapy, represent nonparticipation or no power; (2) the following three rungs of informing, consultation, and placation represent tokenism; (3) the last three rungs of partnership, delegated power, and citizen control represent citizen power.

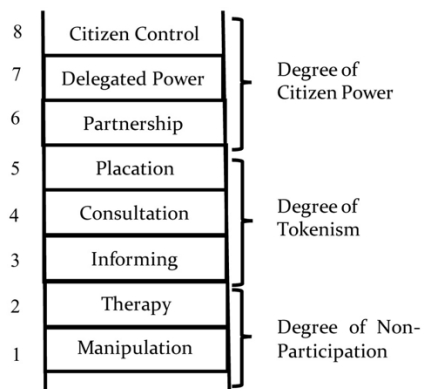



Figure 2. 3: Eight levels of the ladder of citizen participation (Source: Arnstein, 1969)

First, nonparticipation is seen as a way of educating or curing participants by the powerholders without allowing actual participation. Participants can only listen to what the powerholders want to say. Second, tokenism describes a form of participation in which participants do have the ability to speak their minds and be heard. However, there is no power for citizens to enforce that their opinion is taken into account by powerholders. Therefore, it does not assure that power is being redistributed and that the status quo can change. Third, citizen power illustrates a form of participation in which participants have the power to influence the decision-making process and is

considered a genuine level of participation. In practice, the levels are more fluent, and many more levels could be distinguished (Arnstein, 1969).

Although Arnstein’s ladder has been used and referred to for over fifty years, it has also been criticised. Tritter and McCallum (2006) opined that participation is not only about citizen power and the redistribution of power; it is far more complex, and attention should be given to the desired level of participation of the public. This indicates that citizen involvement will be ineffective and fail when there is a mismatch in how the public desires to participate and the level of participation strived for by the municipality.

Later, Glass (1979) defined five stages of public participation in the form of objectives to be achieved in successful community engagement activity. These are information exchange, education, support building, supplemental decision-making, and representational input. In 2000, the International Association of Public Participation (IAP2) coined the spectrum of public participation to help clarify the role of the public (or community) in planning and decision-making and how much influence the community has over planning or decision-making processes. This framework, which has been modified over the years but remains the most up-to-date and valid model for public participation, consists of five levels of citizen engagement: (1) inform; (2) consult; (3) involve; (4) collaborate; and (5) empower or citizen-led decision-making (IAP2, 2018). As shown in Figure 2.4, it articulates the public participation goal and the promise to the public for each level.

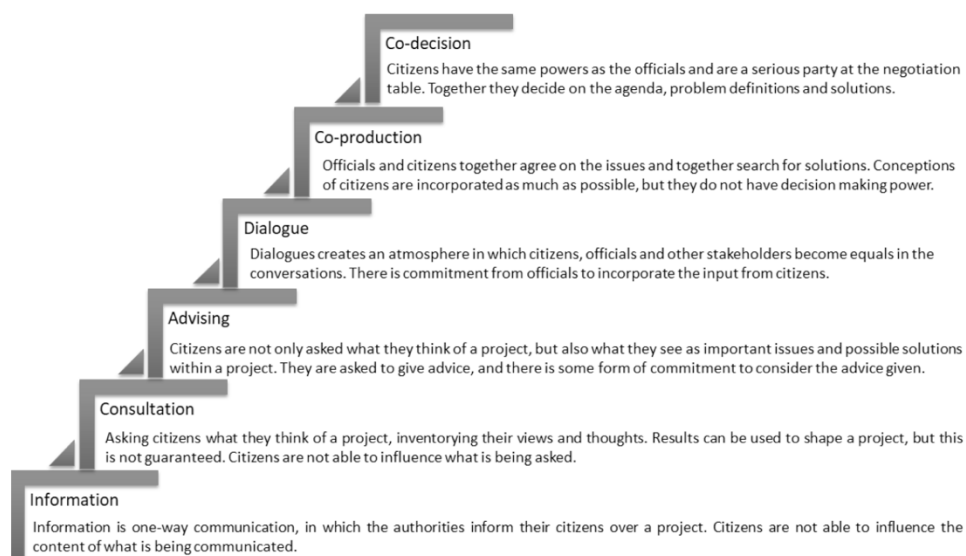


	INFORM	CONSULT	INVOLVE	COLLABORATE	EMPOWER
PUBLIC PARTICIPATION GOAL	To provide the public with balanced and objective information to assist them in understanding the problem, alternatives, opportunities and/or solutions.	To obtain public feedback on analysis, alternatives and/or decisions.	To work directly with the public throughout the process to ensure that public concerns and aspirations are consistently understood and considered.	To partner with the public in each aspect of the decision including the development of alternatives and the identification of the preferred solution.	To place final decision making in the hands of the public.
PROMISE TO THE PUBLIC	We will keep you informed.	We will keep you informed, listen to and acknowledge concerns and aspirations, and provide feedback on how public input influenced the decision.	We will work with you to ensure that your concerns and aspirations are directly reflected in the alternatives developed and provide feedback on how public input influenced the decision.	We will look to you for advice and innovation in formulating solutions and incorporate your advice and recommendations into the decisions to the maximum extent possible.	We will implement what you decide.

Figure 2. 4: The spectrum of community Participation (Source: IAP2, 2018)

As observed from the above figure, the community has more influence over decisions when moving towards the right on the spectrum, and each level can be appropriate depending on the context.

As argued by Sturm (2012), even though Arnstein's ladder exists of eight steps and therefore contains more nuance, it is rather negatively formulated. According to him, this negative formulation can affect the understanding of community engagement practitioners. To prevent this issue, more neutral terms are being chosen. Supporting the critiques on existing community engagement models, Sturm (2012) proposed a new set of levels of community participation based on research practitioners' views on the timing of participation, shown in Figure 2.5.



*Figure 2. 5: Chances and potential of participation for better transport planning
(Source: Sturm, 2012)*

Strum's community engagement model, particularly for a transport planning project, involves six levels: information, consultation, advising, dialogue, co-production, and co-decision.

As observed from the above models of community engagement, most note increasing levels of engagement from one-way information sharing through two-way dialogue and collaboration to community leadership. Academic labels for points along this continuum vary: Austin (2000) terms these as 'philanthropic', 'transactional' and 'integrative' engagement; Hardy and Philips (1998) identify 'collaboration', 'compliance', 'contention' and 'contestation'; Alberic and van Lierop (2006) distinguish 'inside-out' transmission of information from firms to communities from 'outside-in' approaches which draw in community perspectives and Morsing and Schultz (2006) encourage

moving from 'informing' and 'responding' to 'involving' communities in the engagement process. Following a detailed analysis of over 200 academic, practitioner and knowledge sources, including the above-discussed community engagement models, Bowen et al. (2010) revealed a typology of three engagement strategies: transactional, transitional and transformational. The character of these strategies is detailed in Table 2.1 below.

Table 2. 1: The three community engagement strategies (Source: Adapted from Bowen et al., 2010)

	Transactional	Transitional	Transformational
Corporate stance	Community investment/ information "Giving back"	Community involvement "Building bridges"	Community integration "Changing society"
Illustrative tactics	Charitable donations Building local infrastructure Employee volunteering Information sessions	Stakeholder dialogues Public consultations Town hall meetings Cause-related marketing	Joint project management Joint decision-making Co-ownership
Communication	One-way: firm-to-community	Two-way: more firm- to-community than community-to-firm Engage in dialogue	Two-way: Community-to-firm as much as firm-to-community Shared sense-making
Number of community partners	Many	Many	Few
Frequency of interaction	Occasional	Repeated	Frequent
Nature of trust Learning	Limited	Evolutionary	Relational
Learning	Transferred from firm	Most transferred from firm, some transferred to firm	Jointly generated
Control over process	Firm	Firm	Shared
Benefits and outcomes	Distinct	Distinct	Joint

Transactional engagement is based on 'giving back' through community investment and information. 'Giving back' can include philanthropic donations and employee volunteering. It relies on one-way communication where interaction is occasional and the firm controls the process and decision-making. In contrast, transformational engagement is a synergistic process that aims at 'changing society' through joint decision-making and shared sense-making. Projects are managed by both the firm and respective communities, and community leadership is involved in the decision-making. Through the shared processes, outcomes unattainable without the community are achievable. Transformational engagement involves high levels of trust and relies on

authentic dialogue, with frequent interactions amongst a more limited group of partners. Transitional engagement is an intermediate form between transactional and transformational forms in which engagement is substantive, but synergy is not achieved. Like transformational engagement, it is characterised by two-way communication and higher levels of community involvement. The control of resources remains with the firm, but 'bridges are built' with communities. This form of engagement lacks the joint decision-making and shared sense-making of truly transformational engagement.

The above-discussed chronological transformation of the community engagement concept is summarised in Figure 2.6.

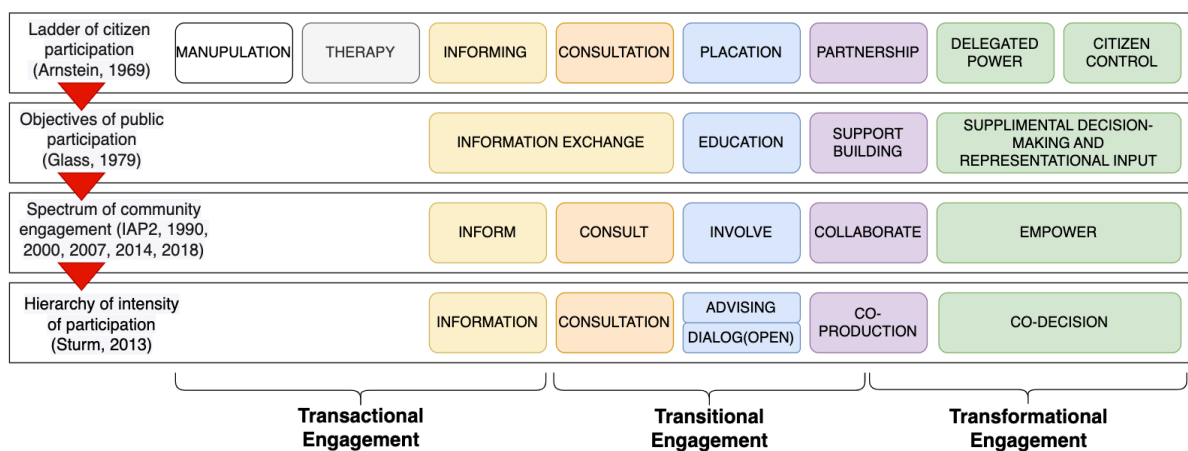


Figure 2. 6: Development of the community engagement concept over the last five decades

Figure 2.6 shows striking similarities between different versions of the community engagement continuums, and each of these engagement levels has its purpose. Thus, the implementation of all of these degrees of engagement within a single development project is not recommended anywhere, as each level has a unique role in community engagement that needs to be carefully chosen depending on the project requirements and the context. It is important to recognise that they are levels, not steps. Arnstein herself also recognised that although informing has no participation, as long as there is transparency regarding the goal of participation and the influence participants are offered, communicating or asking for advice is also essential in a decision-making process. However, this should not be done under false pretences. Lower levels of participation should always be combined with higher levels of participation in the timespan of a project to become legitimate forms of participation. However, this does not mean that for each phase in a project, high levels of participation are necessary or

even desirable. The goal, therefore, should not be to endeavour higher levels of participation but to design the participatory process in compliance with the citizens (Tritter & McCallum, 2006). However, to research how planning officials think about the number of influential citizens they should get throughout the planning process, it is helpful to use levels of participation to define this influence and relate it to the phases in a planning process.

In a global movement promoting democracy, justice and sustainability, community participation is now central to planning and policy reforms worldwide (Mahjabeen et al., 2009). Community participation is considered fundamental to fair and representative decision-making in modern-day UP and is also a key element in achieving sustainable development (Redclift, 2002; Ribot, 2003; Shrestha & McManus, 2008). In line with sustainable development, the case for 'risk-sensitive' development is now established in the academic literature and international policy frameworks. RSUPD involves integrating disaster risk reduction and climate change adaptation measures as part of urban development strategy and planning (Wiseman et al., 2010). In terms of investigating the status de quo of engaging communities in strategic and operational level RSUPD, the following systematised reviews were conducted.

PART II

2.5 Barriers to Community-Inclusive Risk-Sensitive Urban Planning and Development

Even though many researchers have investigated barriers and practical challenges to participatory decision-making, these studies have predominantly focused on region-specific or context-specific challenges without a global perspective and no prioritisation of these constraints. Therefore, a comprehensive understanding of existing barriers to community entry and issues and challenges in productive community engagement in RSUPD still warrants a proper investigation. This systematised literature review (the steps followed are provided in Appendix 1), therefore, aims to fill this gap by consolidating the state-of-the-art barriers and challenges in participatory decision-making and the potential solutions for overcoming these. Observing the nature and similarities of the barriers identified through the systematised literature review, they were classified into five areas: (1) community context, (2) practice related, (3) institutional, (4) processes, and (5) infrastructure.

2.5.1 Community context-specific barriers

The community context is shaped by a locality's inherent socio-cultural, income, education and other neighbourhood characteristics. The lack of communities' knowledge and awareness of UD procedures and the benefits derived from engagement (Alawadi & Dooling, 2015; Haaland & van den Bosch, 2015; Harden et al., 2015; Protik et al., 2018; Swapan, 2016) is prominent, causing communities to be disengaged from participation. Most urban people have no idea about the discernible impacts of community engagement in UD plans (Protik et al., 2018). This is further worsened by consultation fatigue (Shand, 2018; Yellow Book Limited, 2017). The high levels of poverty that exist for many community members (Kita, 2017; Shand, 2018) and low levels of literacy and numeracy, and the dominance of oral culture among communities (Gosman & Botchwey, 2013; Lee & Kwak, 2012) stands opposed to engaging locals in critical decision-making. In addition, some communities consider community engagement a threat due to discrimination and fear of exposure to authorities (concerning drug use, immigration status, or stigmatising illness), and they see engagement as a means of diverting existing funding into other initiatives (Shand, 2018).

2.5.2 Practice-related barriers

The literature asserts that in most cases, if not all, industry practitioners are consulted with communities to fill project requirements without attempting to engage with locals, especially with those who are vulnerable and marginalised, in a sound manner (Harden et al., 2015; Kita, 2017; Wheeler, 2016). Oppositely, Cropley and Peter (2013) commended that it would be a mistake to assume that these marginalised groups would all be willing to engage in planning if the barriers were removed. It can be further commented that there is no reason to suppose that the seldom-heard would be more motivated to participate than the apathetic majority (Yellow Book Limited, 2017). Further, there are poor relations between communities with decision-makers and urban planners (Kita, 2017). For example, a lack of a participation tradition is evident in Eastern European countries, where institutional cultures still prioritise community consultation rather than allowing citizens and stakeholders to actively contribute to the UP process and form its outcomes (Lindenau & Böhler-Baedeker, 2014). Similarly, the participation of displaced communities in resettlement planning is also minimal, with city officials undertaking the whole process and only coming to the communities during the displaced community registration (Kita, 2017).

2.5.3 Institutional barriers

Institutional barriers are policies, procedures, or systems that systematically disadvantage certain groups of people. Primarily, the top-down and centralised management of government authorities (Deshpande et al., 2019; Fung, 2015; Harden et al., 2015; Lima, 2019; Meredith & MacDonald, 2017; Shand, 2018; Tantoh & Simatele, 2018) causes resistance to sharing power and control with community actors (Meredith & MacDonald, 2017). Many researchers (Harden et al., 2015; Yellow Book Limited, 2017) stated that organisational commitment to community engagement is shallow. It is evident that for some developers and local authorities, engagement is too often a matter of managing expectations rather than evidence of a real commitment to reach out to communities and to listen and respond to what is said (Yellow Book Limited, 2017). Furthermore, there is not much evidence of a willingness to change policies or amend development proposals to reflect the views of communities (Yellow Book Limited, 2017). Fung (2015) also is of the opinion that current procedures only have a minimal discussion on the role of third-sector organisations (such as voluntary associations, non-governmental organisations (NGOs), community organisations, and non-profit organisations) in supporting community development activities.

Regarding resource allocation, limited finance for community participation (Deshpande et al., 2019) is highlighted. Fulfilling budgetary requirements is key to the success of any implementation. In addition to financial investments, there is also limited availability of other resources required for community participation. These resources include knowledgeable and experienced professionals (Meredith & MacDonald, 2017). Most of the DRR and UPD related agencies do not evident to conduct appropriate training for professionals to excel in participatory methods fit for different circumstances (Harden et al., 2015; Lee & Kwak, 2012; Petriwskyj et al., 2012); thus, current engagement practices seem limited to conventional participatory methods such as public meetings, community workshops, and alike. Therefore, the literature emphasises that more investments are needed for professional capacity-building and capability development programmes.

2.5.4 Process-centred barriers

Many researchers are of the view that the aim and purpose of community engagement are ill-defined due to a lack of clarity (mixed messages) and lack of transparency: consequently, this status quo causes confused expectations (Alawadi & Dooling, 2015; Harden et al., 2015; Lima, 2019; Yellow Book Limited, 2017). Additionally, current engagement processes provide communities with only a limited time to build trust with decision-makers and urban planners to establish participatory suggestions and achieve results (Alawadi & Dooling, 2015; Harden et al., 2015; Yellow Book Limited, 2017). This may discredit any efforts taken for participative decision-making, thereby wiping out the community's informed engagement. It is known that current decision-making processes in city developments are hugely complex; therefore, tensions and conflicts of interest are inevitable (Royal Institute of Building Architecture, 2011; SMARTe, 2010).

Community representation in UD processes have been further hindered due to the less information being available to the citizens (Krishna et al., 2014; Protik et al., 2018): most notably, information on government meetings and familiarity with government officials, and knowledge about government affairs (Protik et al., 2018). Such information is not presented well due to ineffective methods of disclosing information and the difficulty of obtaining information at the local level (Herriman, 2011; Lee & Kwak, 2012). The inclusive and accessible practice is further hindered when the information is not provided in a format that can be clearly understood by the community to understand what is being proposed and thus contribute effectively (Böhler-Baedeker

& Lindenau, 2013; Gosman & Botchwey, 2013). Incomprehensible information provided to participants is often hard to understand due to technical language and inconsistent terminology (Yellow Book Limited, 2017). The failures such as overlooked participation, the exclusion of seldom-heard people (Community Places, 2014), and unrepresentativeness and partisanship among community representatives (Harden et al., 2015) in community participation structures cause an imbalance of stakeholders in the participatory process. Furthermore, such an imbalance can occur between interest groups (who can powerfully communicate their opinion) and weaker community members (who have difficulties communicating their interests in the process) (Lindenau & Böhler-Baedeker, 2014).

2.4.5 Infrastructure-related barriers

These barriers lean more towards investments in infrastructure and planning to support community engagement. Improper coordination of event logistics (Harden et al., 2015) is a challenge for inclusive and accessible practice. In particular, some people cannot physically reach the planned venues for community participation due to geographical boundaries (Chapman, 2010; Harden et al., 2015) and limitations relating to access (e.g., transport, event timing, safety, and accessibility to the location of meetings) (Herriman, 2011; Lee & Kwak, 2012; Petriwskyj et al., 2012). Poor community engagement is further exacerbated by weak communication channels, particularly between decision-makers and communities (Deshpande et al., 2019); rural isolation due to weak community infrastructure: poor roads and transportation (Deshpande et al., 2019; Revi et al., 2017); and unavailability of appropriate technology for supporting effective community participation (Gosman & Botchwey, 2013).

As discussed above, the systematised literature survey revealed 48 barriers and challenges constraining community entry and engagement in participatory decision-making in RSUPD. Among these barriers, the most highlighted barrier is the lack of communities' knowledge on how best to engage in participatory decision-making in development processes and the benefits they can gain through community engagement. The second most cited constraint is the decision-makers absence or lack of meaningful engagement with communities. Ill-defined aim and purpose of community engagement, as well as a lack of clarity, transparency and confused expectations within present stakeholder engagement processes, came as the third top obstacle with regard to the inclusion of vulnerable communities in UPD.

2.6 Enablers of Community-Inclusive Risk-Sensitive Urban Planning and Development

Notwithstanding the above-synthesised constraints, there are enablers for promoting community-inclusive UPD towards transition in building risk-sensitive cities. In this section, an attempt has been made to classify the facilitating factors into six categories, such as community context, institutional, relations, legal and policy, resource, and infrastructure, based on recently published literature.

2.6.1 Community context enablers

Emphasising the collective efforts required for inclusive developments, locals' strengths and capacities would be driving forces to build responsive cities inclusively and equitably. Many scholars argue that communities' knowledge and lived experiences about their vicinity, local hazards, areas that are prone to disasters, and lessons learnt from previous disaster events make them a good source of information for effective risk assessment and land use planning (Butler & Adamowski, 2015; Hambati, 2013; Perrone et al., 2020; Stave, 2010). Thus, it is essential that decision-makers/implementors learn from communities and amend agency-led plans by incorporating locals' tacit knowledge and lived experience. Enduring residency in a particular neighbourhood further makes community leaders who drive change and action in a locality (Deshpande et al., 2019). Often, committed individuals or champions form community committees facilitate meetings to discuss specific issues in a locality and then reach out to either NGOs or local authorities for help (Deshpande et al., 2019; Thomalla et al., 2018). Furthermore, community-based organisations (CBOs) play a vital role in educating all the stakeholders and the general public in ascertaining the incorporation of public needs and values into the local government decision-making (Rafique & Khoo, 2018). CBOs increase citizens' voices, promote equitable opportunities and service delivery, interlink citizens with public representatives, and make community participation more inclusive (de Lancer Julnes & Johnson, 2011; Yang & Pandey, 2011).

2.6.2 Institutional enablers

Institutional enablers could emerge from any public or private agencies related to inclusive developments. Although not evident in most countries, Dias et al. (2018) state that bottom-up governance delivers inclusive urban designs by engaging local

community members actively in the development process. A proper bottom-up process will help to achieve better performance by capturing locally significant factors to achieve better results in relation to sustainability indicators. Besides, a bottom-up approach increases a community's capacity to manage their environment; therefore, the community is empowered (Lindenau & Böhler-Baedeker, 2014; Walton et al., 2016). However, Cooksey and Kikula (2005) argue it can become infeasible to have a bottom-up process, especially with mega-scale projects, because it may reduce planners' and designers' control, which will result in reducing the efficiency of UD processes; this could be the reason for which top-down UP is dominant. In addition, stakeholder collaboration, as opined by (Gupta & Vegelin, 2016), allows for meeting individual as well as collective needs in city planning. The multi-level stakeholder collaborative planning process is certainly more time-consuming and tedious than each stakeholder developing their own engagement plans, but it leads to sustainable and inclusive outcomes (Kirshen et al., 2018).

2.6.3 Relational enablers

Relational enablers include the factors that synergise the community and institutional contexts. The most prominent relational enabler is the committed field workers because they build community trust over time (Kirshen et al., 2018). Community trust building relates to the skills of field workers in having the time and expertise to understand every aspect of the complex community landscape that the development is trying to impact. Trust and relationship building are both outcomes of other enablers, as well as necessary aspects for effective transformational engagement towards inclusive developments. Volunteer workforces, including NGOs, are another prominent enabler in any domain of participatory work that acts as intermediary between communities and local governing bodies (Deshpande et al., 2019). NGOs associated with humanitarian actions and environmental sustainability often make significant efforts to mitigate the negative social and environmental impacts of urban sprawl through inclusive DRR and land use planning (Badri et al., 2006; Walton et al., 2016).

2.6.4 Legal and policy enablers

Regulatory frameworks and political factors can be both a driver as well as a factors against inclusive developments. Christiansen and Loftsgarden (2011) argued that although a number of factors act as driving forces, in the end, it is the public authorities that decide how land development should be managed. Therefore, adequate planning

and political control play a critical role in preventing or limiting unsustainable development. For instance, European countries, including Denmark, Britain and the Netherlands, have different policy provisions and regulatory frameworks to enforce and control inclusive developments (Tosics et al., 2010). For example, the Localism Act (2011) in England and Section 15 of the Local Government in Scotland Act (2003) introduced new powers for people to make neighbourhood planning orders with reduced interference from their central governments. However, this is less evident in most developing economies due to political instability and corruption (Geekiyanage et al., 2020).

2.6.5 Resource enablers

Inclusive initiatives require proper resource mobilisation; finance and expert knowledge are vital resources required for community inclusion. The literature asserts that most of the DRR and humanitarian-related works are funded by inter-governmental organisations (IGOs) such as the World Bank, United Nations (UN) entities including UN-Habitat, United Nations Development Program (UNDP), United Nations International Strategy for Disaster Reduction (UNISDR), and World Health Organisation (WHO) (United Nations, 2016; Walters, 2018; Weichselgartner & Kelman, 2014). Also, they provide the necessary admin and technical expertise to build social capital. To illustrate, in 2014, Bangladesh was one of the world's top 10 recipients of donor aid for the widespread application of participatory approaches in the interests of grassroots and inclusive development outcomes. In 2010, the UNISDR launched the 'Making Cities Resilient' campaign by funding a growing number of local governments to achieve inclusive, resilient and sustainable urban environments.

In contrast, scholars contend that vibrant individuals and community-based social capital networks offer access to a range of resources. These resources encompass information, financial and material assistance, childcare, as well as emotional and psychological support, especially in the aftermath of disasters (Elliott et al., 2010; Hurlbert et al., 2000). Despite the clear effectiveness demonstrated, practitioners have often overlooked the potential of social cohesion and social networks in urban planning and pre-disaster preparedness (Aldrich & Meyer, 2015).

2.6.6 Infrastructure-related enablers

A relatively new dimension of participation relates to social media, which enables a person to be informed about an issue and comment at any place and at any time

(Lindenau & Böhler-Baedeker, 2014). The advent of social media has opened up unprecedented new possibilities for engaging the public in government work and has changed the public's expectations about how government work should be done (Lee & Kwak, 2012). Social media can be classified into two groups: expressive and collaborative, depending on its primary purpose. Expressive social media enables people to express themselves by sharing text, picture, video, and music with others (e.g., Facebook, MySpace, Twitter, YouTube, Flickr, and Foursquare), while collaborative social media let people work together to achieve common goals through interactive and social processes (e.g., Wiki, Mural, Miro, Google Docs). Many scholars argue that it is high time to name social media as a critical infrastructure as it has already demonstrated its use in the fields of DRR, emergency management, and community development (Dufty, 2012; UNDRR, 2015).

As elaborated in sections 2.4, 2.5, and 2.6, community engagement requires a timely and proper application of participatory methods throughout the RSUPD cycle, which is explicitly reviewed and discussed in the next section.

PART III

2.7 Participatory Methods for Community Engagement

Over the years, many researchers have investigated numerous methods to involve the public in decision-making processes. Still, these attempts have been constrained by many factors, including low community capacities, agencies' silo processes, a lack of a participatory attitude in both the public and practitioners and ill-defined processes. However, these methods have been periodically improved for the effective engagement of communities in achieving different purposes of community inclusion and representation. The second structured review (see Appendix 1 for the steps followed), therefore, was conducted to investigate existing participatory methods and their diverse applications in different contexts.

The structured and comprehensive literature review identified 34 methods available for community engagement. Appendix 2 presents a summary of these identified methods along with examples of their tools, strengths, and associated limitations. Each of these participatory methods offers different degree(s) of community engagement and has specific situations or stages that are applicable. Therefore, this section is classified into two subsections in order to present critical analyses of the applicability of participatory methods at different levels of the public participation spectrum and throughout the process of RSUPD.

2.7.1 Mapping of participatory methods into the spectrum of community engagement

Based on the characteristics of each method and the purpose of their application, these methods were manually classified within the IAP2's spectrum of community engagement to understand better which participatory methods are more appropriate in each phase of participation.

2.7.1.1 Inform level

The 'inform' level does not provide the opportunity for public participation at all but provides the public with the information they need to understand the decisions made by agencies (IAP2, 2018). However, the inform level reminds project implementors and decision-making agencies that they should serve as honest brokers of information. At this level, they should at least give the public what they need to understand the project

and decision(s) fully and reach their conclusions about the appropriateness and adequacy of the decision(s). The presentation and dissemination at the inform level are achieved through simple methods such as printed materials, websites, videos, infographics, advertising via media, presentations/live streaming and displays/model exhibits. These methods provide one-way communication through which practitioners can educate communities on upcoming developments.

As these methods do not serve as an opportunity to build a valid conversation with or to receive feedback from communities, satisfactory and meaningful information facilitation can be provided through social media platforms, which is a promissory method of engaging youth (Lee & Kwak, 2012; UNDRR, 2015; Weichselgartner & Kelman, 2014). The rise of social media also revives old questions on how decision-making processes can achieve a balance between representative, delegable, participative and direct democracy (Tamarack Institute, 2017). The Organisation for Economic Co-operation and Development [OECD] (2015) has pronounced that the use of social media platforms has already been used not only to inform but also to consult.

In addition, public meetings can be used to inform larger groups of people and generate inter-community discussions about prospective development. Public meetings also encourage two-way communication, as this method generally has a facilitator for community questions and a recorder who records suggestions and issues revealed at the meeting (Tamarack Institute, 2017). In a case where it requires a particular community to understand the nature of a development site (such as the construction of an industrial or commercial facility), to avoid a possible public protest, practitioners can arrange a site visit(s) to the development location, as this allows locals to understand the project details better. Although informing the public via social media platforms, public meetings, and site visits offer some level of public consultation about prospective development, there is no guarantee that their voices will be integrated into the decision-making process.

2.7.1.2 Consult level

The '**consult**' level of public participation provides the minimum opportunity for bringing public input into a decision. In terms of development, consultation is particularly appropriate when there is little complexity in an issue, and it can be useful for obtaining feedback about a draft plan or canvassing a range of views early on in a longer planning process (although not necessarily acting on them). Consultation with little interaction can be achieved through surveys, interviews, and polls. A survey or an interview helps

to understand stakeholders' opinions on a particular topic in a structured way that can be extensively analysed. Polls, as a voting method, allow people to register their opinion and thus quickly provide an assessment of a current situation (Queensland Government, 2010). A simple vote on a UD plan will give the respective authorities an idea of the level of local awareness and support for an issue and can open up the way for other engagement strategies.

Consultation can be more interactive when it uses methods such as focus groups, citizen science or crowdsourcing. Focus groups are small group discussions that generate in-depth information on a specific topic. Citizen science facilitates the collection of data in an organised way from the members of the public, typically in collaboration with professional scientists (Rosenstock et al., 2017). Conversely, crowdsourcing offers a method to bring in people interested in an issue and actively engage them longitudinally until a sound solution is reached (Tamarack Institute, 2017). In terms of quantity, surveys, polls and citizen science or crowdsourcing methods have shown potential in approaching a larger group of the public. In contrast, individual interviews and focus groups are much more effective for obtaining opinions about a particular development from a selective community, such as prospective inhabitants or local representatives who live in proximity to that development.

The Most Significant Change (MSC) is a form of participatory monitoring and evaluation (M&E). It is a form of monitoring because it occurs throughout the programme cycle and provides information to help people manage the programme. Furthermore, it contributes to evaluation because it provides data on the outcomes and impacts that can be used to assess the performance of the programme as a whole. It involves many project stakeholders deciding the sorts of changes to be recorded and analysing the data collected (Tamarack Institute, 2017). Though these methods keep the promise of the consult level to 'listen and acknowledge public feedback', it is questionable whether these consultation methods facilitate two-way communication. Nevertheless, this stage of community participation allows agencies to identify potential issues that need to be considered in order to guide the next stages of development planning with the active involvement of the community.

2.7.1.3 Involve level

At the 'involve' level, the public are invited into the decision-making process, typically from the beginning, and is offered multiple ongoing opportunities to provide input into the decision-making process as the development solutions mature over time. However,

the respective agencies are still the decision-makers, and there is no expectation of building consensus or offering the public any sort of high-level influence over the decision (IAP2, 2018). This approach typically considers both community requirements and perspectives with government requirements in order to generate alternative design proposals. In this approach, there is a need to update communities throughout the development process until the final design is reached.

The involve level interactively engages the community to understand community requirements and to explore design ideas using idea mapping and co-creation tools. Community mapping and system dynamics (SD) are specialised methods for mapping different perspectives. Community mapping, sometimes known as asset mapping, is the process and product of a community getting together to map its own assets, values, beliefs, or any other self-selected attributes. A community map highlights people, physical structures, organisations and institutions that can be used to create a meaningful service project for the community. SD is a promissory public involvement method that uses simulation modelling (causal loop diagrams) to capture the views and ideas of stakeholders (Pejic Bach et al., 2019). It is suitable for studying complex systems. Király and Miskolczi (2019) identified three main approaches to participatory SD modelling: (1) group model building (GMB); (2) participatory SD modelling for policymaking; and (3) community-based SD. These three methods differ significantly in terms of the category of stakeholders to be involved, the facilitating techniques and the key expected outcomes (Ricciardi et al., 2020).

The GMB involves executives, entrepreneurs and/or professionals in a corporate context and recommends facilitation techniques that do not overload the clients while keeping the model simple and understandable. The key expected outcomes from the GMB are participant ownership, social capital, commitment to change and the prioritisation of model-consistent decisions (Andersen et al., 2007). Participatory SD modelling for policymaking involves people from NGOs and/or government agencies and recommends facilitation techniques that maximise participation in the initial phase of problem setting and the final phase of simulation testing. The simulation-building process that happens during these two phases is left to expert modellers. The key expected outcomes of the participatory SD approach are system predictability, model-consistent decisions, and social capital (Stave, 2002). Community-based SD, on the other hand, involves the whole community (especially marginalised members), recommends facilitation techniques that are based on social counselling, and prioritises participants' social capital and empowerment as the key expected outcomes

(Hovmand, 2014). However, the complexity of SD models makes it difficult for users to understand the details of the models (Pejic Bach et al., 2019; Stave, 2002).

Other methods that are being used to involve communities are workshops, design charette, placemaking, and knowledge co-creation workshops, which not only involve communities but also facilitate collaboration to a certain degree.

2.7.1.4 Collaboration level

The 'collaborate' level in the engagement spectrum aims to partner with the public in each aspect of a decision, including developing alternatives and identifying the preferred solution. The collaboration level promises to incorporate advice and recommendations from the public to the maximum extent possible, but decision-making still lies with development-related organisations. As mentioned above, workshops or open-space events, design charrettes, and knowledge co-creation methods provide an interactive course of action emphasising two-way processes in creating alternative design solutions. Workshops and open-space events are most valuable when bringing together representatives from diverse groups who share a common interest in an issue but bring different perspectives on how it should be addressed (Queensland Government, 2010). A design charrette and placemaking are methods used for intensive planning sessions where citizens, designers and others collaborate on a vision for development, particularly remodelling failing, abandoned or underused spaces to make them more attractive through temporary structures and installations (Tamarack Institute, 2017). Notably, it allows everyone who participates to be a joint author of the plan.

Knowledge co-creation leads to the development of novel ways to re-frame a social problem and its solutions, creating messages and new messengers that reflect the lived experience of a target population and providing inroads that open up new possibilities for change (Hedelin et al., 2017). Although it has become a priority for agencies to include methods of co-creation with the community, especially in the planning and post-occupancy phases, the tension between the need to establish future goals and the necessity of allowing physical and cultural flexibility remains in most UPD processes (Bouw & Thoma, 2019).

Collaboration methods such as expert panels and working groups are specially designed for stakeholders to work together towards a common objective while incorporating the scientific knowledge and experience of subject experts and

specialised community groups. Experts' opinions and experience provide useful input into decision-making, particularly in UPD.

2.7.1.5 Empower (Co-decision-making) level

As the foregoing discussion elaborates, the first four levels of the community engagement spectrum range from no participation to interactive participation but do not provide an avenue for community-led decision-making. At the top level of community engagement, the '**empower**' level places the final decision-making in the hands of the public. Community leadership in decision-making at UPD is purposeful when there is a need to bring deliberation into policy formation in order to understand and incorporate ground-level data. This can be achieved by implementing participative empowerment methods such as citizen committees, citizen juries, visioning, and community indicator projects. Citizen committees (also known as public advisory committees and public liaison committees) consist of a group of representatives from a particular community or a set of interests who are appointed to provide comments and advice on an issue. More importantly, the members meet regularly to provide ongoing input and advice throughout a project (Tamarack Institute, 2017), thus significantly contributing to the decision-making process.

Unlike citizen committees, citizen juries only involve experts on a particular theme and bring expert knowledge and ideas together to build discussions and assist in making informed decisions on a focus area. Visioning is a method typically used in planning, wherein residents are brought in to participate in creating urban or landscape visions (Tamarack Institute, 2017). Community indicator projects (CIP) are those where communities have a vision for a sustainable future and have established ways of tracking their progress using indicators. The list of indicators varies and is generally developed by the community itself (Tamarack Institute, 2017). In this approach, indicators are selected either across topical domains or with a focus (e.g., children) in order to collectively track trends in the community's well-being and quality of life (Tamarack Institute, 2017).

When making development decisions related to available resources, participatory asset management methods can be employed. Asset-based community development (ABCD) is an innovative methodology for assessing a community's resources, skills and experience, organising the community around issues that move its members into action, and then determining and taking the appropriate action (Tamarack Institute, 2017). It aims to exploit the community's strengths and potential to facilitate their

sustainable development. This method uses the community's assets and resources as the basis for development and thereby empowers people by encouraging them to utilise what they already possess (Aslin & Brown, 2004; Tamarack Institute, 2017). Similarly, participatory budgeting, as a form of citizen participation in which citizens are involved in the process of deciding how public money is spent, is widely applied in participative financial decision-making. These innovative policymaking processes allow citizens to be directly involved in making policy decisions.

Figure 2.7 below illustrates the mapping of the above-discussed participatory methods into the community engagement spectrum.

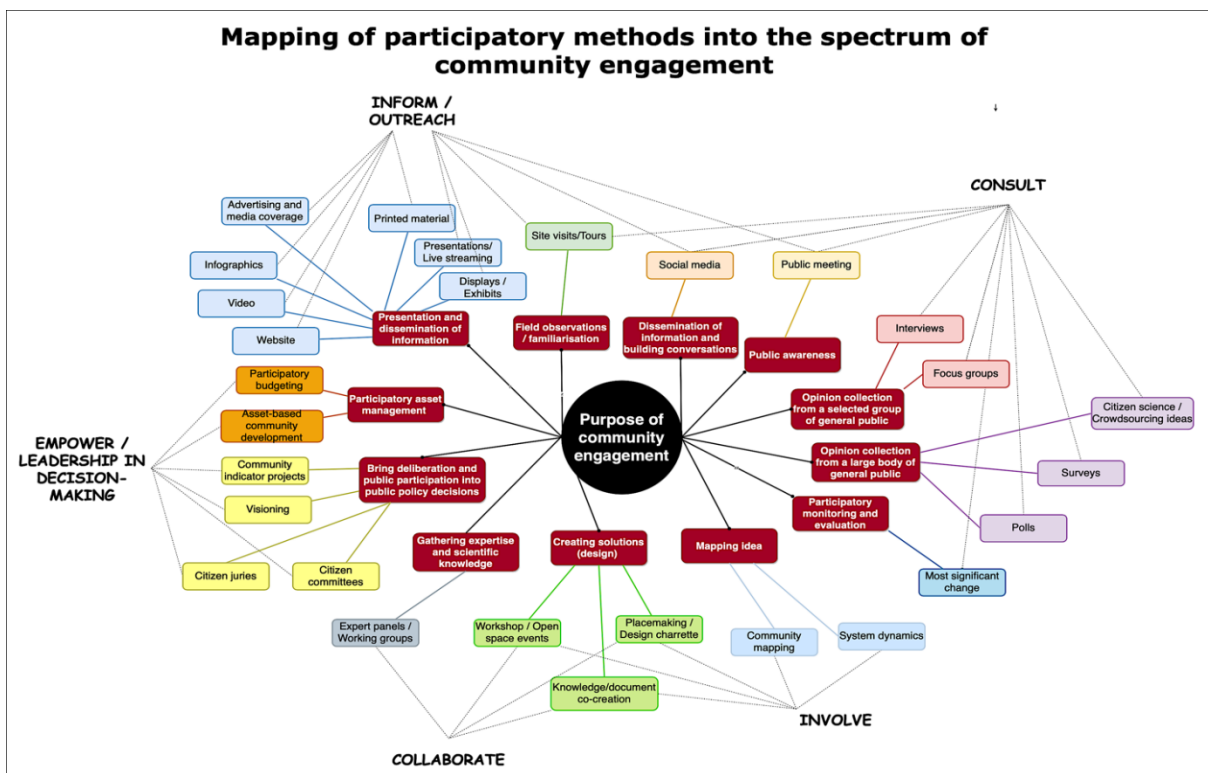


Figure 2. 7: Mapping of participatory methods into the spectrum and purpose of community engagement

2.7.2 Application of participatory methods in inclusive urban development: Case-based evidence analysis

This section of the systematic review of participatory methods distinguishes the application of methods across the different stages of UPD. As observed from the case studies included within the review, all of the projects undertook community engagement activities during the **pre-planning stage** (conceptual design), whilst only a few projects permitted communities to engage in the other phases of development. However, interactive participation is still not overly evident in this stage, as agencies

mostly tend to only inform or consult with the public. In many such cases, printed advertisements, media campaigns, websites and blogs, and open-space events have been widely used to publicise development plans and to foster public understanding of development planning (Kirshen et al., 2018b; Pickering & Minnery, 2012). Previous research shows that there has been a success in applying methods such as public meetings, scoping workshops, forums, interviews, focus groups and questionnaires to gain public feedback for design proposals, city plans, and regional policies (Abd Elrahman, 2016; Auckland Design Manual, 2015; Jesse, 2014; Moghaddam & Rafieian, 2020; Savic, 2015).

In addition, in the Victoria Square development in New Zealand, mobile consultation units with digital information stations were used to assist in eliminating public rejection on the agencies' city proposals (Savic, 2015). Giving a little more interaction with the public, inclusive projects (mostly in Europe, the USA, and New Zealand) have implemented the 'World Café' technique to hold community tables (Savic, 2015). Additionally, the 'NextCampus' project in Germany developed an online serious game which facilitated the community to play on a virtual site and, thereby, educate players about the current situation of the existing buildings (Poplin, 2012). The game encouraged the participants to produce the most satisfactory UP solution for the upcoming development and to make 3D simulation models of the buildings according to their expectations. However, this game did not enable players to communicate with the decision-makers or play as groups; thus, there was no space for active participation (Poplin, 2012).

Overall, in practice, the informing and consulting methods identified in Figure 2.7 have been applied in the pre-planning stage. Furthermore, at present, it seems that agencies tend mostly not only to inform but also to consult with the public during the pre-planning phase, irrespective of the communities' interest in engagement. For this reason, the use of a combination of informing and consulting methods can be seen in the pre-planning phase, consisting of both physical and digital/virtual engagement techniques. For example, a public event, an exhibition, media coverage, a website and online forums have been launched in the Greenovate case in the USA (Kirshen et al., 2018b).

Some of the projects had progressed the community engagement to the **planning and briefing stage** of urban design. These projects have enhanced community engagement by moving onto the consult, involve, and collaborate levels with the public in order to capture clients'/users' needs and expectations. For instance, the Metro

Vancouver 2040 project in Canada used several forms of consultation, such as public meetings, workshops, forums, webinars, focus groups and electronic voting, to discuss key regional policies and to seek public comments on them (Pickering & Minnery, 2012). The community engagement in the Greenovate project went to the involve level using three methods, namely a community summit, a community yard sale, and a Civic Academy to engage with marginalised populations in urban adaptation planning (Kirshen et al., 2018b). Tactic urbanism, sometimes called placemaking or a pop-up, is a popular approach that enables collaboration with the public in creating design solutions. For example, placemaking was used in Luxor Street in Egypt to develop a tourist street (Abd Elrahman, 2016) and in Christchurch, after the massive earthquake disruption, to rebuild temporary city structures (Savic, 2015). Similarly, the Newmarket Urbanism project in the UK implemented enquiry by design, adapted from the placemaking approach, to develop practical action plans to accomplish the city's vision statement (Prince's Foundation for Building Community, 2012).

From this study's case study analysis, it can be shown that, in most cases, communities are not invited to take part in the later stages of UD. This could be due to locals' lack of technical knowledge regarding UPD. Thus, the final development plan(s)/decision(s) are made by agency practitioners by considering the community inputs that were collected during the first two stages, as appropriate. Participatory budgeting (PB), sometimes known as community development committees/councils (CDCs), has shown the potential to empower communities during the **professional design** and **development** stages. This is most evident in emerging economies where international humanitarian organisations fund inclusive development. For example, Afghanistan's urban reform process (funded by the UN-Habitat) (UN-Habitat, 2019) and the Urban Partnerships for Poverty Reduction (UPPR) programme in Bangladesh (funded by the UNDP, UN-Habitat, and UKaid) (Walters, 2018) have established CDCs to improve the living conditions of citizens who live in informal housing and slums. Similarly, the Harare city project in Zimbabwe created saving groups to provide a structure for micro-savings and loans among community members (Shand, 2018). In all three instances, CDCs were comprised of women. As such community committees enabled locals to influence the development decisions made by agencies, these groups seem to be engaged from planning to the development of said projects.

The review shows that community engagement is not considered during the **post-development stage**: after the completion of the project's development, when the built environments are handed over to the public. In this phase, the community serves as

the beneficiary, so no participatory methods are tested in practice. One exception is the UPPR programme in Bangladesh, which continued their CDCs even during the post-development stage for the future betterment of their people (Walters, 2018). However, overall, it seems that less participatory methods have been practically applied and tested for results in the latter stages of UD (from professional design to post-development in particular).

Despite the number of participatory methods and their application in DRR and UPD, the preceding literature review established the absence of a proper mechanism for selecting engagement methods based on the objectives of a proposed UD project. As per the case study review, the selection of methods seems purely based on implementors' preferences rather than deciding upon a project or community engagement considerations/requirements. This has been highlighted quite a few times in literature, which elaborates on the need to investigate a tool for selecting participatory methods logically and sequentially along the RSUPD process. The implementation of participatory methods should not be carried out solely for the purpose of checking boxes, but the implementation must align with both the development objectives and the objectives of community engagement. Simply going through the motions of participation without meaningful engagement and impact undermines the essence and potential benefits of participatory approaches.

The literature further elaborates that adopting participatory methods will not complete the process of achieving transformational community engagement. Inclusive approaches in RSUPD need to be concluded by adopting a proper mechanism to evaluate the level of community transformation achieved through participatory development. The next part of the literature review, therefore, is dedicated to synthesising related concepts and previous work on transformational community engagement.

PART IV

2.8 Community Transformation

Community transformation, also known as community change and mobilisation, intends to bring a significant change in a distressed community that would not be promptly measurable (Hille, 2008). The state-of-the-art literature on community transformation is deeply entrenched in understanding structural changes and the importance of broader social transformation (Few et al., 2017; Pelling et al., 2015; Ziervogel et al., 2016). One of the best examples that illustrates a decentralised social transformation through engagement is the worldwide '#MeToo movement', which brought renewed attention to the issue of sexual harassment in the workplace. The #MeToo movement inspired the public to consider sexual harassment as a health issue and empowered them to raise their voices to receive protection (O'Neil et al., 2018). As a result, system changes were implemented within institutions, regulations, policies, and practices.

Following a comprehensive review, the studies reported by Hille (2008) and Snow (2001) have established that although significant efforts have been made to promote individual and organisational transformation, there is a lack of models for supporting the successful transformation of communities. The models such as the Modernisation model and Marxian revolutionary model are based on social theories such as Social Cognitive Theory (SCT) and Theory of Planned Behaviour (ToPB), thus, are more geared towards modelling the transformation of societies as opposed to communities. Furthermore, current models have focused on resolving conflicts between social classes or describing social dynamics that can lead to successful collaborations (Moczek et al., 2021; Schulz et al., 2003). Therefore, these models generally lack a comprehensive theoretical explanation of the dynamic processes that can lead to community transformation in the context of inclusive development.

As suggested in Putnam (1994, p. 5), the “key to transformation in a community is social capital which consists of social networks, shared norms and values, and trust that facilitates coordination and cooperation for mutual benefit”. Giving another viewpoint, Hille (2008) opined that change in a distressed community could be achieved and measured in terms of civic participation.

2.8.1 Transforming communities through community engagement: Transformational community engagement

Among several aspects, including income and employment, educational attainment, human health, and environmental quality, community engagement is one of the keys to a positive transformation of communities (Hille, 2008). For example, 'Oxfam's Vulnerability and Risk Assessment methodology' attempts to put in place a change within vulnerable communities through their engagement in the transformation of adaptation practices (Few et al., 2017). According to Ziervogel et al. (2016), participatory decision-making provides an avenue to identify points within a system where significant changes are needed and leads to an exploration of the extent to which socio-economic structures promote or hinder equity and sustainability while challenging social inequalities. These participatory approaches help stakeholders to develop new skills and networks with new people across scales and provide opportunities for marginalised communities to speak up (Morchain et al., 2019). Consequently, this empowers communities, builds trust among the public and authorities, and, thereby, creates opportunities to shift top-down and centralised power structures to bottom-up and decentralised.

Not only initiating and implementing community predication makes a development project successful as it is mandatory to evaluate their level of community participation to understand how they have transformed as a result of inclusive practices. Inspired by ToC, 'KAP theory' has been recognised as a possible application that can be reproduced to evaluate community participation in development decision-making. 'KAP theory' is a change theory in which the changes in human behaviour are divided into three successive processes: the acquisition of knowledge, the generation of attitudes, and the formation of behaviour (Lindgren & Kelley, 2019; Kaliyaperumal, 2004). A 'KAP' index provides a tool to monitor and evaluate the outcome(s) of intervention(s), particularly those where the link between programme activities and outcomes constitutes an 'unknown' (Lindgren & Kelley, 2019). The execution of the KAP index is based on difference-in-difference (or double-difference) analysis, in which the differences in outcomes before and after an intervention of the control and treatment group are measured and compared (Khandker, Koolwal, & Samad, 2010). In the absence of verifiable metrics, KAP has been deemed the best alternative as it is widely used and well-understood by many practitioners, thus having the potential to adapt to measure community transformation through civic engagement. It is to be noted that the mediating factor between the program and the KAP measures is the ToC. The KAP

should focus on the outcomes of the ToC, not the activities of the program per se. For the KAP, the focus needs to be on how the implementors expect their target audience (community group) to change in terms of adopting new knowledge, attitude formation, and behaviour.

The most evidenced challenge in implementing participatory approaches in development projects is the lack of communities' knowledge of agency-led development practices (AbouAssi & Trent, 2012; Adamson, 2010; Haaland & van den Bosch, 2015; Harden et al., 2015; Lee & Kwak, 2012). Enhancing community knowledge by providing ample, accurate and appropriate information at the suitable stage, has no involvement though, helps to build community knowledge on UPD process/practices and the importance and requirement of participative decision-making. Further to that, convincing local communities that their opinions, suggestions and oppositions have been considered and addressed within the development plans and outcomes is another aspect of supporting successful community engagement, consequently making a positive attitude transformation of communities towards agency-led development (Deshpande et al., 2019; Lindenau & Böhler-Baedeker, 2014; Varol et al., 2011).

Moreover, the active participation of communities within the entire process of development: from inception to post-development, would support communities to achieve behavioural changes, which proclaims total community transformation (Shand, 2018). On a different perspective, Hille (2008) opined that engagement practices would need to reach deep into the community with "entry-level" programs for those who have never been involved before, whether due to socio-economic status, youth, or apathy. They further mentioned that it would need "re-entry programs" for those who have participated before but dropped out, and "advanced level" programs for people who have experience but need further training to become trainers themselves.

However, the state-of-the-art has neither been documented nor has been attempted in a coherent, systematic way to establish indicators to measure such community transformation through community engagement, particularly at pre- and post-engagement.

2.8.2 Review of theories, frameworks and models for community transformation

The third systematised review (see Appendix 1 for the steps followed) resulted in eight seminal works: four theories and four models that provide different theoretical underpinnings for civic transformation in different contexts. The five theories included are the CCAT, Transition Theory, SCT, and ToPB. The original authors have graphically illustrated their theories to demonstrate the linkages between the constructs of each theory. In addition, the four selected models have been developed focusing on social interventions in diverse fields such as disaster-induced resettlements, education, cultural change, and participatory research. These theories and models were then critically analysed to identify the fundamental concepts of community transformation that could use to triangulate the theoretical holistic approach to transforming communities through engagement in the context of RSUPD, which the study intended to develop. The results are presented in Table 2.2.

Table 2. 2: An overview of the community/social transformation models

Best-fit Theories*/Models†		Disciplinary origins	Focus/Strength	Key Constructs
A	Community Coalition Action Theory (CCAT)* (Osmond, 2008)	Health + Social	Comprehensively addresses coalition building of a community to work together to achieve a common goal.	<ul style="list-style-type: none"> • Stages of development • Community context • Lead agency or convening group • Coalition membership • Processes • Leadership and staffing • Structures • Pooled membership • External resources • Member engagement • Collaborative synergy • Assessment and planning • Implementation of strategies • Community change outcomes • Health/social outcomes • Community capacity
B	Transitions: A Middle-Range Theory* (Im, 2011)	Nursing science + Social	Describes and predicts human beings' experiences in various types of transitions: health/illness, situational, developmental, and organisational.	<ul style="list-style-type: none"> • Change triggers • Types and patterns of transitions • Properties of transition experiences • Transition conditions • Patterns of response/process • Outcome indicators

C	Social Cognitive Theory* (SCT) (Luszczynska & Schwarzer, 2020)	Psychology	Explain how people regulate their behaviour through control and reinforcement to achieve goal-directed behaviour that can be maintained over time.	<ul style="list-style-type: none"> • Reciprocal Determinism • Behavioural Capability • Observational Learning • Reinforcements • Expectations • Self-efficacy
D	Theory of Planned Behaviour (ToPB)* (Pavlova & Silbereisen, 2015; Taylor et al., 2006)	Psychology	Explain all behaviours over which people have the ability to exert self-control.	<ul style="list-style-type: none"> • Attitudes • Behavioural intention • Subjective norms • Social norms • Perceived power • Perceived behavioural control
E	A conceptual framework for transformative adaptation† (Ajulo et al., 2020)	Disaster induced resettlements	Illustrates how each of the aspects is transformed from a socially ascribed to a transformed status after administering the intervention.	<ul style="list-style-type: none"> • Trigger • Exposure unit • Process • Change
F	The Social transformation model† (Esterhuizen, 2015)	Education	A framework for integrating technology-enhanced learning in open distance learning.	<ul style="list-style-type: none"> • Resources (Preconditions to transformation) • Transformation process (transformation aspects, intervention, aspects to be transformed) • Transformation • Transformed status • Ascribed status
G	The Social transformation framework† (Bukari et al., 2017)	Social	For an effective cultural change for women's political emancipation.	<ul style="list-style-type: none"> • Event • Vulnerability context • Psycho-social domains (human capacity, cultural values, social ecology) • Transformational strategies and processes • Outcomes • Review
H	Community-Based Participatory Research (CBPR) mobilisation processes† (Tremblay et al., 2017)	CBPR	A context-specific model to generate a new, innovative understanding of CBPR mobilisation processes.	<ul style="list-style-type: none"> • Problem • Partnership • Cause • Collective action strategy • Framing processes • Opportunities • Resources • Community and system changes • Lifecycle of CBPR project (4 stages)

The CCAT summarises the process and elements of coalition formation, operation, and intermediate and long-term impact. Coalitions typically form when a lead agency or actor convenes representatives of critical sectors and target populations around a community problem (e.g., locals get affected by a development). The nature of the

coalition's membership, organisational structure, and leadership quality lay the base for the coalition to function effectively. Once convened and functioning, Butterfoss and Kegler (2002) propose that the primary mechanism through which coalitions are maintained is through the collaborative synergy created by bringing together diverse individuals in pursuit of common goals. Collaborative synergy is indicated by resource sharing among coalition members, intensive member engagement, and quality strategic planning. When synergy forms, it allows coalitions to engage in actions that are likely to create structural changes within their community and build their community's capability to address future concerns (Butterfoss & Kegler, 2002).

In contrast, the Transition Theory by Meleis (2010) presents a social change influencing framework which evolved from clinical practice. The theory introduces a broader view of rationality, including relationships, change over time, and the person in particular situations and contexts. The transitions theory model describes the experience of individuals who are confronting, living and coping with an event, a situation, or a stage in growth and development that requires new skills, sentiments, goals, behaviours, or functions (Meleis, 2010).

The SCT, originally the Social Learning Theory (SLT), considers the unique ways individuals acquire and maintain behaviour and the social environment in which individuals display the behaviour (Luszczynska & Schwarzer, 2020). SCT proposes that behavioural change and maintenance is a function of: (1) expectations that one's actions can lead to the desired outcome (outcome expectations) and (2) expectations about one's ability to enact a behaviour to produce the desired outcome (self-efficacy). These expectations may be enhanced through vicarious learning, which involves observing others' actions, and verbal persuasion, which entails exhortations from others (Bandura, 2011; Lamorte, 2016).

The ToPB, on the other hand, started as the Theory of Reasoned Action in 1980 to predict an individual's intention to engage in a behaviour at a specific time and place (Lamorte, 2016). This theory was intended to explain all behaviours over which people can exert self-control. The key component of this model is behavioural intent; behavioural intentions are influenced by the attitude about the likelihood that the behaviour will have the expected outcome and the subjective evaluation of the risks and benefits of that outcome (Lamorte, 2016). The ToPB states that behavioural achievement depends on both motivation (intention) and ability (behavioural control) (Taylor et al., 2006). It distinguishes between three types of beliefs: behavioural,

normative, and control (Taylor et al., 2006). The ToPB comprises six constructs collectively representing a person's actual control over the behaviour.

Adapting from the transition theory, Ajulo et al. (2020) present a conceptual framework for understanding the transformative adaptation of refugees in disaster-induced resettlements. The framework suggests adaptive transformations of political, technological, and social perspectives where possible social transformations proposed are migration, behaviour change, social innovation, and cultural changes. Reflecting on another perspective of social transformation, Esterhuizen (2015) presents a social transformation model for integrating technology-enhanced learning into open distance learning. The process illustrates how the seven e-learning aspects proposed in their study are mobilised from a socially ascribed to a transformed status after administering the e-learning intervention. Similarly, another social transformation framework has been introduced by Bukari et al. (2017) for effective cultural change for women's political emancipation, which is adapted and modified from the sustainable livelihood framework by the Department for International Development, UK (DfID, 2008). This explains the combined effects of psycho-social and transformational strategies in causing social change. It illustrates how an undesirable aspect of an individual's life transits to what is desirable through changes in the social system. The model has three basic elements: vulnerability context, psycho-social domains and transformational processes. The last model is a multidimensional conceptual framework that builds on social movement theories to identify the key components of community-based participatory research (CBPR) processes (Tremblay et al., 2017).

Apparently, the above models and theories neither present a transformation approach triggered by community engagement nor focused on the scope of this research. Furthermore, the models included are context-specific, thus, perhaps not generalisable to all participatory projects. Even though none of the reviewed transformation models has fully captured a community transformation approach through RSUPD, all can make significant contributions towards modelling community transformation through civic engagement.

2.9 Highlights of the Synthesis: A Comparative Analysis by Context

After studying the literature on community engagement in RSUPD, it is clear that there are significant differences between the practices of emerging economies and developed countries. In developing economies, community engagement tends to be more reactive and focused on consultation rather than active participation. Many impeding factors were found in developing contexts, particularly from South Asian countries, whereas supporting factors are prominent in economically and politically stable countries. For instance, less legal and political support, absence of inclusive development policies, less finance, people with less knowledge, skills and competence in participatory development, fewer technical platforms and digital literacy are noticeable constraints in countries such as Sri Lanka, Bangladesh, Pakistan, and Afghanistan that share similar economic, political, and community characteristics. In contrast, proactive community engagement is common in Europe, Australia, New Zealand, Canada, and the USA. This is often due to legal provisions and political support, inclusive development policies, external funding, active involvement of NGOs, and digitised engagement platforms.

In terms of the reviewed participative projects, in developing countries, communities are mostly engaged ceremonially at the beginning of projects. Instead, there are limited projects with consistent community engagement (e.g., Embarcadero Waterfront in San Francisco, USA, Christchurch Rebuilding in New Zealand, and Singapore's Urban Redevelopment Authority (URA) Master Plan) evidenced by streamlined economies. However, risk-informed developments are essential for countries with bureaucratic economies as they could lead to a country's enhanced resilience to inevitable disaster and climate change risks and build forward better. On the other hand, most emerging economies are signatories and have ratified global agreements for achieving safe, resilient, sustainable, and equitable built environments (e.g., SDGs, Sendai Framework, Paris Agreement, and NUA). Thus, much emphasis should be given to transforming communities in developing countries as it could expedite meeting the global standards for resilient cities and communities.

2.10 Gap Establishment

Firstly, since most of the factors influencing community entry and engagement in development decision-making arise from the context and social behavioural characteristics of respective communities, it is worth investigating this issue from a more contextualised perspective. It provides an opportunity to study why and how community engagement has been hindered in a particular society in terms of its inherent characteristics of context, infrastructure, and process. This gap could be further addressed by investigating possible solutions with industry best practices to overcome barriers to inclusive RSUPD. A complete understanding of overcoming such barriers can establish by providing a good account of best practices and enablers of community inclusion in RSUPD that are investigated in a given context. A comprehensive study on addressing barriers to and strengthening enablers of inclusive RSUPD may provide implications on which and how different stakeholders should take responsibility for promoting inclusive development.

Secondly, the literature further lacks a body of knowledge on how these constraints can be lowered by using a proper combination and integrating different community engagement methods. It is further observed that implementing existing physical participative decision-making approaches may be discouraged during global pandemic situations such as Covid-19 due to social distancing restrictions imposed. In a post-pandemic era, public interest in collaboration may also be derelict due to the loss of social gathering platforms. Consequently, finance for infrastructure development and planning support for community engagement would also be limited following a pandemic-induced economic recession. Therefore, there is a need to investigate innovative and hybrid approaches that exploit social media and other digital applications in facilitating community engagement. However, care needs to be taken to ensure that vulnerable communities have access to such digital platforms as well as adequate knowledge in using such digitally-driven community engagement solutions to avoid further exacerbation of the current situation. Furthermore, the recent movements against racial discrimination have amplified the complexity of handling community engagement without prejudice. Therefore, much attention needs to be given to managing community engagement activities with a clear understanding of the selection of participatory methods.

Thirdly, undertaking inclusive developments while achieving positive community transformation is less evident and extremely challenging in most developing countries

as most of their communities have been excluded from decision-making processes mainly due to political influences and prejudiced governing systems. The literature lacks a body of knowledge of indicators to measure in what way communities may transform due to inclusion in RSUPD activities. This warrants a proper investigation into understanding building equal opportunities and decentralising hierarchical power structures for a positive community transformation, particularly through community-inclusive RSUPD projects.

Considering the above-discussed knowledge gaps, developing a holistic approach for achieving RSUPD through transformative community engagement is timely. It will have policy implications and serve as a sound basis for future research in disaster and climate risk resilient and sustainable UD. Accordingly, Table 2.3 maps the study objectives and research questions with crucial elements of investigation and deliverables, which could contribute to the knowledge.

Table 2. 3: Mapping research objectives, questions, elements of investigation, and outcomes of the study

Research objective	Research question	Elements of investigation	Deliverables
1. To investigate the factors impeding and facilitating community engagement in the decision-making of RSUPD and analyse their interdependencies	Q1. What are the critical barriers to community engagement in RSUPD, and how do they influence each other? Q2. What are the vital enablers of community engagement in RSUPD, and how do they influence each other?	<ul style="list-style-type: none"> • Pairwise relationship between identified barriers • Pairwise relationship between identified enablers • Driving and dependence power of impeding and enabling factors 	<ul style="list-style-type: none"> • Total interpretive structural models for barriers and enablers • Driving barriers and enablers • Linkage barriers and enablers • Dependent barriers and enablers • Autonomous barriers and enablers
2. To identify the stakeholders and analyse their interest and power similarities in contributing to fostering community engagement in the decision-making of RSUPD	Q3. Who can influence community engagement in the decision-making of RSUPD? Q4. How can relevant stakeholders contribute to influencing community engagement in RSUPD?	<ul style="list-style-type: none"> • Stakeholders in inclusive RSUPD • Stakeholder-factor matrices • Stakeholder-stakeholder matrices • Power, interest and resource similarities between stakeholders • Stakeholders' role in promoting engagement 	<ul style="list-style-type: none"> • A two-mode social network • Co-attended factors • Suggestions for effective collaborations and partnerships to build • Key actors in different contexts • Actions to be taken by different groups of stakeholders
3. To evaluate the applicability of participatory methods to engage communities in different circumstances in the process of the RSUPD	Q5. Which participatory methods are appropriate to achieve community engagement during the different phases of RSUPD? Q6. Which criteria influence the proper selection of participatory methods?	<ul style="list-style-type: none"> • Participatory methods • Participatory methods selection criteria 	A tool for selecting participatory methods for inclusive RSUPD
4. To develop indicators to evaluate the level of community transformation resulting from community engagement in RSUPD	Q7. What indicators can be used to evaluate the intended community transformation after engagement in RSUPD?	<ul style="list-style-type: none"> • A mechanism for assessing transformation • Indicators to use in assessing transformation 	<ul style="list-style-type: none"> • A model for community transformation • KAP indicators
5. To construct a grounded theory depicting a holistic approach for fostering community entry and engagement in RSUPD decision-making	Integration of the outcomes of the first four objectives (Q1 to Q7)		Proposed holistic approach for fostering community engagement in the decision-making of RSUPD (before validation)
6. To verify the validity of the developed holistic approach	Verification of the proposed holistic approach through member checking		The validated holistic approach

2.11 Summary and Link

Community engagement has a long history in development, though, yet it has not been effectively implemented to cater to community needs, particularly in emerging economies. The review highlights that most of the barriers and enablers are context-specific. It is suggested to implement approaches that are enabling knowledge and attitude transformation of communities, sufficient provision of infrastructure and budget to encourage community inclusivity, and revisit current policies and laws related to UPD, DRR and CCA to include provisions for community engagement. The review further highlights that, though there is an extensive number of participatory methods, the application of such methods has been limited to the initial stages of UD. Hence, communities have been overlooked in actual development decision-making. The systematised review further emphasises the lack of literature and practice in evaluating community transformation that a community may achieve through participatory development. Thus, these theoretical and practical gaps in the existing community-inclusive UD and DRR approaches warrant proper research in developing a holistic approach for fostering community inclusion during the entire process of RSUPD.

Establishing a comprehensive review of the study focus on this chapter, the next chapter presents the research methodology adopted in accomplishing the study's aim and objectives.

CHAPTER THREE

RESEARCH METHODOLOGY AND THE STUDY CONTEXT

3.1 Introduction

Research is undertaken as the systematic investigation of existing knowledge gaps or an issue based on a particular subject. The research methodology chapter provides a comprehensive review and assessment of the theoretical basis and selection of research methods, along with explanations of how the study was conducted. This chapter synthesises the literature on methodological frameworks, research philosophies, approaches, methods, strategies, time horizons, research techniques and the quality criterion applied to the study. Lastly, the chapter introduces and justifies the study context chosen for this grounded investigation.

3.2 Research Methodological Frameworks

A research methodology is a systematic and orderly approach to exploring viable solutions to an identified research problem (Collis & Hussey, 2013). Cooper et al. (1998) define research methodology as identifying the research philosophy, approach, and techniques. Even though various research design models are available, such as the Nested model (Cooper et al., 1998), Saunders et al. (2019)'s research onion demonstrates a clear framework to provide the most suitable methods and strategies to address research. It comprises different layers, and each layer refers to a research approach that determines the research process. Research philosophy, research approach, research strategy, time horizon, and questions on the data collection and analysis methods are the layers of the research onion, respectively, as seen in Figure 3.1.

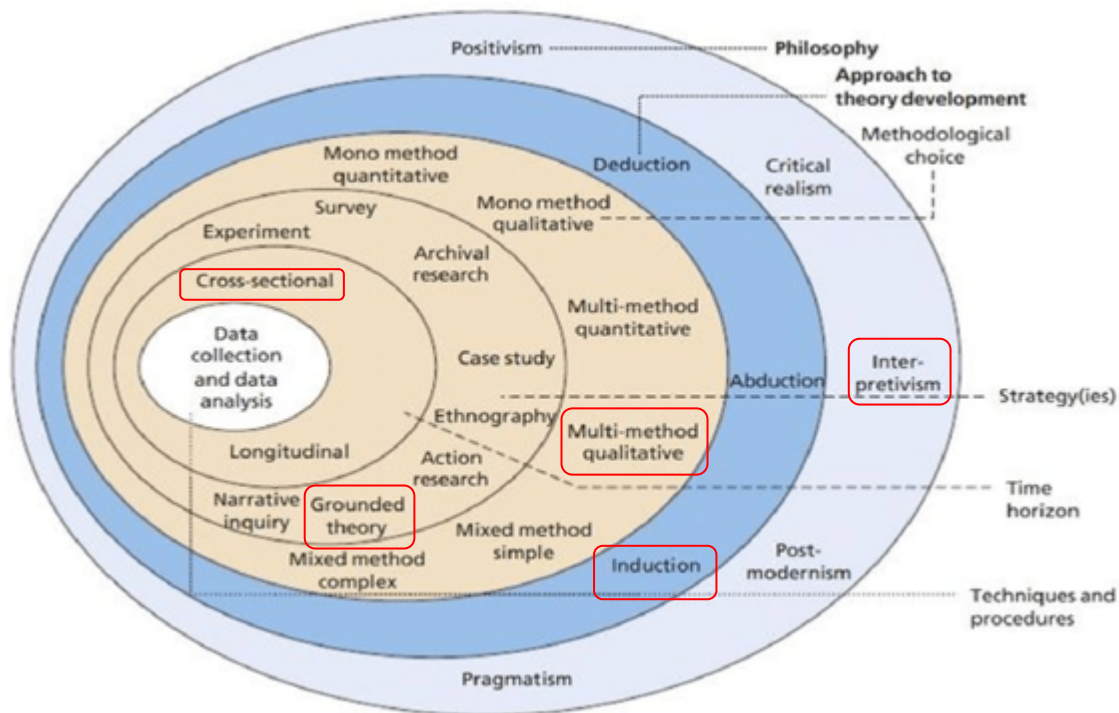


Figure 3. 1: Selections from the layers of the research onion
(Source: Adapted from Saunders et al. (2019))

Identifying an appropriate flow of research methodology representing each layer of the research onion is extremely important in research in social sciences. Therefore, the subsequent sections discuss the selected research design elements while providing proper justifications for the selections made.

3.3 Research Philosophy

Research philosophy refers to a belief and assumption about knowledge development (Saunders et al., 2019). There are five main research philosophies, namely positivism, critical realism, interpretivism (social constructionism), postmodernism, and pragmatism, that can be placed in a continuum where one end is positivism, and the other end is interpretivism (Easterby-Smith et al., 2012). Positivism entails working with observable social reality, mostly the philosophical stance adopted by physical and natural scientists (Saunders et al., 2019). Positivists adopt what is often referred to as 'scientific methods' to propose and test theories with highly structured data that is usually measurable and in which the researcher's values do not influence the research. This usually involves large samples of quantitative data and statistical hypothesis testing. Where a theory is not confirmed by findings (based on the analysis of these

data), there is a need to revise the theory. In the late twentieth century, this was known as direct realism, one of the two extremes of realism philosophy (Reed, 2005).

Critical realism, the other extreme, focuses on explaining what we see and experience in terms of the underlying structures of reality that shape observable events (Saunders et al., 2019). This means that there is a need to find out both what is immediately experienced and the structures and relationships that lie beneath this; in other words, to consider the underlying complexity.

Interpretivism, like critical realism, developed as a critique of positivism from a subjectivist perspective. Interpretivism is often interpreted as constructivism or social constructionism. All three forms acknowledge that reality is not an objective entity but is socially and subjectively constructed (Saunders et al., 2019). They further argue that diverse social backgrounds create and experience different social realities, which fail to discover definite, universal 'laws' that apply to the broader community (Saunders et al., 2019). Thus social phenomena (i.e., human beings and their social worlds) cannot be studied in the same way as physical phenomena in natural science.

While overlaps exist, each perspective offers distinct viewpoints and focuses on different aspects of knowledge construction and social reality. Constructivism emphasises the active role of individuals in constructing meaning and knowledge based on their experiences and interactions (Mills et al., 2006). Interpretivism, on the other hand, focuses more on understanding and interpreting human behaviour and social phenomena in their natural contexts (Van der Walt, 2020). It emphasises subjective interpretations and meanings attributed by individuals but may not emphasise the active construction of knowledge to the same extent as constructivism. Social constructionism, while sharing some similarities with constructivism, has a broader focus on the social processes and interactions through which reality is constructed. It emphasises the role of language, discourse, and social practices in shaping individuals' perceptions and social institutions (Boyland, 2019).

Postmodernism, a way beyond interpretivism, emphasises the role of language and power relations, seeking to question accepted ways of thinking and give voice to alternative marginalised views (Saunders et al., 2019). In pragmatism, the importance of research is in the findings' practical consequences as to consider that no single viewpoint can ever give the entire picture and that there may be multiple realities (Saunders et al., 2019). Pragmatism asserts that concepts are only relevant where they support action (Kelemen & Rumens, 2008). It strives to reconcile both objectivism and

subjectivism, facts and values, accurate and rigorous knowledge, and different contextualised experiences (Saunders et al., 2019). It does this by considering theories, concepts, ideas, hypotheses, and research findings not in an abstract form but in terms of the roles they play as instruments of thought and action and in terms of their practical consequences in specific contexts (Saunders et al., 2019). Reality matters to pragmatists as practical effects of ideas and knowledge are valued for enabling actions to be carried out successfully. For a pragmatist, research starts with a problem and aims to contribute practical solutions (Saunders et al., 2019).

These philosophical stances are shaped by three assumptions: ontology, epistemology and axiology, which describe how the researcher views the world and reality (Saunders et al., 2019). Ontology is defined by Crotty (2003, p. 10) as “the study of being”. It is concerned with “what kind of world we are investigating, with the nature of existence, with the structure of reality as such” (Crotty, 2003, p. 10). Guba and Lincoln (1994) state that ontological assumptions respond to the question ‘what is there that can be known?’ or ‘what is the nature of reality?’. Epistemology is ‘a way of understanding and explaining how we know what we know’ (Crotty, 2003). Epistemology is also ‘concerned with providing a philosophical grounding for deciding what kinds of knowledge are possible and how we can ensure that they are both adequate and legitimate’ (Maynard, 1994, p. 10). Epistemology considers different routes of approaching research, thus could be either the interpretivism or positivism views (Holden & Lynch, 2004). Axiology concerns how a researcher judges value. Some researchers want to use their experience, which is value-laden, and some may not include their previous experience within the study, which is value-free (Saunders et al., 2019). Scholars (Collis & Hussey, 2013; Crotty, 2003; Easterby-Smith et al., 2012; Saunders et al., 2019) have explained how these assumptions are featured within the different philosophical stances, as summarised in Table 3.1.

Table 3. 1: Comparison of ontological, epistemological, and axiological assumptions of five philosophical positions in research

Assumption type & Questions		Philosophical stances				
		Positivism	Critical realism	Interpretivism/Constructivism/Social constructionism	Postmodernism	Pragmatism
Ontology	What is the nature of reality?	<ul style="list-style-type: none"> • Real • One true reality • (universalism) • Granular (things) • Ordered 	<ul style="list-style-type: none"> • Stratified/layered (the empirical, the actual and the real) • Intransient • Objective structures • Causal mechanisms 	<ul style="list-style-type: none"> • Complex, rich • Multiple meanings, interpretations, realities • Flux of processes, experiences, practices 	<ul style="list-style-type: none"> • Nominal • Complex, rich • Some meanings, interpretations, realities are dominated and silenced by others • Flux of processes, experiences, practices 	<ul style="list-style-type: none"> • Complex, rich • 'Reality' is the practical consequences of ideas • Flux of processes, experiences, and practices
	What is the world like?	<ul style="list-style-type: none"> • External • Independent 	<ul style="list-style-type: none"> • External • Independent 	<ul style="list-style-type: none"> • Socially constructed through culture and language 	<ul style="list-style-type: none"> • Socially constructed through power relations 	<ul style="list-style-type: none"> • Practical meaning of knowledge in specific contexts
Epistemology	How can we know what we know?	<ul style="list-style-type: none"> • Adopt assumptions of the natural scientist • Scientific method 	<ul style="list-style-type: none"> • Knowledge historically situated and transient 	<ul style="list-style-type: none"> • Assumptions of humanities 	<ul style="list-style-type: none"> • What counts as 'truth' and 'knowledge' is decided by dominant ideologies 	<ul style="list-style-type: none"> • 'True' theories and knowledge are those that enable successful action
	What is considered acceptable knowledge?	<ul style="list-style-type: none"> • Facts • Numbers 	<ul style="list-style-type: none"> • Facts are social constructions 	<ul style="list-style-type: none"> • Opinions • Narratives • Written, spoken and visual accounts 	<ul style="list-style-type: none"> • Focus on absences, silences and oppressed/repressed meanings, interpretations, and voices 	<ul style="list-style-type: none"> • Focus on problems, practices, and relevance
	What constitutes good quality data?	<ul style="list-style-type: none"> • Observable and measurable facts/phenomena 	<ul style="list-style-type: none"> • Observable and measurable phenomena • Attributed meanings 	<ul style="list-style-type: none"> • Attributed meanings 	<ul style="list-style-type: none"> • Attributed meanings 	<ul style="list-style-type: none"> • Attributed meanings
	What kinds of contributions to knowledge can be made?	<ul style="list-style-type: none"> • Law-like generalisations 	<ul style="list-style-type: none"> • Historical causal explanation as contributions 	<ul style="list-style-type: none"> • Individuals and contexts specifics • New understandings and worldviews as contributions 	<ul style="list-style-type: none"> • Exposure of power relations and challenge of dominant views as contributions 	<ul style="list-style-type: none"> • Problem-solving and informed future practice as contributions • Emphasis on practical solutions and outcomes

Axiology	What is the role of values in research?	• Value-free	• Value-laden	• Value-bound	• Value-constituted	• Value-driven
	How should we deal with the values of research participants?	<ul style="list-style-type: none"> • Detachment • Researcher is neutral and independent of what is researched • Researcher maintains an objective stance 	<ul style="list-style-type: none"> • Researcher acknowledges bias by world views, cultural experience, and upbringing • Researcher tries to minimise bias and errors • Researcher is as objective as possible 	<ul style="list-style-type: none"> • Integral and reflexive • Researcher is part of what is researched, subjective • Researcher interpretations are key to the contribution 	<ul style="list-style-type: none"> • Researcher embedded in power relations • Researcher radically reflexive 	<ul style="list-style-type: none"> • Research initiated and sustained by the researcher's doubts and beliefs • Researcher reflexive
Typical methods	Development of theory	• Deductive	• Retroductive (abductive), in-depth historically situated analysis of pre-existing structures and emerging agency	• Inductive	• Deconstructive	• Following research problem and research questions
	Method of analysis	• Quantitative	• Range of methods and data types to fit the subject matter	<ul style="list-style-type: none"> • In-depth investigations • Qualitative methods of analysis 	<ul style="list-style-type: none"> • In-depth investigations of anomalies, silences, and absences • Qualitative methods of analysis 	• Range of methods: mixed, multiple, qualitative, quantitative, action research

The present study involves human participants (i.e., study communities' lived experiences and narratives relating to their living in disaster-prone areas and engagement in developments, including housing); hence, it takes the form of multiple interpretations/realities. This study, therefore, uses an ontology that is essential to a social world of meanings, which is more idealistic. Researchers need to have a deep understanding of people's own thoughts, interpretations, and meanings to identify the actual situation of the established objectives. Moreover, using different data collection techniques such as field visits, focus groups, and semi-structured interviews enables the interpretation of community representatives' and professionals' opinions and inner thoughts. The epistemological stance used for this research is constructivism, as it increases the general understanding of reality, the researcher's experience, the opinions of interviewees, and theoretical concepts (Easterby-Smith et al., 2008). Furthermore, the construction of meanings is transmitted within an essentially social context by conducting interviews. This research includes not only the narratives, perspectives, and experiences of participants but also those of the researcher. Therefore, the axiological position for this research is value-bound. This is further approved by Orlikowski and Baroudi (1991), as they posit that constructivist research can never assume a value-free stance. In conclusion, for this study, the ontological stance is idealistic, the epistemological stance is constructivist, and the axiology stance is value-bound. Thus, it is logically sequenced that constructivism is the theoretical perspective underpinning this study.

3.4 Research Approach

The research approach is the best way of achieving the research aim by organising research activities and collecting data (Easterby-Smith et al., 2008). The second layer of the research onion presents several types of research approaches: deductive, inductive, and abductive. The deductive approach is associated with positivism and works from the particular to the general. The deductive approach starts with existing theory, allowing researchers to establish a hypothesis and collect data and information to resolve the issue by rejecting or confirming the established hypothesis (Saunders et al., 2019). This is more appropriate when identifying the relationship, or a link, in general circumstances (Gulati, 2009). Put simply, the deductive approach assesses the validity of a theory in a given circumstance.

The inductive approach is the opposite of the deductive approach and is associated with constructivism. It starts with observation and theories and works from the general to the particular. The flexible nature of the inductive approach (compared to the deductive approach) allows the researcher to observe and create a hypothesis that is established as theories (Mertens, 2008) by providing real-life examples with subjective reasoning (Benz et al., 2008).

Abductive reasoning shares the characteristics of both inductive and deductive approaches. It involves making educated guesses or plausible explanations to account for observed phenomena or data, inferring the best possible explanation given the available evidence (Levin-Rozalis, 2004).

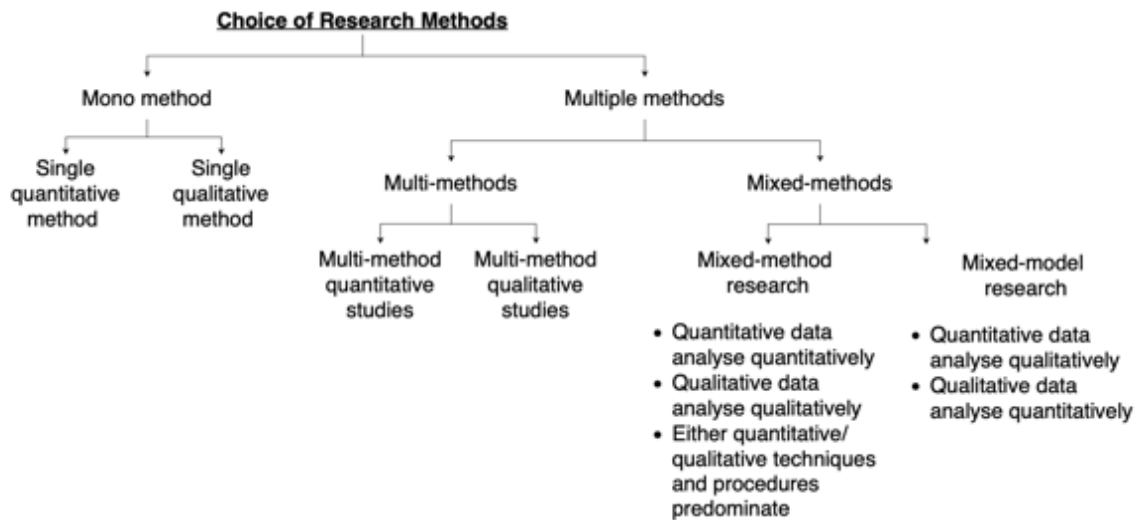
As the study is positioned in constructivist philosophy, it is obvious to follow an inductive approach to resolve the issue by developing from empirical evidence. Saunders et al. (2015) mentioned that “with research into a topic that is new, is exciting much debate and on which there is little existing literature, it may be more appropriate to work inductively by generating data and then analysing and reflecting upon what theoretical themes the data are suggesting.” In this instance, even though there is a breadth and depth of investigations carried out to foster community-inclusive decision-making in mainstreaming risk reduction measures into development projects, particularly in Europe, only a small amount of literature is grounded in the Asian region. Therefore, the inductive approach is required to build theories based on locally collected data and observations. Accordingly, in this study, the gaps were realised through systematised reviews, but the theory is purely conceptualised through empirical evidence. Thus, the literature did not influence the intervention but helped with theoretical triangulation. Based on the above justifications, an inductive approach was adopted for this study.

3.5 Choice of Research Methods

Research methods create a path for the researcher to collect data. The choice of research method depends on the purpose of the study, how variables are measured and how the information is analysed (Kumar & Phrommathed, 2005). Quantitative and qualitative is the primary classification of available research methods. The quantitative method is generally associated with the positivist approach and is most valuable if a hypothesis and theories have already been established at the beginning of the research (Saunders et al., 2019). In contrast, the qualitative method deals with non-

numerical data (Leavy, 2017) based on people's words, perceptions, and feelings to achieve an in-depth understanding of a situation (Cooper et al., 2011).

The choice of these methods can be further classified into the mono method and multiple methods, as shown in Figure 3.2.



*Figure 3. 2: Choice of research methods
(Source: Adapted from Saunders et al. (2019))*

This research intends to develop Holistic approach to empower communities in the decision-making process of developing RSUD, thus requiring insight and an in-depth understanding of the relevant areas. This study, therefore, concentrates on understanding how people interpret their experiences, what meaning they attribute to their experiences, and how they construct their worlds. Thus, this research is more qualitative in its nature since qualitative research methods are more likely to help the researcher understand people and socio-cultural contexts (Creswell, 2014). Therefore, this research adopts a qualitative research choice. Further to that, the use of multiple methods provides better opportunities to answer research questions in multiple forms while facilitating better evaluation to the extent to which research findings can be trusted (Tashakkori & Teddlie, 2003). With this note, to collect a wealth of data, this study employs multiple qualitative methods for data collection, as discussed in section 3.8.1. Due to the subjective nature of this study, the qualitative data collected were qualitatively analysed, as discussed in section 3.8.2. The study, therefore, adopts a multi-method qualitative methodological choice.

3.6 Research Strategy

A research strategy can be defined as a plan of how researchers will achieve the research aim by answering the established objectives. The selection of appropriate research strategies for a research study is driven by numerous factors, such as the research aim and objectives, the philosophical stance, the time taken, and the resources available for data collection (Saunders et al., 2019). Yin (2009) suggests five research strategies: experiment, survey, archival analysis, history, and case studies. Saunders et al. (2019) further asserted action research, grounded theory (GT), and ethnography as research strategies. Figure 3.3 presents the positioning of these research strategies within a continuum of philosophical assumptions.

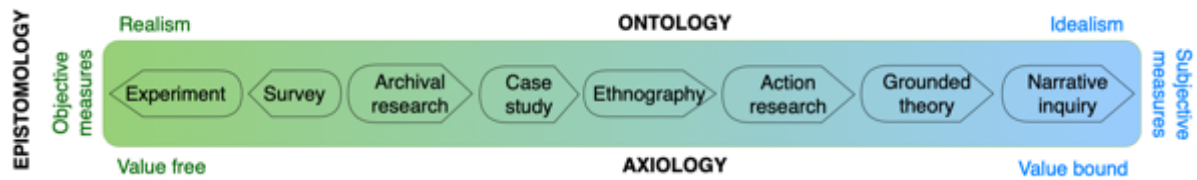


Figure 3. 3: Positioning research strategies towards philosophical assumptions

As the philosophical assumptions for this research study are idealistic, subjective and value bound, the appropriate research strategies range from archival research to narrative inquiry. This is further confirmed by the qualitative research methods choice justified above. The choice between these qualitative research strategies can be discussed under several titles, as outlined in Table 3.2.

Table 3. 2: Characteristics of research strategies for qualitative studies (Source: Adapted from Saunders et al. (2019); Saunders et al. (2015); Yin (2009))

Research strategy	Typical form of research questions	Focus	Phase of research	Data collection techniques
Archival research	Who, what, where, how many, how much?	Historical events	Exploratory, Descriptive, Explanatory	Administrative records and documents
Case study	Why, what, how?	Contemporary states/ Behavioural events	Explanatory, Exploratory	Interviews, Observation, Documentary analysis, Questionnaires, An exploration of artefacts., Field studies
Narrative inquiry	How, why?	Narratives	Exploratory, Explanatory	Interviews, Journals, Autobiographies, Oral recordings, Written narratives, Field notes
Ethnography	How, why?	Contemporary states/	Exploratory, Descriptive,	Observations, Interviews, Artifacts

		Behavioural events	Explanatory	
Action research	How?	Contemporary states/ Behavioural events		Observing individuals or groups, Audio/videotape recording, Structured/semi-structured interviews, Field notes, Surveys/questionnaires
Grounded theory	How, why?	Contemporary behaviours		

Archival research, known as historical studies, makes use of recent or historical records and documents as the principal source of data (Saunders et al., 2019); thus does not encourage the collection of participant narratives or field observations that are essential for this study. Ethnography, which permits observations, is a study in which the researcher studies a cultural group for a prolonged period (Creswell, 2014). Ethnography, thus, is inapplicable to this study due to two reasons: typically, an evaluation of live reality encounters of a cultural group (Creswell, 2014), which this study does not rely upon, and it takes a prolonged period to collect data (Creswell, 2014), which is rendered unfeasible by time limitations in a doctoral study. On the other hand, narrative inquiry concentrates on individual experiences and reports a chronology of the experiences using a time sequence of events (Saunders et al., 2019). This strategy, however, does not encourage the researcher's reflexivity within interpretations, which is required for theory development. Thus, narrative inquiry is not the right choice for this study. Relatedly, a case study facilitates "an empirical investigation of a particular contemporary phenomenon within its real-life context over which the researcher has no control" (Robson, 2002, p. 178). The case study strategy is of particular interest if the researcher aims to gain a rich understanding of a context (Yin, 2009) instead of providing a solution for a practical problem.

The study aims to develop a holistic approach by integrating the findings derived from empirical data analysis for the first four objectives. Thus, the study demands a research strategy that is more suitable for theory development. Also, the study's first four objectives need richer and stronger evidence (i.e., such as field observations and constant collection of data until the study phenomena are completely understood) than case studies could provide. These features of this research lay the foundation for effecting action research and/or GT to answer the research problem. Given the prevailing circumstances (i.e., health guidelines, social distancing requirements) of the Covid-19 pandemic, it is challenging to implement an action/intervention in the field. This is further constrained by the limited time available for data collection in a doctoral study. Therefore, this study was decided to conduct in a GT approach.

3.6.1 Grounded theory (Methodology)

Glaser and Strauss (1967, p. 1) defined GT as "the discovery of theory from data that are systematically obtained and analysed in social research". GT is often better to think of as 'theory building' through induction. The justification for using GT in developing a holistic approach to participatory RSUPD is based on the principle that GT provides the researcher to predict and explain behaviour, the emphasis being on developing and building theory through systematic gathering, synthesising, analysing, and conceptualising qualitative data (Charmaz, 2001). The GT would keep the analysis close to the data and provide inductive discoveries about the phenomena under study (Strauss & Corbin, 1997). In brief, the methodology of GT is iterative, requiring a steady movement between concept and data, as well as comparative, requiring a constant comparison across different types of evidence to control the conceptual level and the scope of the emerging theory (Abdel-Fattah, 2015) (see Figure 3.4).

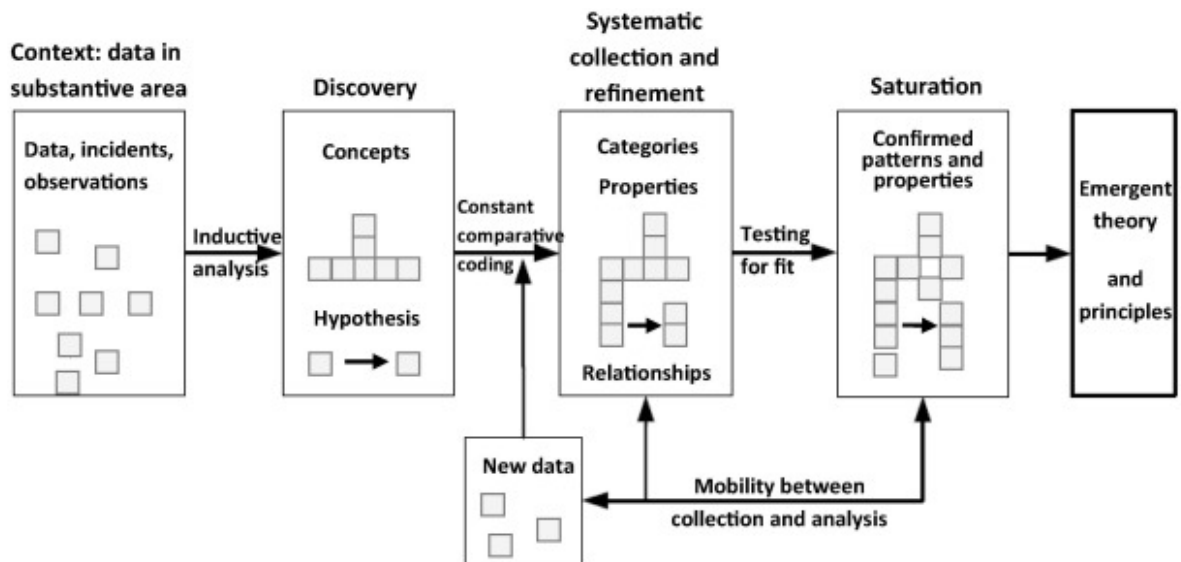


Figure 3. 4: Model of grounded theory

(Adapted from Abdel-Fattah (2015); De Villiers (2005))

This well-defined strategy for theory building has been popular in social sciences since Glaser and Strauss (1967) coined it. However, it has been argued due to different philosophical perspectives. Similar to quantitative research traditions, classic GT is positivist in worldview, realist in ontology, and objectivist in epistemology (Glaser & Strauss, 1967). This, therefore, positions reality as an external, unyielding truth to be explored, determined, and understood through objective, value-free means (Guba & Lincoln, 1994). As a result, this form of GT enables producing a generalised,

explanatory theory of a process, action, or interaction that intends to transcend time and context (Glaser & Strauss, 1967).

This classic GT was subsequently argued by Strauss and Corbin (1997) and Charmaz (2001). They brought up another two traditions of GT: pragmatic GT and constructivist GT, respectively. In pragmatic GT, Corbin maintained Glaser and Strauss (1967)'s positivist slant toward theory generation. However, they began to introduce concepts of constructionism that considered a researcher's prior knowledge, interaction with participants, and interpretation of findings (Strauss & Corbin, 1997, 1998). Methodologically, they deemphasised the role of comparative analyses and focused on analytical verification by introducing such procedures as open, axial, and selective coding as well as extensive questioning and self-reflection (Corbin & Strauss, 1990). The outcome of pragmatic GT is mainly a descriptive non-theory that consists of conceptual ordering and gaining an in-depth understanding of a particular process or phenomenon (Jones & Noble, 2007; Strauss & Corbin, 1997, 1998).

As a result of scholars questioning whether researchers can conduct GT studies free from bias or preconceived thoughts, constructivist GT has emerged. In the constructivist version, the researcher is a co-producer of experience: "What the viewer sees shapes what he/she defines, measures, and analyse" (Charmaz, 2000, p. 524). Constructivist grounded theorists acknowledge that the theory formed is grounded in the participants' experiences; nevertheless, the researcher helps co-create the theory based on their interactions with the participants (Charmaz, 2006). The result of a constructivist GT can be an explanation of a process, action, or interaction situated within a particular time and context (Charmaz, 2014).

The selection of one of these traditions of GT is based on the above-discussed philosophical and methodological underpinnings. These contradictory views can be further simplified into several key characteristics, as listed in Table 3.3.

Table 3. 3: Comparison of the three traditions of grounded theory (Source: Adapted from Azulai (2021); Groen et al. (2017))

Characteristic	Classic grounded theory	Pragmatic grounded theory	Constructivist grounded theory
Ontology	Critical Realist	Interpretivist	Constructivist
Epistemology	Objective	Pragmatic	Subjective
Purpose	Abstract theory and meaning	Abstract theory or gain an in-depth understanding	Abstract theory and in-depth meaning
Implementation	Promotes adherence to rigorous, fundamental processes	Provides a set of tools that may be used,	Highlights flexibility within the process;

		rejected, or ignored (Small-T theory)	resists mechanical application
Outcome	Generalised theory that transcends time and context (Big-T theory)	Subjective theory dependent on time and context or descriptive non-theory (Small-T theory)	Subjective, descriptive theory dependent on time and context (Small-T theory)
Researcher role	Observer (Maintains a neutral, expert, and passive researcher perspective)	Interpreter (Maintains a neutral researcher perspective while acknowledging personal experience and knowledge)	Integrated co-constructor (Maintains a non-neutral researcher perspective and acknowledges personal priorities, positions, and values)
Role of literature review	General reading is used to establish a general problem area; focused reading occurs after emergent theory is developed. Research questions are formed after research begins.	Literature serves as a way to establish the phenomenon that is to be studied and what is known about it. Review of literature can inform research questions and, in fact, increase theoretical sensitivity. Research questions can form before research begins.	Early review may be used to establish a research argument; later review can be used to compare and contrast emergent theory to previous work. Review of literature can help develop theoretical sensitivity and a more accurate understanding of a research topic. Research questions are formulated before research begins.
Sensitising concepts	Concepts that serve as departure points and to guide inquiry	Concepts that help guide but do not limit inquiry	Background ideas that inform the overall research problem and initiate an inquiry
Causality assumptions	Based on causal processes in which some events influence others	Causal mechanisms and their effects are not fixed, but contingent	Causal mechanisms and their effects are not fixed, but contingent
Quality Criteria	Generated theories are general, modifiable explanations of process, actions, and interactions	Generated theories are researcher interpretations of process, actions, and interactions; can also be used for non-theory generation and description	Generated theories are suggestive, sophisticated, and informed explanations of process, actions, and interactions
Strengths	Revolutionary thinking in a post-positivist era that helped legitimise qualitative research. Rigorous methodology with more flexible procedures. High level of abstraction is often achieved	Offers a clear description of the complex methodological procedures. Focuses on both micro and macro conditions, using developed conceptual/conditional matrix technique. Rigorous analytical tools (coding paradigm) enable the construction of an analytically sound theory.	Emphasises participant-researcher relationships and attention to context. Researcher's self-reflection and provision of close descriptions of participant data helps limit the risk of forcing data through the researcher's interpretations. Strengthened methodological self-consciousness.
Limitations	Lacks explicit discussion of philosophical assumptions.	Rigid, prescriptive, detailed methodological procedures.	May have less analytical power.

	Lacks researcher self-reflection. Overstates researcher objectivity. Privileges researcher knowledge by valuing distance from participants. Unchecked power differentials may force the researcher's assumptions into data interpretation. Ignore the context of data.	Focus on detailed procedures may interfere with the researcher's sensitivity to data. Power differential between researcher and participants is not addressed.	Creating interview guides may introduce researcher bias and force data.
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Referring to the comparison of the three forms of GT provided in Table 3.3, the constructivist GT strategy was selected for the study. This selection is mainly justified based on the philosophical stances given for the study: constructivist ontology and subjective epistemology. The study, therefore, adopted value-bound axiology: the researcher maintains non-neutral and acknowledges personal priorities, positions, and values. Some scholars (Charmaz, 2006; Mills et al., 2006; Mitchell, 2014) argued that classical and pragmatic forms of GT might not be plausible in qualitative studies, as avoiding the researcher's reflections in qualitative research is impracticable. Furthermore, the role of the literature review, compared to the other two practises, is extensive in constructivist GT. Therefore, adopting this strategy facilitates and accepts the use of literature review and constructs/concepts that emerged from it to form the research questions for a study. There exists extensive and comprehensive literature in the scope of this research. Thus, overlooking state-of-the-art established in previous research contributions is not acceptable (Charmaz, 2006; Giles et al., 2013; Mitchell, 2014). For example, Mitchell (2014), in their study, operationalised the constructivist method by using theoretical frameworks that they opined as deductive reasoning. Reviewing literature and integrating its conclusions to form research questions and develop data collection instruments further enhances theoretical sampling: one of the key elements in the GT (Azulai, 2021). These qualities of constructivist GT confirm the use of this strategy, over the other two forms of GT, for this study.

3.7 Time Horizon

The time horizon of research is categorised into two: cross-sectional and longitudinal. Cross-sectional research is a snapshot of a particular period, while longitudinal research consists of a series of snapshots over a period of time (Saunders et al., 2019). Saunders further emphasised that selecting a time horizon for a research design is independent of which research strategy(ies) or methods are chosen for a particular

study. Therefore, this study could have been conducted either way. However, this research favours cross-sectional research to comply with the period of this study. The main strength of cross-sectional research is its capacity to observe and collect data from many individuals at a single point in time.

3.8 Research Techniques

Research techniques can be broadly discussed under data collection and analysis techniques (Saunders et al., 2019). As the research employs a qualitative approach (inductive) along with the constructivist GT, the research techniques are selected accordingly.

3.8.1. Data collection techniques

Data collection techniques were decided upon due to the research design and the nature of the data required for the study. Accordingly, the study involved both primary and secondary data collection. Systematised reviews were conducted to collect secondary data to establish the gaps in the current body of knowledge, and subsequently, the review findings were utilised for theoretical triangulation. Multiple data collection techniques, such as semi-structured interviews, FGDs, and field visits, were administered for primary data collection.

3.8.1.1 Systematic (systemised/structured) literature review

Systematic review differentiates from other types of reviews (including critical review, literature review, scoping review, state-of-the-art review, and umbrella review), as it facilitates critical appraisal and synthesis of previous research findings in a systematic manner. The systematic review has generally been accepted as an effective, more complete, repeatable, and less biased literature review that can successfully lead to evidence-based conclusions (Pollock & Berge, 2018).

Contrary to the controversies surrounding literature reviews in conjunction with grounded theory studies, constructivist GTM permits the examination of literature both before, during, and after data collection. This approach serves the dual purpose of shaping research questions and facilitating theoretical triangulation of study findings (Azulai, 2021; Groen et al., 2017). Detailed insights on this are provided in Table 3.3, specifically under the section concerning the role of literature. In this study, systematic review findings informed the establishment of the study objectives and research questions and, subsequently, used to compare and contrast the study findings with the

state-of-the-art of literature. In constructivist GTM, it is important to emphasise that researchers bear the responsibility of conducting a wholly grounded data collection process, refraining from introducing influences or prompts from existing review findings (Charmaz (2001)). This principle was diligently upheld throughout this study.

The essence of systematic review is seeking to systematically search for, appraise and synthesise research evidence, often adhering to guidelines on the conduct of a review (Page et al., 2021; Pollock & Berge, 2018; Wright et al., 2007). The best-known and probably the most used framework is Preferred Reporting Items for Systematic Reviews and Meta-Analyses for Protocols 2015 (PRISMA-P 2015) (Moher et al., 2015). The PRISMA statement consists of a 27-item checklist and a four-phase flow diagram intended to facilitate the preparation and reporting of a robust protocol for the systematic review (Crawford, 2020; Liberati et al., 2009; Moher et al., 2015; Page et al., 2021). Extending the basic steps provided in Prisma Flow Chart, Koutsos et al. (2019) present a flexible and easy-to-follow framework for conducting a systematic review. As depicted in Figure 3.5, they suggest following the steps of (1) Scoping; (2) Planning; (3) Identification; (4) Screening; (5) Eligibility, and (6) Presentation (synopsis of findings, discussion, and presentation of the results).

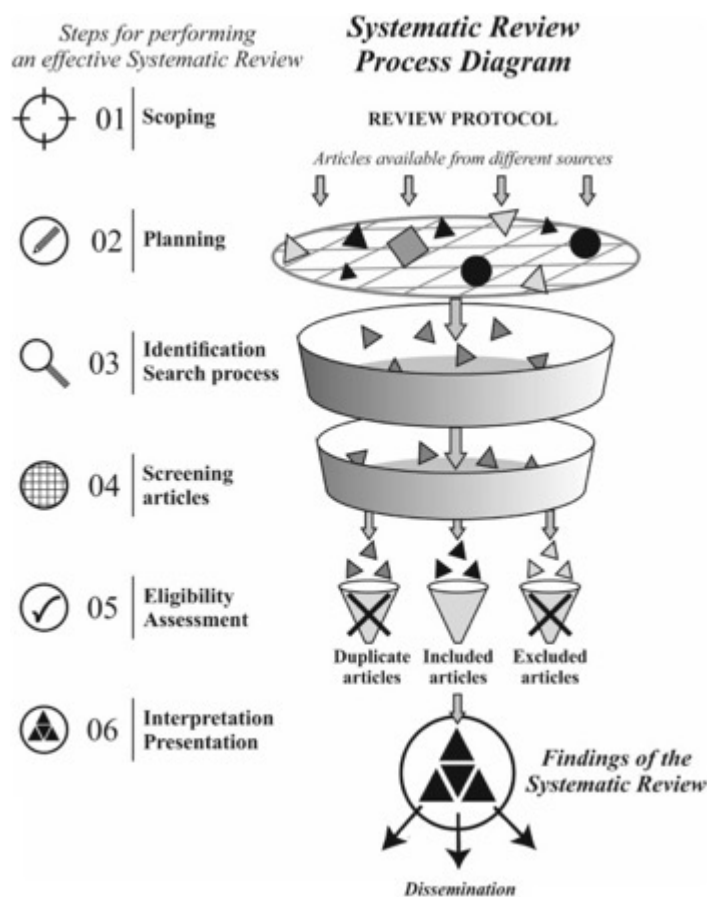


Figure 3. 5: Steps for performing a systematic review (Source: Koutsos et al. (2019))

The fundamentals of each step are discussed in Table 3.4. The table further provides links to each step of the PRISMA checklist.

Table 3. 4: Steps involved in the structured reviews conducted (Source: Adapted from Pollock and Berge (2018))

Step	Fundamentals
Scoping	<ul style="list-style-type: none"> • Development of a review protocol (focused research questions and study design) • Identification of a few relevant studies for a pilot review study • Search for previous systematic reviews on a current issue
Planning	<ul style="list-style-type: none"> • Selection of the main keywords (the key terms in a review question is identified with reference to the PICO (participants, interventions, comparators, and outcomes) literature search string) • Development of the search strategy and building search queries using Boolean operators • Identification of appropriate digital databases or sources of eligible studies
Search process	<ul style="list-style-type: none"> • Implementation of the pre-defined search strategy • Examination of the resulting articles • Making changes to the search strategy if needed and performing additional searches • Searching for additional sources to identify articles • Manually selection of additional studies
Screening	<ul style="list-style-type: none"> • Export of citations as the resulting studies of the search queries • Import the exported citations into a citation manager (in this study, endnote reference management software is used) • Remove of duplicate • Update article information • Thoroughly examination of the selected articles
Eligibility	<ul style="list-style-type: none"> • Setting inclusion and exclusion criteria • Reading in-depth the selected full-text of the articles.
Presentation and interpretation of results	<ul style="list-style-type: none"> • Synopsis of the systematic review findings • Presentation of the results (the PRISMA flow diagram of a systematic review proposed by Moher et al. (2010) is used to present the results of the structured reviews conducted for the study - presented in Appendix 1) • Interpretation of the findings • Discussion on the generalisation of the conclusions • Limitations of the systematic review • Recommendations for further research

The above-discussed systematic review process is known as structured or systemised review in research studies where only one reviewer is involved: in postgraduate research. Accordingly, the process and the results of structured reviews conducted for each review question are presented in Chapter 2 and Appendix 1.

Once a review question is determined, the key terms articulated in the question need to be identified, and a logic grid or concept map needs to be created. There are several literature search strategies such as SPICE (Setting-Population-Intervention-Comparison-Evaluation), ECLIPSE (Expectation-Client group-Location-Impact-Professionals-Service), CIMO (Context-Intervention-Mechanism-Outcome), PICO (Population-Intervention-Comparison-Outcome), and SPIDER (Sample-Phenomenon

of Interest-Design-Evaluation-Research type) (Cooke et al., 2012). For this study, the PICO strategy was used to represent the key elements within the review questions. Although it was first applied in clinical trials, the PICO approach provides a sound basis for formulating the research question and defining the keywords for the literature survey from the terms included in the research question.

3.8.1.2 Semi-structured interviews

Semi-structured interviews are primarily administered in social science, where the researcher has sound knowledge about the research background to build a compelling discussion with the interviewee. Semi-structured interviews are best used when the interviewer would not get more than one chance to interview someone (Longhurst, 2003). The semi-structured interview guidelines provide clear instructions for interviewers and can provide reliable, comparable qualitative data (Cohen & Crabtree, 2006). The inclusion of open-ended questions to follow relevant topics that may stray from the interview guide does, however, still provide the opportunity for identifying new ways of seeing and understanding the topic at hand (Cohen & Crabtree, 2006).

The interview questions were developed to explore the current situation of community involvement in RSUPD, the barriers and enablers which hinder and support community participation in informed decision-making, stakeholders and their contributions, application of the existing methods/tools/strategies in engaging communities in DRR, CCA, and UPD, and thoughts on community transformation. The interview guide developed for practitioners is presented in Appendix 3.

3.8.1.3 Focus group discussions

The study respects a participatory and inclusive approach to data collection. Thus, community perspectives were also considered valuable inputs to investigating the research questions. An FGD involves gathering people from similar backgrounds or experiences to discuss a specific topic of interest. It is a form of qualitative research where questions are asked about their perceptions, attitudes, beliefs, opinions, or ideas (Boateng, 2012). Accordingly, this study conducted seven FGDs with selected community participants to better understand their perceptions of decision-making and operational activities in the context of RSUPD. The questions of FGDs are presented in Appendix 3.

3.8.1.4 Field visits and observations

Field observations, one of the key aspects of the grounded study, allow the researcher to understand people's behaviour, habits, needs, and social relations in their environment relative to the investigated problem (Mulhall, 2003). Therefore, for this study, field notes, images, recorded video and audio clips were used to understand and describe the actual scenario of how unsustainable UD has affected communities and to which level communities are engaging in UPD and interested in engaging in agency-led development decision-making. All participants were provided with a participant information sheet, and consent was obtained for recording videos and audio. The participant information sheet and the consent form are attached in Appendix 4.

3.8.1.5 Sampling and participant inclusion and exclusion criteria

Qualitative sampling aims to understand a studied phenomenon through different lenses that incorporate inhabitants experiencing a given situation or in a particular context to incorporate all possible angles of a practical issue (Busetto et al., 2020) and to ensure information richness (Fossey et al., 2002). This forces qualitative researchers to use 'purposive sampling' instead of 'random sampling' strategies (Busetto et al., 2020). In particular, purposive sampling refers to selecting participants who serve a specific purpose consistent with a study's main objective (Collingridge & Gantt, 2008). Purposive sampling has different techniques, including criterion sampling, maximum variation sampling, and theoretical sampling (Busetto et al., 2020; Collingridge & Gantt, 2008; Poulis et al., 2013). Amongst, criterion sampling: selecting participants that meet some predominant criteria of importance (Collingridge & Gantt, 2008) (as depicted in Figures 3.6 and 3.7) is used to recruit participants for the first phase of data collection. GT often involves theoretical sampling after the first phase of data collection. This allows the selection of participants who can provide insight into emerging theoretical constructs until theoretical saturation is achieved (Collingridge & Gantt, 2008).

The study intends to collect primary data from four tiers of research participants: (1) agency practitioners involved in DM and UPD in Sri Lanka, (2) practitioners from private, international, and voluntary organisations who are dealing with DRR, UPD and community empowerment in Sri Lanka, (3) academics, and (4) community representatives from disaster-prone areas in Sri Lanka. Accordingly, the iterative sampling approach started with criterion sampling followed by theoretical sampling was advised to recruit samples from each tier.

Selection of industry practitioners

Practitioners from relevant organisations were primarily selected based on their experience. Officials with at least five years of experience in their career and who have engaged in community-inclusive DRR or UPD projects were selected. Thus, the selection process excludes newly inducted employees with no experience. The professionals were further selected by considering the hierarchy of their organisational structure, covering officials working at different scales: national, provisional, district, divisional, and local (village). The sample included a cross-section of participants by department, role, and seniority level. The flow chart depicted in Figure 3.6 shows the selection process followed for practitioners with their inclusion and exclusion criteria.

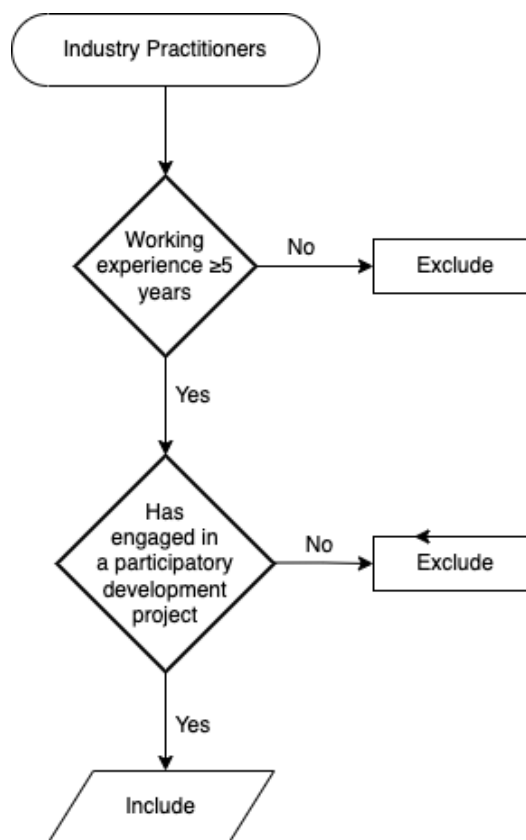


Figure 3. 6: Participant selection flow diagram for industry practitioners

Selection of community representatives

Community representatives were initially selected based on age above 18 or below 60 years. The selected citizens were further filtered by considering any risk or harm to participants due to any physical disability or mental stress. They were further filtered based on whether they have engaged in at least one participatory development project or are interested in participating in a prospective project. The participants with experience were included, and those who did not have any experience but were willing

to participate in future development were further considered. However, the participants who would like to participate but there is not any upcoming UD within their territory to engage in were excluded from the sample. Figure 3.7 below graphically represents the community participant selection process.

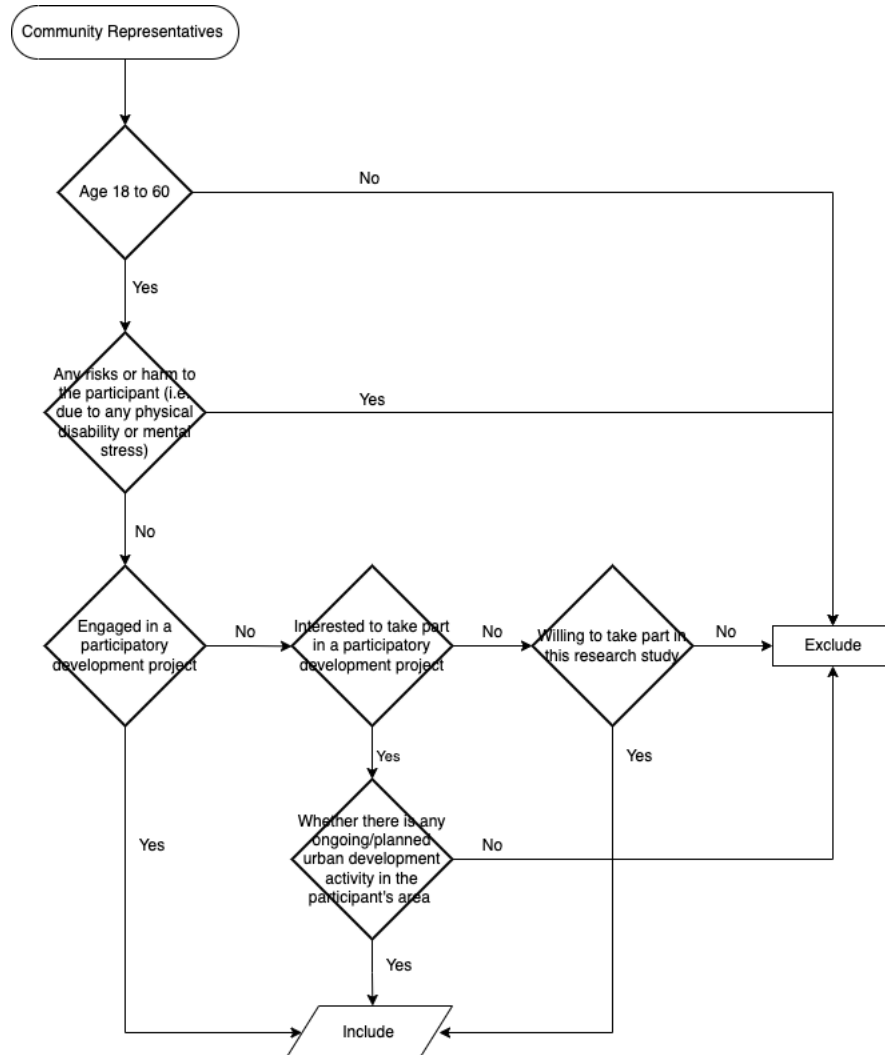


Figure 3. 7: Participant selection flow diagram for community representatives

3.8.1.6 Profiles of study participants

Given that community engagement is a collective effort of both agency practitioners and community members, the empirical data were extracted from both perspectives. As shown in Figure 3.8, the study involves 17 experts and 27 community members. Compared to experts, a high number of community participants were approached for two reasons. First, it was challenging to cover a holistic view and achieve theoretical saturation of community perspectives by involving fewer locals. Secondly, more community inputs ensure the study deliverables are generated through inclusive and

participatory data collection, as it is essential to prioritise the grassroots level when the focus is on community engagement.

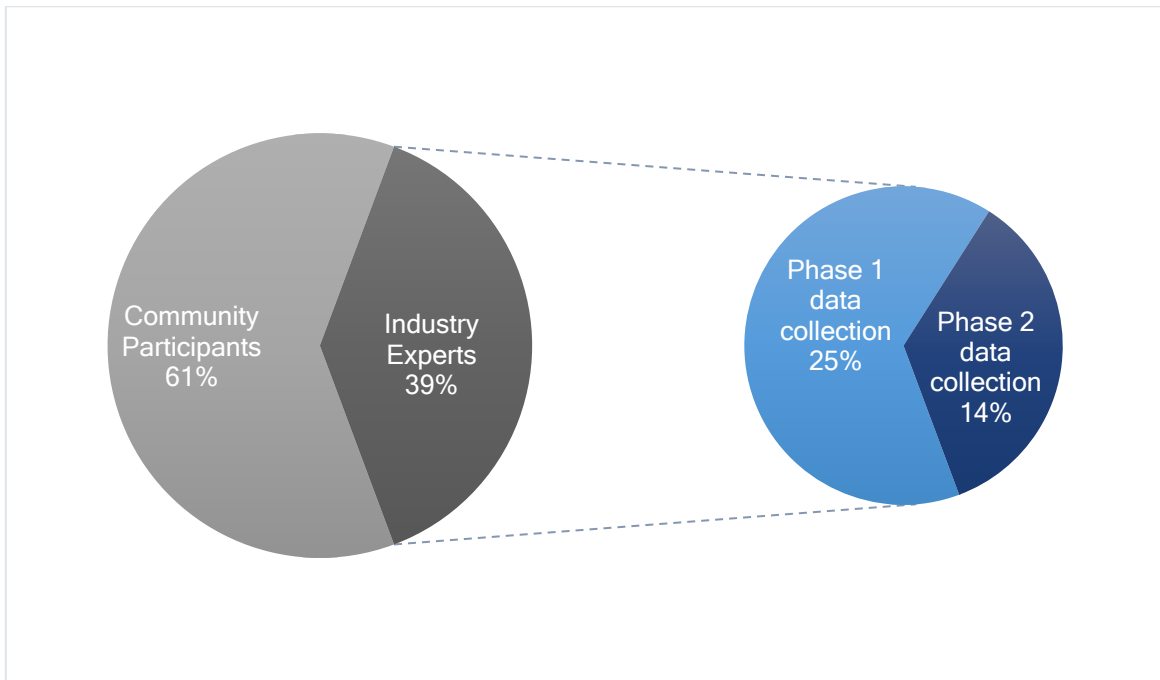


Figure 3. 8: Distribution of expert and community participants

In this study, semi-structured interviews were conducted with industry experts. A summary profile of the industry experts who participated in the study is presented in Table 3.5.

Table 3. 5: Profile of the industry experts

Participant code	Designation	Type of representing organisation	Area of expertise	Work experience (Yrs.)	
Phase I	P1	Senior Lecturer	University	DRR, CB	11
	P2	Senior Lecturer	University	DRR, CE	11
	P3	Senior Scientist (Human Settlement Planning & Training Division)	Public Agency (DM)	UPD, DRR, CE	11
	P4	Monitoring, Evaluation, Learning and Accountability Coordinator	INGO	CE, CB	16
	P5	Village Officer	Local Authority	CE, CB	8
	P6	Additional Director General	Public agency (DM)	DRR	12
	P7	Project Manager (Urban)	IGO (UN-Habitat)	DRR, UPD, CCA, CE, CB	25
	P8	Project Director (Reduction of Landslide Vulnerability by Mitigation Measures Project)	Public Agency (DM)	DRR	20
	P9	Project Officer (Climate Data Analyst)	International Agency (DM)	DRR	16
	P10	Director (Preparedness for Response and Recovery Department)	International Agency (DM)	UPD, DRR, CCA, CE, CB	17

	P11	Programme Coordinator	International Agency (DM)	DRR, CE, CB	15
Phase II	P12	Architecture/Urban Planner	Private Agency (UD)	UPD	5
	P13	Social Scientist (Project Management Unit)	Public Agency (UD)	UPD, CE	20
	P14	Divisional Secretary	Local Authority	UPD, CE, CB	11
	P15	Former Assist. Director (Mitigation Research and Development Division)	Public Agency (DM)	DRR	11
	P16	Village Officer	Local Authority	CE, CB	14
	P17	Village Officer	Local Authority	CE, CB	8

(Note: DM - Disaster Management, UPD - Urban Planning & Development, DRR - Disaster Risk Reduction, CCA - Climate Change Adaptation, CE - Community Engagement, CB - Community Capacity Building)

As shown in Table 3.5, the experts considered for the study represented public agencies, private agencies, local authorities, academic institutions, international agencies, NGOs, and Inter-governmental organisations (IGOs) who contributed their opinions from different perspectives. Most of the experts were from public agencies (29%) and local authorities (23%) (see Figure 3.9 - row 1); it is reasonable to put more weight on their opinions as most of the DM and UD projects in Sri Lanka are governed by the government. Expertise in five key areas such as UPD (16%), DRR (26%), CCA (5%), community engagement (29%), and community capacity building (24%), was taken into consideration to generate perspectives for the study's focus on barriers to participatory development from all related disciplines (see Figure 3.9 - row 2). Their experience varied from 5 to over 20 years, and most participants possessed more than 11 years of experience in at least one discipline (see Figure 3.9 - row 3).

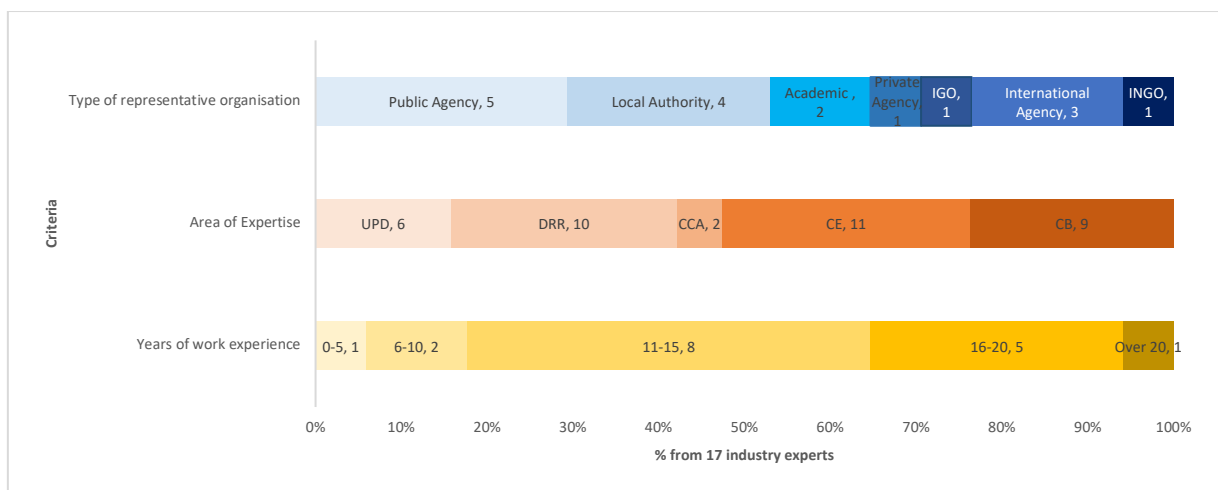


Figure 3. 9: Classification of experts based on their years of work experience (row 1), area of expertise (row 2), and type of organisation (row 3)

Subsequently, seven FGDs, including 27 community members, were conducted to include the community perspective. The profile of the community representatives included in the study is presented in Table 3.6.

Table 3. 6: Profile of the community participants

Case description	FGD#	Code	Gender	Age	Highest education	Employment	Level of engagement
Resettlement project after a landslide	1	C1	Female	62	GCE O-LEVEL	-	Consult
		C2	Female	47	GCE O-LEVEL	House-wife	Inform
		C3	Female	48	GCE A-LEVEL	House-wife	Inform
	2	C4	Female	55	GCE O-LEVEL	Working at a tea estate	Consult
		C5	Female	22	GCE A-LEVEL	Student	Consult
		C6	Male	58	GCE A-LEVEL	Businessman	Involve
		C7	Male	59	GCE O-LEVEL	Labourer	Inform
		C8	Male	63	GCE O-LEVEL	Labourer	Inform
Landslide awareness and mitigation programme in a semi-urban area	3	C9	Female	55	GCE A-LEVEL	Tea trade	Inform
		C10	Female	80	GCE O-LEVEL	Tea trade	Inform
		C11	Female	58	GCE O-LEVEL	Working in a tea estate	Inform
		C12	Female	38	GCE A-LEVEL	Tea trade	Inform
	4	C13	Female	63	GCE A-LEVEL	Working at a tea estate	Consult
		C14	Male	65	GCE O-LEVEL	Working at a tea estate	Inform
		C15	Male	60	GCE O-LEVEL	Working at a tea estate	Inform
C16		Male	70	Grade 7	Working at a tea estate	Inform	
Lagoon development project in an urban area	5	C17	Male	45	GCE A-LEVEL	Fisherman	Collaborate
		C18	Male	48	GCE O-LEVEL	Fisherman	Consult
		C19	Male	42	GCE A-LEVEL	Fisherman	Involve
		C20	Male	61	GCE A-LEVEL	Businessman	Decision-making
Resettlement project after the collapse of a massive garbage dump	6	C21	Female	58	GCE A-LEVEL	Pensioner	Inform
		C22	Female	37	GCE O-LEVEL	House-wife	Inform
		C23	Female	55	GCE A-LEVEL	Teacher (retired)	Inform
		C24	Male	32	GCE A-LEVEL	Mechanic	Involve
City centre development project	7	C25	Female	54	GCE A-LEVEL	House-wife	Involve
		C26	Male	63	GCE A-LEVEL	Businessman	Involve
		C27	Male	44	GCE A-LEVEL	Businessman	Involve

As observed in Table 3.6, community representatives were selected based on five urban and peripheral development projects in Sri Lanka (the project details are provided in Section 3.10.5). The sample was carefully chosen to include somewhat similar percentages of females (52%) and males (48%) within the communities to maintain gender equity within the study (see Figure 3.10 - row 1). Notably, it was observed that female participation is not overlooked or restricted in Sri Lanka, compared to most other Asian countries. The majority (67%) of the community participants were between the ages of 31 to 60, while the study included 29% of senior citizens (see Figure 3.10 - row 2). However, during the field visits, it was observed that

child and youth participation is little in evidence in UP, which has been reflected in the study sample. Sri Lanka retains an above 93% literacy rate. This is a considerably higher benchmark than that of certain developed Asian nations like India and Malaysia, and it can be attributed to the high quality of education provided by Sri Lanka's educational system. Thus, 96% of the community participants of the study have completed their secondary education (see Figure 3.10 - row 3). In addition, the engagement experiences they have received from respective development projects were classified based on the spectrum of public participation published by the IAP2. Most participants reported that they had only been informed regarding a project, but only 22% and 19% have been involved and consulted, respectively. Only a small percentage (4%) had experienced collaboration and co-decision-making with implementors (see Figure 3.10 - row 4). The study sample, therefore, seems to reflect the real community engagement practice in the Sri Lankan DRR and UD context.

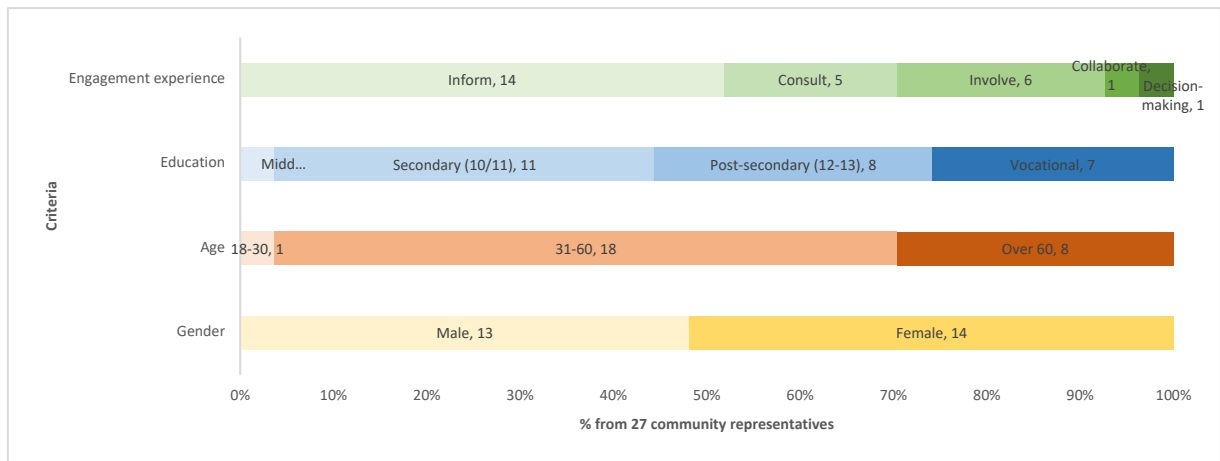


Figure 3. 10: Classification of community participants based on their gender (row 1), age (row 2), the highest level of education (row 3), and level of engagement (row 4)

3.8.1.7 Limitations of the data collection

Initially, it was planned that all interviews would be conducted in person unless there were extenuating circumstances, such as scheduling conflicts or unavailability, in which case virtual meeting platforms would be used. However, due to the Covid-19 pandemic, most expert interviews had to be conducted virtually using various virtual meeting and collaboration platforms such as Microsoft Teams, Zoom, and Mural. While it was possible to conduct community interviews in Sri Lanka in person, the pandemic significantly limited the ability to conduct field visits and observations.

3.8.1.8 Ethical approval

All procedures performed in this research study involving human participants were in accordance with the ethical standards of and the approval from the University of Salford ethics committee (see Appendix 5 for ethics approval).

3.8.2. Data analysis techniques

This study adopted multiple qualitative data analysis techniques. The following sections explicitly discuss the purpose of employing different techniques and justifications for their integration within a single study.

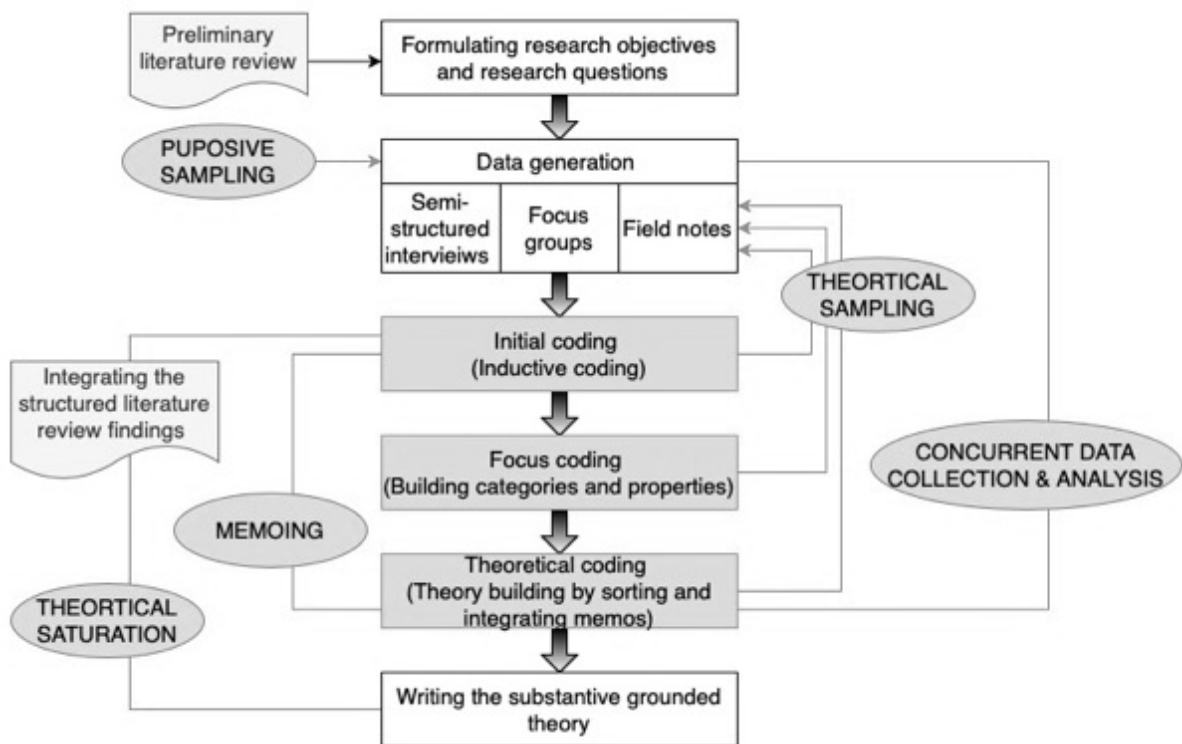
3.8.2.1 Grounded theory analytic procedure

This research employs qualitative data coding pertaining to the GT methodology. GT follows an independent, qualitative, and descriptive approach for "identifying, analysing, and reporting themes and patterns within data" (Braun & Clarke, 2006, p. 79). Although the grounded theory analytic procedure shares some characteristics of thematic analysis, it is distinct from both content analysis and thematic analysis. The content analysis uses a descriptive approach in both the coding of the data and in its interpretation of the quantitative counts of the codes (Downe-Wamboldt, 1992; Morgan, 1993). The thematic analysis aims to identify and analyse patterns or themes within the data, focusing on capturing the meaning and essence of participants' experiences or perspectives (Braun & Clarke, 2006). Grounded theory analytical procedure goes beyond description and seeks to uncover the underlying processes, relationships, and theoretical concepts that explain the phenomenon under study (Saunders et al., 2019) and is specifically designed to develop new theories based on empirical data (Corbin & Strauss, 1990).

GT analytic procedure involves becoming familiar with the input data, coding data, searching for themes and recognising relationships, refining themes, and testing propositions. The most prominent step is becoming familiar with the data collected through semi-structured interviews and FGDs. Such qualitative data may include reference actions, behaviours, beliefs, conditions, events, ideas, interactions, outcomes, policies, relationships, strategies, etc. (Saunders et al., 2019). Without following a structured coding process, it is hard to manage such dynamic data and identify the patterns and relationships among them, which is essential for theory development. Therefore, GT analytic procedure involves coding the data in a more iterative and comparative manner.

The coding process

In GT, theories emerge from the codes and relationships among them that are extracted during the coding process. Supporting this, Corbin and Strauss (1990) introduced a coding paradigm to help researchers systematically organise the data. This guideline emphasises specific strategies and procedures for data collection and analysis, including theoretical sampling, theoretical sensitivity, constant comparative analysis, and concurrent data collection and analysis. This coding framework, as depicted in Figure 3.11, was followed in this study as it blends well with the constructivist GT.



*Figure 3. 11: Constructivist grounded theory coding framework adopted for the study
(Source: Adapted from Charmaz (2001))*

In GT, data collection and analysis are conducted simultaneously; this process allows constant comparison of data while collecting them until a substantive theory is formulated through theoretical sampling (Corbin & Strauss, 2008). Theoretical sampling allows the researcher to follow leads in the data by sampling new participants or material that provides relevant information (Corbin & Strauss, 2008). Throughout the theoretical sampling process, the themes that emerge from the initial rounds of data collection were incorporated to develop questions for the next round of data collection; this is done until no new themes emerge (Corbin & Strauss, 2008). The coding process commenced with initial coding, following focused and theoretical coding, as discussed

in sections 4.2 to 4.4. This coding process involved memoing: an analytic process essential in ensuring quality in the GT (Birks & Mills, 2015). Memos are the short form of ideas generated and documented while interacting with the data (Corbin & Strauss, 2008). Thus, memos are reflective interpretive pieces of the researchers' thoughts, feelings, and intuitive contemplations (Birks & Mills, 2015).

Computer-assisted qualitative data analysis

The above-discussed coding process can be performed manually or with a computer-aided qualitative data analysis programme. However, it should be noted that these programmes do not interpret the data but speed up the process and make handling large amounts of data both manageable and systematic (Elo et al., 2014; Elo & Kyngäs, 2008; Tong et al., 2007). These programmes enhance the analytical process by making it easier and quicker to code, collate, interpret the data and select quotations for the final report (Rambaree, 2007). The commonly used qualitative data analysis programmes are HyperRESEARCH (ResearchWare, Inc.), NVivo (QSR International), ATLAS.ti (ATLAS.ti Scientific Software Development GmbH), and MAXQDA (VERBI GmbH). The features of these programmes are much similar; however, the MAXQDA software was used to code the data and create cognitive maps (to illustrate the relationship between the themes that emerged from the raw data) due to its user-friendly interfaces. A sample of data coding is presented in Appendix 6.

3.8.2.2 Total Interpretive structural modelling (TISM)

Identifying critical barriers to and vital enablers of community engagement in RSUPD and analysing their interdependencies contribute to achieving the first objective of the study. To achieve this, this study employed a qualitative modelling approach: total interpretive structural modelling (TISM). The TISM presented by Sushil (2012) is a well-established method in social science for recognising relationships among specific elements that define a problem. In this process, a set of directly or indirectly linked elements are structured into a systematic model. TISM is an enhancement of interpretive structural modelling (ISM) first proposed by Warfield (1973). ISM allows transmuting obscure and poorly articulated mental models of systems into a lucid and unambiguous well-defined model; however, it is limited to only the understanding of "what are the factors" and "how do they interlink" (Warfield, 1973). In contrast, TISM helps to understand "why such interdependencies prevail". Furthermore, TISM retains significant transitive links between the factors that have meaningful interpretations, whereas, in the case of ISM, all the transitive links are dropped (Sushil, 2012). Thus,

TISM differs from ISM in two ways: one is to provide an interpretation of all the links along with nodes, and the second is to consider the feedback loops and mutual influences that exist between different factors. This makes the TISM model more explanatory. In addition, TISM provides a more interactive and participatory approach to modelling. It involves stakeholders and subject matter experts in the modelling process, allowing for their input and feedback to be incorporated into the final results (Mathiyazhagan et al., 2013). This makes TISM a more inclusive and collaborative approach to modelling, which can enhance the overall quality of the results.

In this study, the barriers and enablers were identified by analysing the primary data collected from industry practitioners and community representatives. Subsequently, the pair-wise interrelationships between the factors (i.e. barriers and enablers were separately analysed) were established through semi-structured interviews conducted with the industry experts. The TISM process was first utilised to map the contextual interrelationships between the barriers and to develop insights into a collective understanding of these relationships. The exact process is adapted for understanding the enablers.

3.8.2.3 Matrix of cross-impact multiplication applied to a classification (MICMAC) analysis

The importance of conducting a MICMAC analysis combined with TISM cannot be overstated. The primary purpose of conducting a MICMAC analysis is to identify the most critical or driving barriers and enablers which drive the entire system (Mathivathanan et al., 2021). Based on the contextual pair-wise relationships between the factors established from the TISM, MICMAC analysis examines factors' driving power and dependence power to distinguish the main factors that drive the model in various classes (Dubey & Ali, 2014; Mathivathanan et al., 2021). In MICMAC analysis, the factors are classified into four quadrants, namely (1) Autonomous; (2) Dependent; (3) Linkage; (4) Independent, as depicted in Figure 3.12.

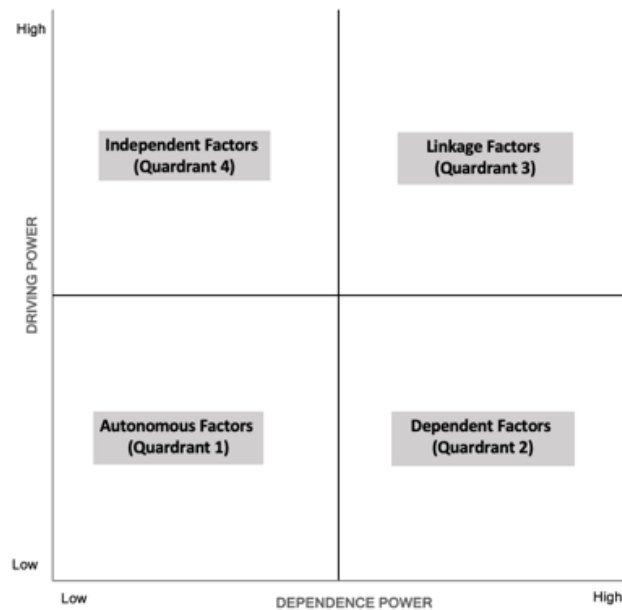


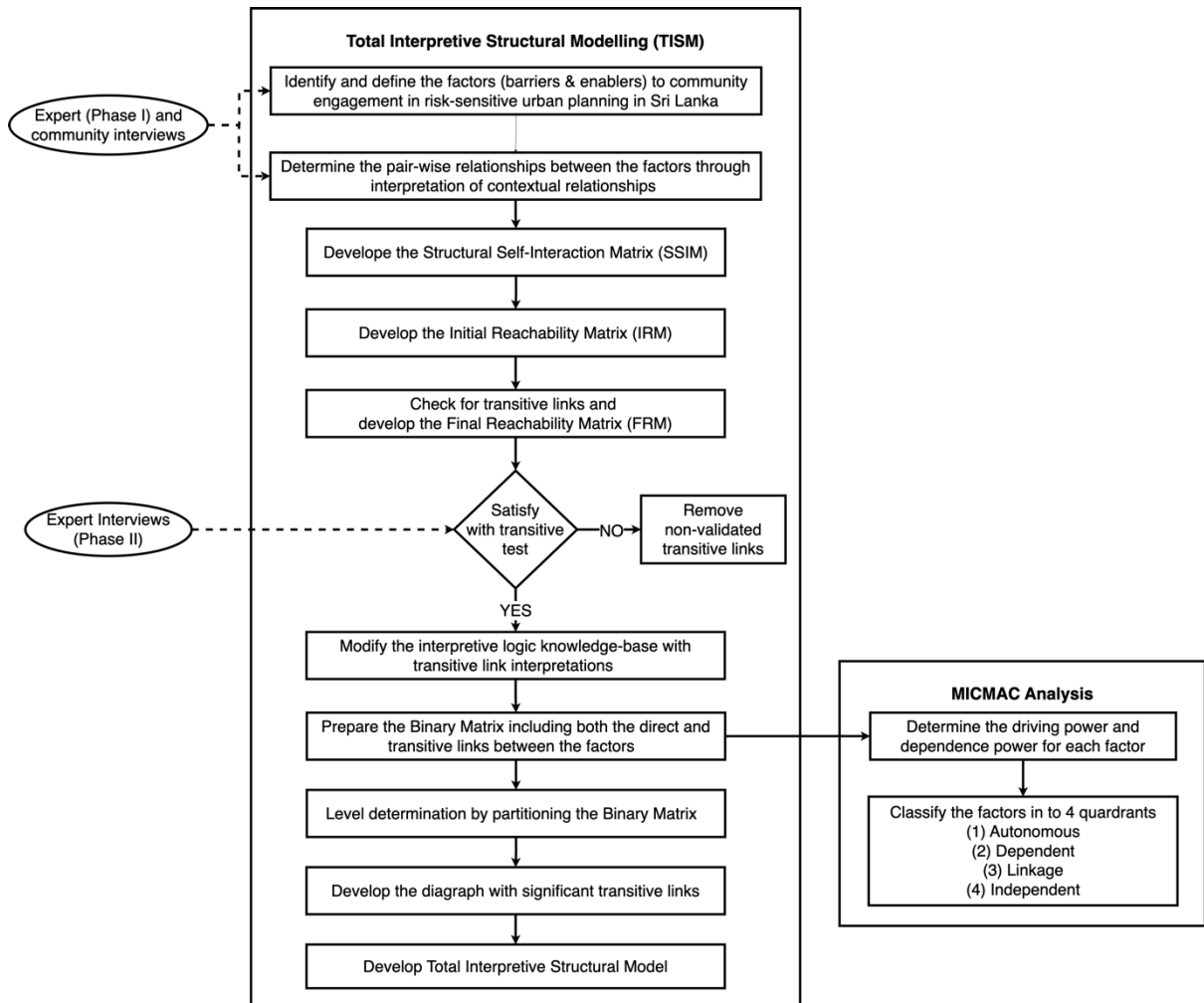
Figure 3. 12: Classification of factors based on their driving and dependence power

As observed from above, the factors placed in each quadrant have different driving and dependence power, thus a different level of influence on the entire system, as explained below.

- Autonomous (Quadrant 1): The autonomous quadrant contains factors that have little impact on other factors in the system and are not influenced by them. These factors are considered to be relatively unimportant in understanding the behaviour of the system as they have no direct effect on the performance of the system.
- Dependent factors (Quadrant 2): The dependent quadrant contains factors that are highly influenced by other factors in the system but do not significantly impact other factors. These factors are important in the sense that they are susceptible to changes in other factors, but they do not directly impact the overall behaviour of the system.
- Linkage factors (Quadrant 3): The linkage quadrant contains factors that both influence and are influenced by other factors in the system. These factors are important because they represent the connections and relationships between different factors in the system. Factors in this quadrant are vital for understanding the interdependencies between different factors and how changes in one variable can affect others.
- Independent/Driving factors (Quadrant 4): The independent quadrant contains factors that have a high impact on other factors in the system but are not

influenced by any other factors. These factors are considered to be the most important and influential in the system, as they strongly impact the behaviour of other factors but are not affected by them. Factors in this quadrant are critical to understanding the behaviour of the system and its overall performance. These factors are also known as driving factors.

The TISM process, along with the MICMAC analysis, adopted for the study is depicted in the flow diagram of Figure 3.13.



*Figure 3. 13: TISM process followed for the study
(Source: Adapted from Sushil (2012))*

3.8.2.4 Two-mode social network analysis (SNA)

The second objective of the study is to determine the key stakeholders involved in community engagement at RSUPD in Sri Lanka and evaluate their roles in promoting community-inclusive decision-making for RSUPD. The study aims to map the contribution of stakeholders by analysing their power and capacity to address the identified barriers and enablers. To accomplish this objective, the study employed a

two-stage approach: a two-mode social network analysis (SNA) to map the stakeholder relationships with the barriers and enablers, followed by a stakeholder analysis (SA) to distinguish the key players for different types of barriers and enablers.

A network is a representation of a system in which nodes (or elements) are interconnected by ties, forming a complex structure (Borgatti, 2009). SNA is a powerful tool used to analyse these networks and understand the patterns and structures of social relationships. Most social networks are one-mode networks, meaning they have a single set of nodes that share similarities. However, there are also two-mode networks, also known as affiliation or bipartite networks (Borgatti, 2009), that have two different sets of nodes, with ties existing only between nodes belonging to different sets. Two-mode social networks have some unique attributes, including capturing the relationships between different types of actors (e.g., people and factors), identifying important actors in the network based on their connections to multiple types of nodes, and revealing patterns of co-occurrence between different types of actors (e.g., which factor tend to be connected to which people) (Borgatti, 2009; Roberts Jr, 2000).

The two sets of nodes in a two-mode network are often distinguished based on which set is responsible for creating the ties (primary or top node set) and which set is not (secondary or bottom node set). One of the first examples of a two-mode dataset is Davis' Southern Women dataset (Davis et al., 1941 as cited in (Roberts Jr, 2000)), which records the attendance of a group of women (primary node set) at a series of events (secondary node set). Each woman is connected to an event if she attends it. Another popular type of two-mode network is the scientific collaboration network (Newman, 2001), where the two sets of nodes are scientists and papers, and a scientist is linked to a paper if they are listed as an author. Scientists are usually assumed to be the primary nodes in this case since they decide whether or not to work on a paper. However, the choice of primary node set can vary depending on the research question. In this case of mapping stakeholder contributions to promoting community engagement in RSUPD, the two sets of nodes are stakeholders and factors, which include 19 barriers and 19 enablers. The ties between nodes represent the affiliations of stakeholders with factors. Since stakeholders have the power to decide which factors to take on, they are considered the primary node set.

Visualisation of the social network was developed using the UCINET software. UCINET 6 has advanced analytical capabilities that allow researchers to explore social network data in depth (Apostolato, 2013; Majeed et al., 2020). The developed network

can assess a wide range of network measures. The study utilised centrality measures, core-periphery network structure, and density matrix.

Centrality measures

The relative positions of the nodes in the stakeholder-factor network can be determined by calculating the following measure of centrality (Sankar et al., 2015):

- Degree centrality: The degree centrality of a stakeholder is the number of factors that the stakeholder has the power to address. Similarly, the degree centrality of a factor is the number of stakeholders who have the power to influence the barrier/enabler.
- Betweenness centrality: Betweenness centrality indicates a node's strategic position in the network, implying its ability to change or hinder the flow of information. It captures the capacity of an actor to play the role of an intermediary in the network. In the stakeholder-factor network, the betweenness centrality of a factor can be expressed that pairs of stakeholders meet only in that factor, and betweenness centrality of a stakeholder refers to a pair of factors that only can be addressed by that stakeholder.
- Eigenvector centrality: Eigenvector centrality determines how well connected the nodes are to which a given node is connected and measures the influence of a node in the network. In a stakeholder-factor network, the eigenvector centrality of stakeholders is determined by the sum of the centralities of the factors that stakeholders have the power to influence, and the eigenvector centrality of the factor is determined by the sum of centralities of stakeholders who have the power to influence.

Core-periphery network structure

In a core-periphery network structure, there is a cohesive group of core actors and a set of peripheral actors that are loosely connected to the core group (Borgatti & Everett, 2000). Regarding the stakeholder-factor network, stakeholders in the core position are the key stakeholders who can be considered as network coordinators. The delineation of the core/periphery zones is based on the comparison between an ideal structure from the available network data and the actual structure.

Density matrix

The density matrix is a way to represent the density of connections in a network. The density matrix is typically symmetric since the density of connections between node *i* and node *j* is the same as the density of connections between node *j* and node *i*. The diagonal elements of the density matrix represent the density of connections within each node, while the off-diagonal elements represent the density of connections between pairs of nodes (Borgatti, 2009). The density matrix can be used to calculate various network measures, such as network density and final fitness. The network density is calculated by dividing the number of connections by the total number of possible connections. The final fitness of an SNA model is typically calculated using a combination of different fitness metrics, including network density, degree centrality, betweenness centrality, clustering coefficient, and modularity.

Critics of two-mode SNA argue that the method is limited by its assumption that nodes in each category are interchangeable (Borgatti, 2009). In reality, nodes in one category may differ significantly from those in another category, and the relationships between them may not be easily captured by a simple two-mode network. Additionally, the use of two-mode SNA may oversimplify complex relationships between actors, particularly when those relationships involve multiple categories of nodes (Newman, 2001). Despite these limitations, two-mode SNA remains a valuable tool for understanding the relationships between different types of actors in a network. By identifying patterns of collaboration and knowledge transfer, researchers can gain insights into the dynamics of complex networks and develop strategies for improving collaboration and innovation.

3.8.2.5 Stakeholder analysis (SA)

Following the SNA, a SA was conducted to gain a better understanding of the interests, perspectives, and influence of each stakeholder to inform decision-making and improve stakeholder engagement in order to promote community engagement in the context of RSUPD in Sri Lanka. SA considers various characteristics of each stakeholder, such as their resources, legitimacy, and urgency, to determine their level of influence and interest in the project (Varvasovszky & Brugha, 2000). These characteristics can be used to categorise stakeholders into different groups, such as (1) key players, (2) context setters, (3) defenders (subjects) and (4) crowd (as depicted in Figure 3.14), based on their level of interest and influence.

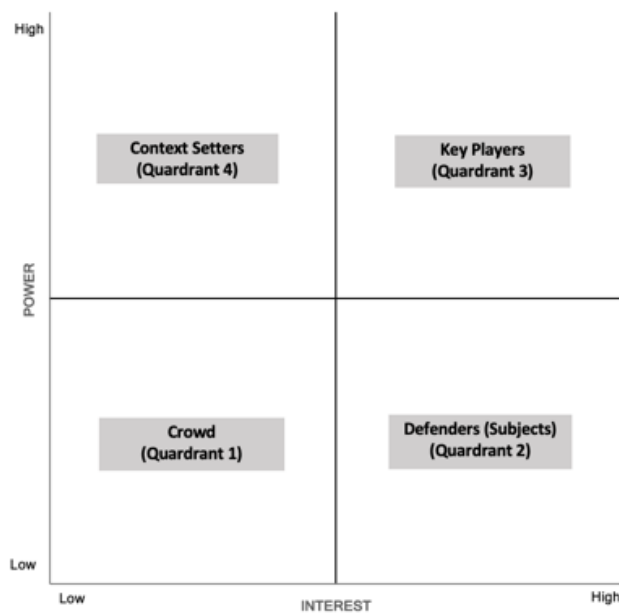


Figure 3. 14: Classification of stakeholders based on their power and interest in factors

The matrix is typically divided into four quadrants based on high or low levels of power and interest. These quadrants help to identify different types of relationships between actors in the network. Namely,

- Key players (High power - High interest): These stakeholders are likely to be decision-makers and have the most significant impact on the initiative's success. They should be actively engaged and managed closely throughout the process.
- Context setters (High power - Low Interest): These stakeholders need to be kept in the loop with what is happening on the project. Even though they may not be interested in the outcome, they yield power. They should be dealt with cautiously because they could use their power negatively if unsatisfied.
- Defendant (Low power - High interest): Keep these stakeholders adequately informed and talk to them to ensure no major issues arise. They should be kept informed and involved as appropriate.
- Crowd (Low power - Low interest): These stakeholders have minimal impact on the project and are unlikely to be significantly affected by its outcome. They may be monitored but do not require active management.

The purpose of SA in this study is to identify the relevant actors who hold significant power and interest in promoting community-inclusive decision-making for RSUPD from

various contexts and perspectives. For instance, the actors who have the capacity to overcome barriers in the community context may not necessarily have the same influence over institutional barriers, and vice versa. Similarly, certain actors may support community-related enablers but may not have the necessary influence to affect legal or policy-related factors.

Some scholars have questioned the effectiveness of SA, critiquing its potential oversimplification of stakeholder characteristics, difficulty in accurately assessing stakeholder interests and power dynamics, and potential for bias or exclusion of certain stakeholders (Varvasovszky & Brugha, 2000). Nonetheless, these limitations can be overcome by combining both SNA and SA to provide a comprehensive understanding of each stakeholder's power towards addressing the barriers and enablers. The overall process followed by combining the SNA and SA for this study is depicted in Figure 3.15.

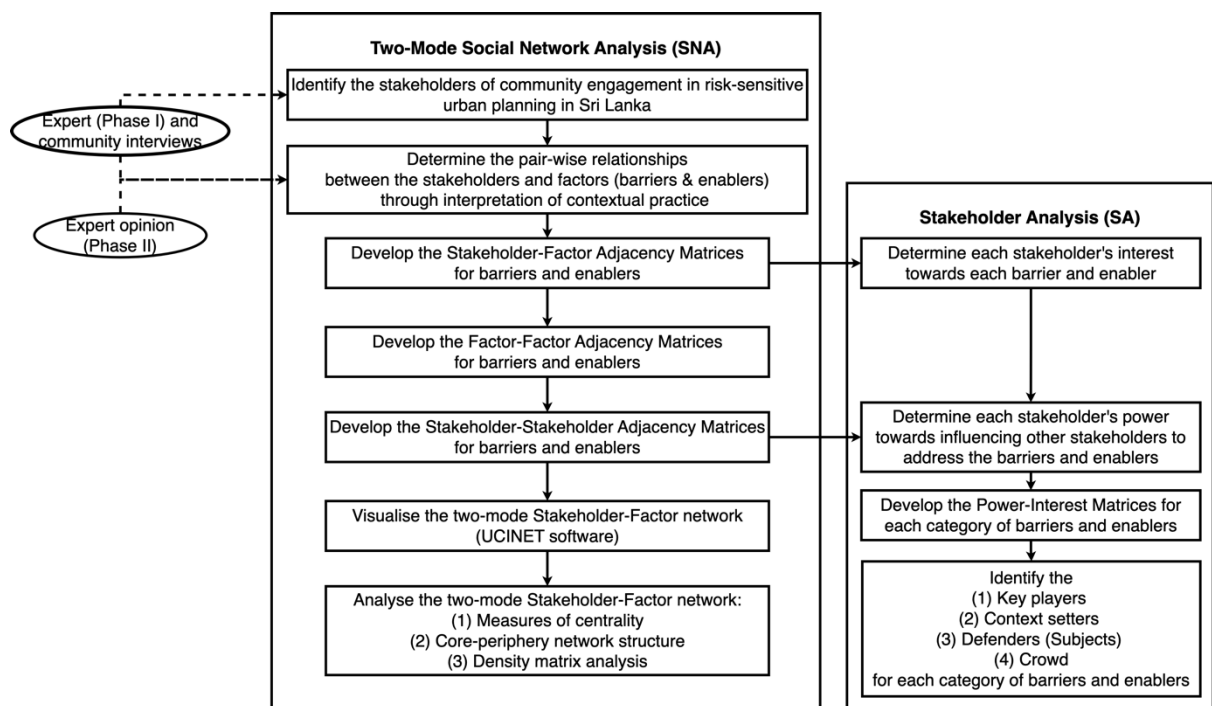


Figure 3. 15: The stakeholder mapping process followed for the study

3.9 Quality Criteria for Verification of the Study Outcomes

The validity of all forms of research depends on the quality of the methods used. Quality in qualitative research often depends on the emerging methods of inquiry, which is different from the quality in quantitative research, which stands for conventional pre-structured methods of inquiry (Merriam & Tisdell, 2015). Although in quantitative

research, validity is related to accuracy, relevance, and reliability of measurement, qualitative research seeks not to measure but rather to understand, represent, or explain something, usually some fairly complex social phenomenon (Pyett, 2003). Furthermore, qualitative research is adaptable to multiple realities and is also more open to multiple shaping of research methods (Lincoln & Guba, 1985). Hence, in qualitative research, an account is valid “if it represents accurately those features of the phenomena that it is intended to describe, explain or theorise” (Hammersley, 1987, p. 69, as cited in Pyett (2003)).

Quality criteria for research are further distinguished based on the research paradigms selected. In general, positivists consider ‘internal validity’, ‘external validity’, ‘reliability’, and ‘objectivity’ to be essential criteria for quality (Chia, 1997; Neuman, 2014). Constructivists replace the above criteria with ‘credibility’, ‘transferability’, ‘dependability’, and ‘confirmability’, respectively: which are elements of ‘trustworthiness’ (Lincoln & Guba, 1985). Also, additional criteria such as ‘triangulation’ or ‘crystallisation’ are usually considered as influential criteria for the quality of the social science research (Nicholas Mays, 2020; Treharne & Riggs, 2015; Walsh & Downe, 2006). In Mays and Pope (2000)'s study, they mentioned a few other quality criteria, such as respondent validation, an apparent explosion of data collection and analysis methods, reflexivity, attention to negative cases, fair dealing and relevance for qualitative research. Besides, the qualitative paradigm contains ethical dimensions such as values of appreciation, aesthetics, humanity, and morality (Clifford & Murcus, 1986, as cited in Richardson (2008)).

To understand the meaning and applicability of these quality criteria, particularly for qualitative research, a tabulated discussion of these criteria is presented in Table 3.7.

Table 3. 7: Quality criteria for trustworthiness in qualitative research

Quality criterion	Definitions	Measures
Credibility	<p>‘...whether the research findings represent plausible information drawn from the participants' original data and are a correct interpretation of the participants' original views’ (Lincoln & Guba, 1986).</p> <p>‘the validity of the conclusions that are drawn from the data and how these conclusions match the reality being reported on’ (Mabuza et al., 2014).</p> <p>‘the research findings are plausible and trustworthy’ (Stenfors et al., 2020).</p>	<ul style="list-style-type: none"> • Prolonged engagement (Lincoln & Guba, 1986; Mabuza et al., 2014) • Persistent observation (Lincoln & Guba, 1986) • Peer debriefing (Lincoln & Guba, 1986; Mabuza et al., 2014) • Triangulation (Lincoln & Guba, 1986; Mabuza et al., 2014) • Negative case analysis (Lincoln & Guba, 1986) • Member checks (Mabuza et al., 2014; Stenfors et al., 2020)

		<ul style="list-style-type: none"> • Well-explicated and justified methodology (Stenfors et al., 2020) • Data saturation (Stenfors et al., 2020)
Transferability	<p>'The degree to which the results of qualitative research can be transferred to other contexts or settings with other respondents' (Lincoln & Guba, 1986). the extent to which the study can make general claims about the world (Halldórsson & Aastrup, 2003). how well the study conclusions can be applied to other similar settings (Mabuza et al., 2014).</p>	<ul style="list-style-type: none"> • Providing thick description (Mabuza et al., 2014) (Lincoln & Guba, 1986) • Purposive sampling (Mabuza et al., 2014) • Identical elements (Lincoln & Guba, 1985)
Confirmability	<p>'The degree to which the research study findings could be confirmed by other researchers' (Lincoln & Guba, 1986). the findings represent the results of the inquiry and not the researcher's biases (Halldórsson & Aastrup, 2003). the degree of objectivity of the researcher in data collection and reporting (Mabuza et al., 2014).</p>	<ul style="list-style-type: none"> • Triangulation (Mabuza et al., 2014) • Practice reflexivity (Mabuza et al., 2014) • Member checking (Lincoln & Guba, 1986)
Dependability	<p>'The stability of findings over time' (Lincoln & Guba, 1986) the extent to which similar findings would be obtained if the study were repeated (Mabuza et al., 2014).</p>	<ul style="list-style-type: none"> • Create an audit trail (Mabuza et al., 2014) (Lincoln & Guba, 1986) • Triangulation (Mabuza et al., 2014)

Considering the overview of quality criteria for qualitative research defined in Table 3.7, the strategies applied for achieving each criterion to reflect the quality and the validity of the research process and the outcomes of this study are presented in subsequent sections.

3.9.1 Credibility

Credibility is the degree of agreement between the respondents' constructions and the researcher's representation of research interpretations/outcomes. A credible inquiry often consists of multiple realities. Thus, the boundaries and relationships among the realities explored appear imprecise (Erlandson et al., 1993). Yet, this facilitates an in-depth investigation of the phenomena being studied. This indicates that, in qualitative research, participants play a central role in falsifying/correcting the picture of reality drawn by the researcher (Halldórsson & Aastrup, 2003). Scholars differently opine strategies to ensure credibility; the researcher should determine which strategies align with the research design, as not all strategies are equally applicable. These credibility measures are listed in Table 3.8 and discuss which measures are used within the study in what way.

Table 3. 8: Credibility measures applied in the study (Source: Adapted from Lincoln and Guba (1985, 1986); Sim and Sharp (1998))

Credibility measure	Description	Application within the study
Prolonged engagement	On-going presence during the data collection process.	<ul style="list-style-type: none"> • Semi-structured interviews lasted for at least one and a half hours to two hours with each participant. • During the primary data collection, several key questions were asked, focusing on the research objectives and the questions formed for the study. • Participants were encouraged to support their statements with examples, and follow-up questions were asked. • The transcripts were thoroughly studied until a theory emerged to solve the research problem investigated.
Persistent observation	Identify the characteristics and elements most relevant to the study's research problem.	<ul style="list-style-type: none"> • The codes, concepts, and core categories helped examine the data's characteristics. • The transcripts were constantly reread, analysed, and theorised, and thereby the concepts/themes that emerged were revised accordingly. • The transcripts were studied until the final theory provided the intended depth of insight.
Triangulation	Triangulation aims to enhance the process of qualitative research by using multiple approaches.	<p>Methodological triangulation was used by</p> <ul style="list-style-type: none"> • Gathering data utilising different data collection methods: in-FGDs, and field notes. • Analysing data using multiple techniques: GT coding process, TISM, MICMAC, SNA, SA. <p>Data triangulation was secured by</p> <ul style="list-style-type: none"> • Collecting data from participants with different organisational backgrounds, levels of authority, working experience, and living styles. • Using the various data sets that emerged throughout the analysis process: excerpts, codes, concepts, and theoretical saturation. <p>Theory triangulation was achieved by</p> <ul style="list-style-type: none"> • Multiple theories developed throughout the study were integrated to develop the final Holistic approach. • Study outcomes were revisited and discussed with relevant concepts in the literature.
Member checks	Member reflections mean that the study outcomes are presented to the participants for input and elaboration.	<ul style="list-style-type: none"> • At the validation phase, expert opinions (from those who had participated in interviews) were sought to give them a second chance to revise the theory and its key features as per their expectations (Section 9.4). • Finally, the validated holistic approach was presented to the participants to confirm the theory.
Data saturation	Saturation or data sufficiency: enough data were gathered to identify all relevant aspects to answer the research question.	The semi-structured interviews and FGDs were continued until theoretical saturation was achieved.
Well-explicated and justified methodology	Provide a clear account of the study methodology.	Chapter three presents a comprehensive and rigorous methodology adapting Saunders's research onion, and justifications were provided for the selection of a philosophical position, research approach, choice of methods, time horizon, strategies, and techniques.
Piloting	Before the main study, preliminary data collection was conducted to examine the feasibility of an	<ul style="list-style-type: none"> • The initially developed data collection guidelines were piloted with two experts in the field: one from the UK (an industry practitioner and academic researcher with expertise in community engagement and urban development) and another from Sri Lanka (an

	approach intended to be used in a larger-scale study.	academic practitioner involved in disaster risk reduction and urban development-related research) <ul style="list-style-type: none"> • Subsequently, initial data collection instruments were refined to incorporate the outcomes of these interviews and their comments.
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3.9.2 Transferability

Transferability refers to how well the study conclusions can be applied to other similar settings (Lincoln & Guba, 1985). This enables readers to assess whether the study findings are transferable to their own setting; this is the so-called transferability judgement (Korstjens & Moser, 2018). The strategies applicable to measure transferability in this study are presented in Table 3.9.

Table 3. 9: Transferability measures applied in the study (Source: Adapted from Lincoln and Guba (1985, 1986); Sim and Sharp (1998))

Transferability measures	Description	Application within the study
Thick description	Describe not just the behaviour and experiences but their context as well so that the behaviour and experiences become meaningful to an outsider.	<ul style="list-style-type: none"> • A detailed description of the study setting: Sri Lanka, along with the justifications, is presented in Section 3.10. • The selection of participants is explicitly discussed in Section 3.8.1.5, with participant inclusion and exclusion criteria.
Purposive sampling	Selecting participants who serve a specific purpose consistent with a study's main objective.	<p>The study used two types of purposive sampling techniques:</p> <ul style="list-style-type: none"> • Firstly, criterion sampling is used to identify the initial set of participants who have experienced the phenomenon of interest. • Secondly, theoretical sampling: selected participants who are capable of providing insight into emerging theoretical constructs to achieve theoretical saturation while developing the theory.

3.9.3 Confirmability

Confirmability is concerned with establishing that data and interpretations of the findings are not figments of the inquirer's imagination but are derived from the data (Lincoln & Guba, 1985). Ensuring this quality criterion enables the reader to think that the research outcomes are genuinely based on the empirical data and not the researcher's reflections. However, the researcher's reflectivity is evident in qualitative research (Mabuza et al., 2014). The measures involved to ensure confirmability in this study are listed and discussed in Table 3.10.

Table 3. 10: Confirmability measures applied in the study (Source: Adapted from Lincoln and Guba (1985, 1986); Sim and Sharp (1998))

Confirmability measures	Description	Application within the study
Practice reflexivity	The process of critical self-reflection about oneself as a researcher (own biases, preferences, preconceptions), and the research relationship (relationship to the respondent, and how the relationship affects participant's answers to questions).	The discussion section provides the researcher's interpretations of the data collected and findings.
Triangulation	Same as mentioned in Table 3.8.	
Member checking	Same as mentioned in Table 3.8.	

3.9.4 Dependability

Dependability refers to the extent to which similar findings would be obtained if the study were repeated (Guba, 1981). However, this is challenging in qualitative studies: varying outcomes should be expected due to the subjective nature of data collected from different samples (within the same context or geographically dispersed contexts) or the same sample longitudinally. The following measures are used to ensure dependability in this study (see Table 3.11).

Table 3. 11: Dependability measures applied in the study (Source: Adapted from Lincoln and Guba (1985, 1986); Sim and Sharp (1998))

Dependability measures	Description	Application within the study
Audit trail	Transparently describe the research steps taken throughout the study, and an external party review the entire process.	An external party was not hired to review the research design and the process implemented within this study; however, the supervisors have continuously guided the researcher to ensure its quality and reliability.
Triangulation	Same as mentioned in Table 3.8.	

3.10 The Study Context - Sri Lanka

GT primarily considers one or multiple natural contexts in which individuals or groups function, as it aims to provide an in-depth understanding of real-world problems (Creswell, 2014; Easterby-Smith et al., 2012; Saunders et al., 2019; Strauss & Corbin, 1998). Similarly, in this study, the ‘reality’ was explored and constructed considering diverse characteristics (i.e., social, cultural, historical, and individual) of a chosen context.

Sri Lanka, officially known as the Democratic Socialist Republic of Sri Lanka, is an island country in South Asia. The country lies between 6°N and 10°N latitude and 80°E and 82°E longitude in the Indian Ocean, with a land area of approximately 65,000 square kilometres (km²). The capital city is Colombo, and the official languages are Sinhalese and Tamil. The population of Sri Lanka is approximately 22.3 million people, and the country has a diverse ethnic and religious makeup, with Sinhalese, Tamils, and Moors being the main ethnic groups. Buddhism is the main religion, but there are also significant Hindu, Muslim, and Christian communities. Sri Lanka has a mixed economy with agriculture, manufacturing, and services sectors. The country has had a tumultuous recent history, with a 26-year-long civil war that ended in 2009. Sri Lanka has since made significant progress in terms of economic development and but there are still ongoing issues related to political stability, human rights, ethnic tensions, and the rights of minority groups. The county profile is presented in Table 3.12.

Table 3. 12: Country profile of Sri Lanka (Source: Central Intelligence Agency [CIA] (2021)

Criteria		Description
Geography	Location (Geographic coordinates)	Southern Asia, an island in the Indian Ocean, (7 00 N, 81 00 E)
	Area	total: 65,610 sq km, land: 64,630 sq km, water: 980 sq km country comparison to the world: 122
	Climate	tropical monsoon; northeast monsoon (December to March); southwest monsoon (June to October)
People & society	Population	23,044,123 (July 2021 est.)
	Ethnic groups	Sinhalese 74.9%, Sri Lankan Tamil 11.2%, Sri Lankan Moors 9.2%, Indian Tamil 4.2%, other 0.5% (2012 est.)
	Religions	Buddhist (official) 70.2%, Hindu 12.6%, Muslim 9.7%, Roman Catholic 6.1%, other Christian 1.3%, other 0.05% (2012 est.)
	Languages	Sinhala (official and national language) 87%, Tamil (official and national language) 28.5%, English 23.8% (2012 est.)
	Population growth rate	0.63% (2021 est.) country comparison to the world: 147
	Income	Lower middle-income: gross domestic product (GDP) per capita of US\$3,852 as of 2019
	Urbanisation	urban population: 18.7% of total population (2020) rate of urbanisation: 0.85% annual rate of change (2015-20 est.)

Government	Government type	presidential republic
	Administrative divisions	9 provinces, 25 districts, 323 divisional secretariat divisions (DSDs), 14,113 and Grama Niladhari (Village Officer) divisions (GNDs)

The selection of Sri Lanka as the research context for this study is mainly based on four explanations: (1) prone to natural disasters and high disaster risk and vulnerability profile; (2) impact of climate change and associated risks; (3) trend of urban development and unsustainable developments; (3) fewer provisions for community engagement in the decision-making of development.

3.10.1 Natural disaster risk profile in Sri Lanka

Sri Lanka has decades of varied experience in unsustainable and risky developments arising from natural disasters. The country is often prone to natural disasters such as floods, landslides, droughts, and cyclones (Disaster Management Centre [DMC], 2019) and suffered from a tsunami, a catastrophic disaster, in 2004. According to the World Bank Group and Asian Development Bank (2020), Sri Lanka faces moderate disaster risk levels, ranked 89th out of 191 countries by the 2021 INFORM Risk Index. Sri Lanka has moderate exposure to flooding (ranked 56th), including riverine and flash flooding and to tropical cyclones and their associated hazards (ranked 45th) (Inter-Agency Standing Committee and the European Commission [IASC], 2021). In addition, around 20% of the nation's surface area is estimated to be exposed to landslide events, which are reportedly the third most frequently occurring hazard behind floods (Wickramaratne et al., 2012). Exposure to cyclones and droughts is slightly lower (IASC, 2021). Periods of intense precipitation can result in flash flooding and landslide events in Sri Lanka, leading to loss of life, livelihoods, and infrastructure.

Sri Lanka is affected by multiple forms of flooding, such as river flooding, flash (or pluvial) flooding, and coastal flooding. As of 2010, the population annually affected by river flooding in Sri Lanka is estimated at 59,000 people, and the expected annual impact on GDP is estimated at \$267 million, while the annually affected population is expected to increase by 26,000 by 2030 (ADB, 2018). The UNISDR (2014) reported that floods are currently the most significant contributor to Sri Lanka's average annual losses from disasters of approximately \$140 million annually. In addition to their direct impacts, flood events have known relationships with other hazards, such as landslides

as well as the spread of disease. Figure 3.16 depicts the distribution of flood and landslide risks in Sri Lanka as of June 2021.

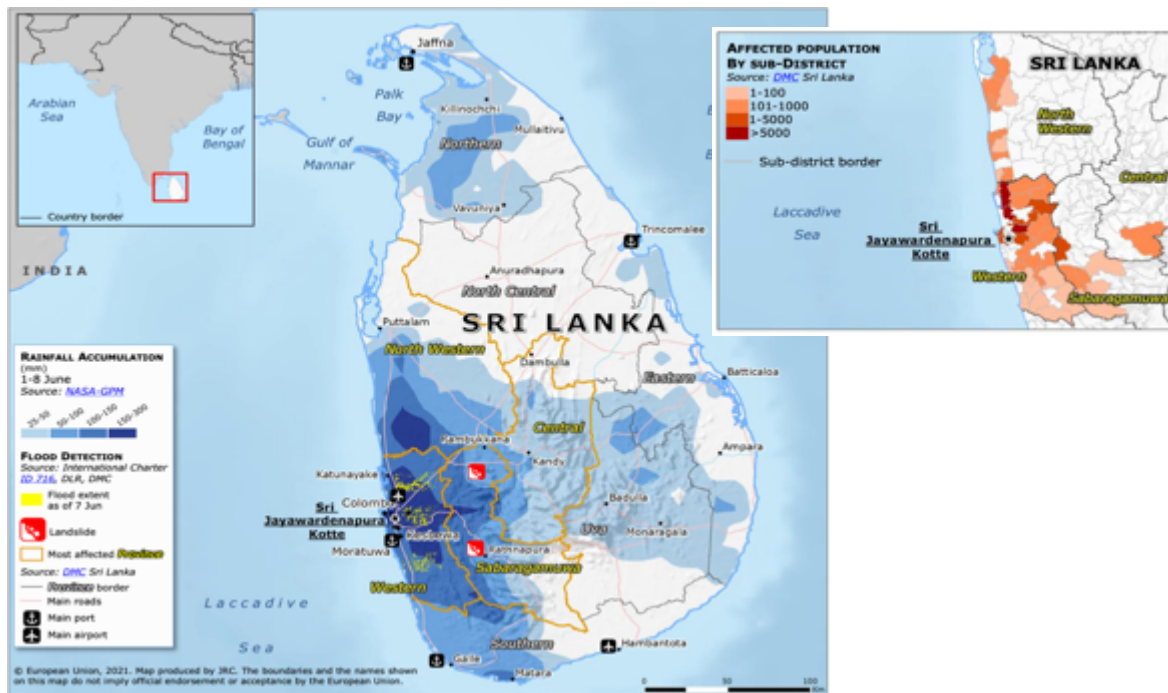


Figure 3. 16: Distribution of flood and landslide risks in Sri Lanka as of June 2021 (Source: European Commission's Directorate-General for European Civil Protection and Humanitarian Aid Operations [ECHO], 2021)

As shown in Figure 3.16, the flood-prone areas in Sri Lanka are mainly in the Western province, whereas the landslide risks are extended to other provinces such as North Western, Central, and Sabaragamuwa. The affected population by district shows that the most vulnerable populations are settled in the urban settings in the Western province: Colombo, Gampaha, and Kalutara districts.

3.10.2 Climate change and associated risks in Sri Lanka

Sri Lanka is highly vulnerable to the current and anticipated effects of climate change due to its low elevation and high dependence on ecological systems. According to the Global Climate Risk Index released in 2020, Sri Lanka was ranked as the 6th most affected country in the world in 2018. One of the recent climate change impacts in Sri Lanka is caused due to severe monsoon rains: a catastrophic event in 2018 killed 24 people, displaced 6,000, and affected 170,000 (Eckstein et al., 2020). The districts of Galle and Kalutara were the most affected.

Climate change threatens to erode Sri Lanka's economic development and poverty reduction gains in the last two decades. Approximately 25% of the country's population

lives within 1 km (0.6 miles) of the coastal areas threatened by future sea-level rise. Primary economic drivers, including tourism, commercial agriculture, and manufacturing, are vulnerable to extreme weather events and sea-level rise. Additional effects of climate change, including deforestation, soil erosion, and loss of biodiversity, also threaten to reduce the country's economic output. The United States Agency for International Development [USAID] (2018)'s projections for climate change in Sri Lanka include:

- Increase in mean annual temperature of between 0.8°C and 2°C by 2060.
- Increase in both daily maximum and minimum temperatures of between 0.7°C and 0.8°C by 2050.
- Projections of change in precipitation vary, with some predicting decreases and some increasing, but they generally indicate an increase in variability and extreme events.
- Increase in cyclone frequency and intensity.
- Increase in frequency and severity of floods, landslides, cyclones, and droughts.
- Total sea-level rise of between 0.2 and 0.6 meters by mid-century, compared to 1971- 2010 levels.

3.10.3 Urban development trend in Sri Lanka

Between 1999 and 2010, Sri Lanka experienced the fastest urban expansion within the Southeast Asian region (Atlas, 2017). The most populous city is Colombo, considered the country's financial and cultural centre. Other major cities, namely the administrative capital of Sri Jayewardenepura Kotte, Dehiwala-Mount Lavinia, Moratuwa, Negombo, Kandy, Kalmunai, Vavuniya, Galle, and Trincomalee (Review, 2021) are less populous than Colombo. While Colombo and other major cities are common destinations for rural migrants, the growing tourism economy has enabled domestic migrants to also circulate the country.

Due to the relatively small island setting, the demand for land in the growing urban areas has led to the expansion of cities to land prone to flooding and landslides, which are often deemed unsuitable for habitation (Dissanayake et al., 2018). Poverty is also linked to flooding and subsequent displacement because the economic hubs of Colombo and Gampaha, which command high prices and suffer from a lack of land, continue to attract migration. In fact, 40% of the country's poor inhabit informal

settlements on the outskirts of the urban areas of the capital region and are driven by the search for opportunities and services (Friedrich, 2017). As mentioned earlier, many of these settlements are built on floodplains, which means that the poorest demographics are most vulnerable to flooding events and habitually end up being displaced (Friedrich, 2017). Furthermore, the outskirts of the metropolitan region of Colombo are pushing into wetlands along the Kelani river basin, which results in environmental degradation and increased exposure of the local population (Friedrich, 2017).

Poor land-use planning and utilisation have been highlighted in the most recent disasters from 2016 to 2018. Unstable riverbanks resulting from sand mining, loss of natural buffer zones, blocking downstream waterways and construction in retention areas all contribute to the increased risks of flooding and landslides in Sri Lanka (DMC, 2019; Ministry of National Policies and Economic Affairs [MoNPEA] & Ministry of Disaster Management [MoDM], 2017). Houses most affected by the 2016 flooding were located in high-risk areas and were of inadequate design; in the urban areas, 65% of the affected houses were makeshift or semi-permanent constructions (MoNPEA, 2017). The same applies to landslides because, at the local level, unplanned cultivation of paddy fields increases the likelihood of severe damage (Perera et al., 2018).

Apparently, there have been approximately 10,000 unregulated buildings in Colombo which have been demolished in 2017, among other high-rise buildings which have been constructed without authorisation (Political Correspondent, 2017). Some informal areas of the cities also lack infrastructure and services, creating significant amounts of pollution to the environment and being increasingly exposed to hydrometeorological hazards (Dissanayake et al., 2018).

3.10.4 Less provision for community-engaged urban planning and development in Sri Lanka

It is hard to mention that Sri Lanka does not have evidence of a history of community participation in development. The issue, however, is whether these community-inclusive development attempts are genuine, down-to-earth, and effective. In Sri Lankan development culture, communities are mostly involved ceremonially or after a project is implemented, not during the planning stage. This drives unsustainable and unsafe developments. Moreover, the involvement of vulnerable and marginal communities (e.g. internally displaced persons (IDPs) and ethnic minorities) in development decision-making is mostly overlooked (Center for Excellence in Disaster

Management & Humanitarian Assistance [CEF-DM], 2021; UNDRR, 2019). However, compared to many developing and South-Asian countries, women's participation is unrestricted in Sri Lanka.

In addition, disregarding community participation during the RSUPD in Sri Lanka is mainly due to its policy failures. A review of the laws, policies and plans related to UPD (National Physical Planning Policy and Plan Sri Lanka of 2030³, Urban Development Authority Act No. 41 of 1978⁴), DRR (Disaster Management Act No. 13 of 2005^{5,6}, Roadmap for Disaster Risk Reduction - Safe and Resilient Sri Lanka of 2016²), and CCA (National Climate Change Policy of Sri Lanka of 2012⁷) in Sri Lanka confirms that there is no or inconsiderable provision for community engagement aspects (Center for Excellence in Disaster Management & Humanitarian Assistance [CEF-DM], 2021; United Nations Office for Disaster Risk Reduction (UNDRR), 2019).

3.10.5 Overview of the considered risk-sensitive urban development projects

The study involved five urban/peri-urban development projects that mainstreamed risk-informed measures and community to draw community perspectives for the study. The five projects evidence community engagement at different scales and for different purposes. Also, the community participants drawn from the five projects are distinct in terms of demography, living standards, education, political preferences and influence, risk perception, and vulnerability. Figure 3.17 depicts the locations of the projects.

³ Section 4.4: Engaging communities through consultation and partnerships will contribute to better outcomes for Government and better community integration.

⁴ No single provision for community engagement in UPD.

⁵ Section 8(A) 2(a): Take necessary measures for the prevention of disasters, or the mitigation, or minimise the effect of, or for preparedness, early warning and capacity building for dealing with the threatening disaster situation or disasters as it may consider necessary in consultation with relevant stakeholders. Here the community has not been defined as a stakeholder.

⁶ Section 8(A) 2(s): Promote public awareness campaigns relating to disaster management in collaboration with stakeholders.

⁷ The first objective is to sensitise and inform the communities periodically about the country's vulnerability to climate change, but strategies still need to be proposed.

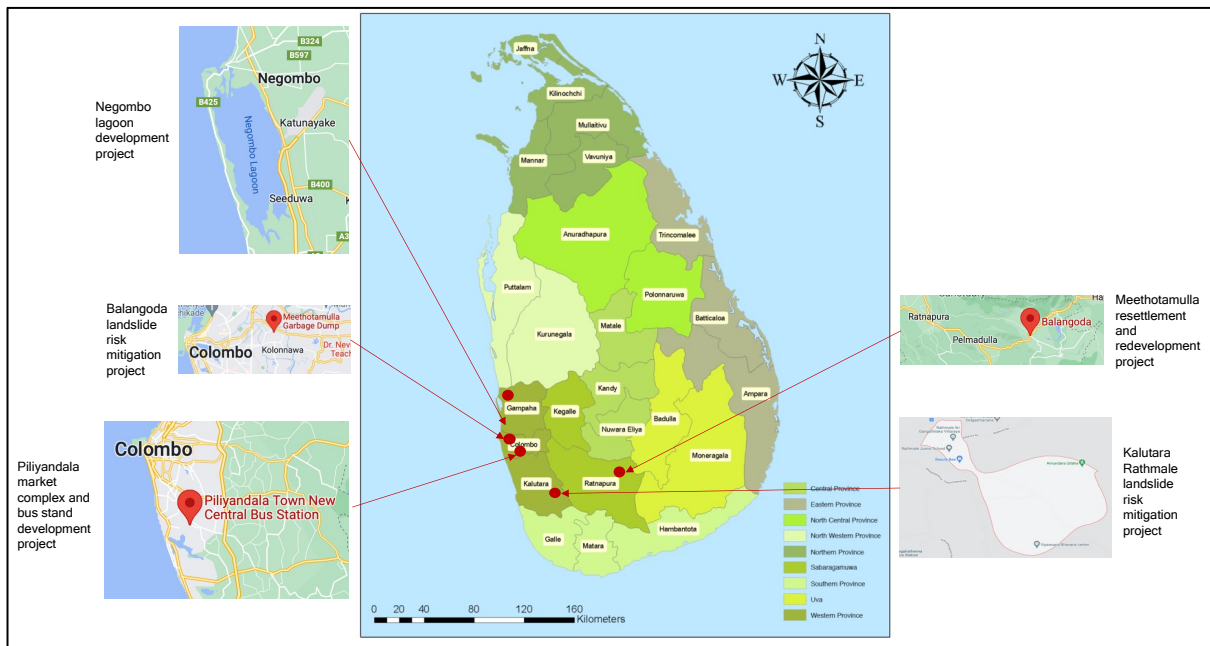


Figure 3. 17: Locations of the selected community-engaged projects mainstreaming DRR and CCA measures

3.10.5.1 Negombo lagoon development project

The Negombo lagoon development project aims to enhance the ecological and socio-economic aspects of Negombo Lagoon in Sri Lanka. The lagoon is an important ecosystem with economic potential, but its scenic beauty and visual attraction have been impacted by waste dumping and other activities. Uncontrolled dumping and improper waste handling increase flooding due to blocks of drainage canals or gullies (Gampaha District Office & UDA, 2019). It may result in safety hazards from fires or explosions and, consequently, increase greenhouse gas emissions, contributing to climate change. The lagoon is used for estuarine and coastal fisheries, anchorage of fishing boats, and conservation purposes. The resulting unauthorised settlements and haphazard development have resulted in habitat loss, alterations in flow patterns, sedimentation, and reduced water depths in the inlet/exit channel (Gampaha District Office & UDA, 2019). These factors have negatively affected water quality and contribute to algal blooms and pollution. The project has formulated objectives and strategies to address these issues.

The proposed strategies include redeveloping existing parks and playgrounds, developing linear parks, creating flood retention and detention areas⁸, beach park development, and tree planting (Figure 3.18). Through this project, it aimed to maintain

⁸ Existing lagoon and abandoned paddy fields should be conserved as flood retention and detention areas considering the flood hazards of the area.

essential flood storage capacity to mitigate urban flood hazards in the area, increase recreational facilities distribution among the population, and minimise the encroachments along the reservations.

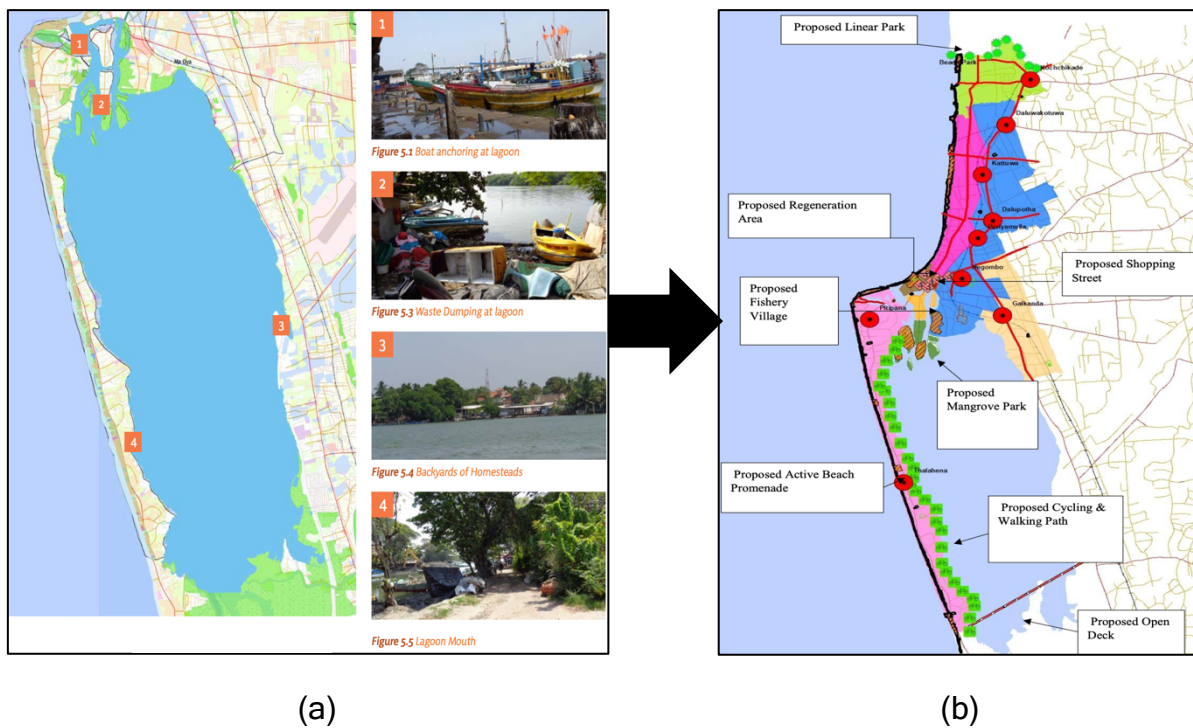


Figure 3. 18: (a) Negombo Lagoon and its environs and (b) the proposed development plan (Source: Gampaha District Office & UDA, 2019)

The development plan was crafted in a manner that would enable the separate components of the plan to be implemented independently under the responsible agencies but with coordination, supervision, and monitoring by the community, CBO⁹, and NGO representatives. It was formalised by submitting a work plan, which included informal interviews with residents and commuters at the beginning and formal meetings with representatives of fishermen societies, special consultation meetings with the religious leaders, and community workshops¹⁰ at later stages. Furthermore, a relocation and community development package was formulated in consultation with the target families. Community support was fostered by awareness, adult education, youth training, and women's development.

⁹ About 50% of this population was represented by CBOs and fisherman societies.

¹⁰ All community workshops were conducted in Sinhala, the local language understood by all participants. Minutes of workshops were prepared and distributed to the participants of 13 workshops that reached 25 of the 26 target villages. The total number of community participants at the 13 workshops amounted to 510, with an average of 40. This represents about 17% of the estimated 3,000 lagoon fishermen.

3.10.5.2 Meethotamulla resettlement and redevelopment project

In April 2017, a massive garbage landslide occurred at the Meethotamulla dump, resulting in 32 deaths, affecting 315 families and 82 houses damaged. Following this dramatic accident (Figure 3.19), several immediate risks were identified: (1) flooding resulting from the blockage of the drainage system at the time of the collapse; (2) sudden release of methane from the waste deposit; and (3) risk of further collapse in other parts of the landfill, specifically following expected heavy rainfall with the monsoon season. This tragic event brought attention to the urgent need for the closure of the landfill. In this regard, two projects were initiated: (1) resettlement of affected communities and (2) reclamation of the dumping site.

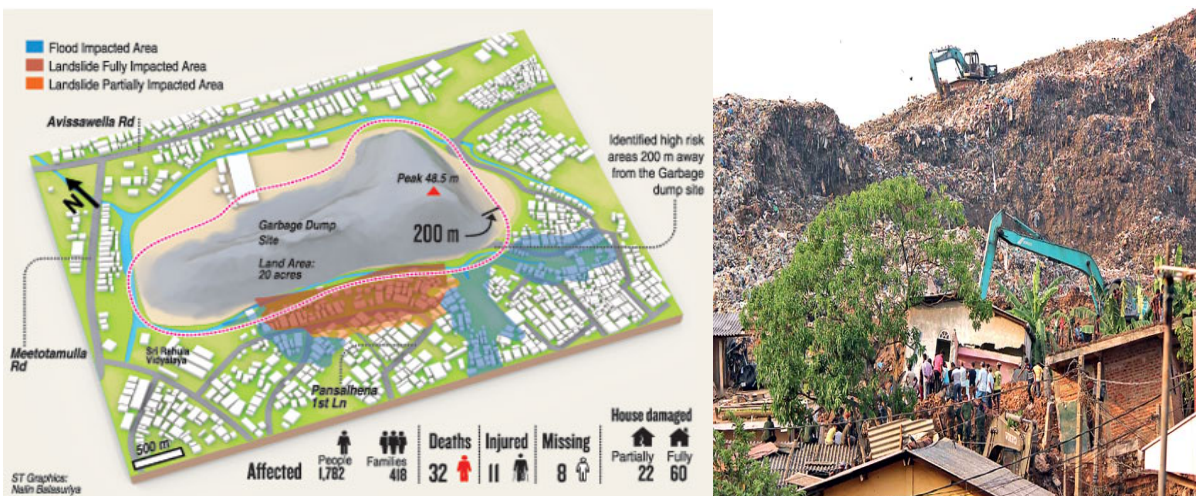


Figure 3. 19: Meethotamulla garbage dump site and the collapse

Thirty-eight (38) affected families were relocated into 550 sq.ft apartment units built by the UDA, subject to the condition of paying an upfront contribution to the condominium maintenance fund. It is reported that several consultations were conducted with the affected communities (UDA, 2019). A meeting with the affected people has been conducted to explain the rationale behind the relocation program and the benefits that would accrue to them and the community as a result of the relocation¹¹. After the relocation, several consultations were reported that were conducted for income and livelihood restoration planning, formation of community committees¹², and monitoring whether the affected people are actively involved in community development activities.

The second step is the site reclamation project. Out of many opinions regarding the best method for developing areas where garbage was once dumped, converting them into urban parks has been considered the most appropriate solution, as it is a tried-

¹¹ The number of participants was 31, 14 men and 17 women.

¹² Formation of a thrift and cooperative committee, a women's development committee, an environmental committee, and a community welfare committee

and-tested method in many countries. A proposal was accepted with Rs 400 million for an urban park to be completed by 2023. However, it is slowly progressing due to community protests and the recent pandemic. Residents claimed that even though the garbage dump was abandoned, methane gas accumulated, and sewage water still flowed in the area leading to another disaster (The Sunday Times, 2021). However, the authorities ensured that the area was being reclaimed scientifically under the guidelines of the National Building Research Organisation (NBRO) and international experts, but it has been interrupted by a few families occupying the site illegally (The Sunday Times, 2021).

3.10.5.3 Piliyandala town development project

The Sri Lankan Government have initiated an Rs. 498 million development project for Piliyandala, with plans for a new market and mall. The project is being conducted under the 'Sukitha Purawara' umbrella project, which aims to develop 23 towns around the country (UDA, 2015). Piliyandala town has been selected to redevelop, considering its vulnerability to flash floods and high traffic congestion. As depicted in Figure 3.20, the first phase of the development project, which aims to make it Colombo's main transport centre, has been launched. One of the project's main aims is to control the traffic entering Colombo City through improved infrastructure.



Figure 3. 20: Piliyandala town development project

Though there is no formalised process for engaging communities during the project, the field visits during the data collection evidenced that community consultation has taken place but was mostly limited to business communities and a few active community committee representatives, including a women's society.

3.10.5.4 Balangoda landslide-induced resettlement project

Balangoda, in the Rathnapura District, is one of the main landslide-prone areas in the country. The drawn community had been affected by two heavy rain-induced mass landslides in May 2017. The development project is to relocate the displaced communities into two nearby state lands. However, the proposed resettlement areas were also abandoned state lands due to relatively low landslide risks. Thus, some measures have been taken to mainstream risk reduction measures while building housing settlements. The project was mainly owner-driven, but compensation and technical support were given to the residents. One of the main relocation failures rightly identified in this project is considering the physical structures only rather than addressing the emotional and psychological requirements of the affected communities in the resettlement process (Perera et al., 2013; Kenady et al., 2008).

3.10.5.5 Kalutara landslide risk mitigation project

Rathmale, a GN division in the Kalutara District, is one of the landslide and flood-prone areas. This area has been concerned as part of the NBRO's landslide risk mitigation programme. Initially, a community awareness session on landslide risks, risks of haphazard and illegal settlements in the area, and landslide risk mitigation strategies were conducted. Following the awareness session, a community mapping was conducted to identify the high-risk areas and risk mitigation strategies were discussed with communities. A community committee was established, appointing a leader who was given a rainfall measurement meter to maintain a seasonal calendar in order for them to inform the NBRO in case of any anticipated landslide or flood risks. Around 12 residents attended, with a balanced male and female participation, but there was no youth participation. As the project is still in the initial stage, community involvement was requested throughout the process of upgrading community infrastructure and settlements to reduce landslide risks.



Figure 3. 21: Community awareness and mapping session on landslide risk mitigation at Rathmale (Source: Field visit photographs, 2022)

3.11 Summary and Link

This chapter discussed the research design developed for the study. Peeling the layers of Saunders's research onion, the study justified applying for the constructivist philosophical position; inductive research approach; multi-method qualitative methodological choice; constructivist GT strategy; a cross-sectional study. The data collection methods involved are semi-structured interviews with 17 experts, seven FGDs with 27 community participants, and field visits. The qualitative data collected were mainly analysed through GT analytical procedure. The GT analytic procedure emphasised the need for further analyses such as TISM, MICMAC analysis, SNA, and SA to develop the holistic approach. Finally, four quality criteria: credibility, confirmability, transferability, and dependability, were applied to ensure methodological excellence and verify the study outcome. The chapter also justifies the selection of Sri Lanka to develop the aimed holistic approach for promoting community engagement in the decision-making of RSUPD.

The next chapter commences the presentation and discussion of the data analysis and outcomes in relation to achieving the study objectives.

CHAPTER FOUR

DATA CODING AND THE CONCEPTUAL DESIGN

4.1 Introduction

As explained in Chapter 3, the study employed a GT based qualitative data coding to identify key themes from the transcribed interview data. This chapter describes each step involved in the inductive data coding process and the key results derived. A conceptual design developed interpreting the identified links among the categories and themes is presented at last, unveiling the need for further data analyses.

4.2 Phase I - Initial Coding

Initial coding identifies emerging concepts from the data (Corbin & Strauss, 2008). This process is expansive: primarily conducted after the first round of data collection, and the line-by-line codes that emerged from the initial coding help develop questions for the next round of data collection (Merriam & Tisdell, 2015). The initial coding, also known as open coding, is comprised of two key steps: (1) examining the text for salient data and (2) applying coding to the text (labelling phenomenon). In this study, a line-by-line coding strategy was incorporated. The line-by-line coding is time-consuming and tedious work, but at the same time, it also helps to build a detailed structured conceptual data model. Accordingly, a total of 340 open codes, along with 3402 coded segments and 40 in-document memos, were created at the completion of coding all interview and FGD transcripts. Figure 4.1 shows an interface of the MAXQDA qualitative data analysis software during the initial coding process.

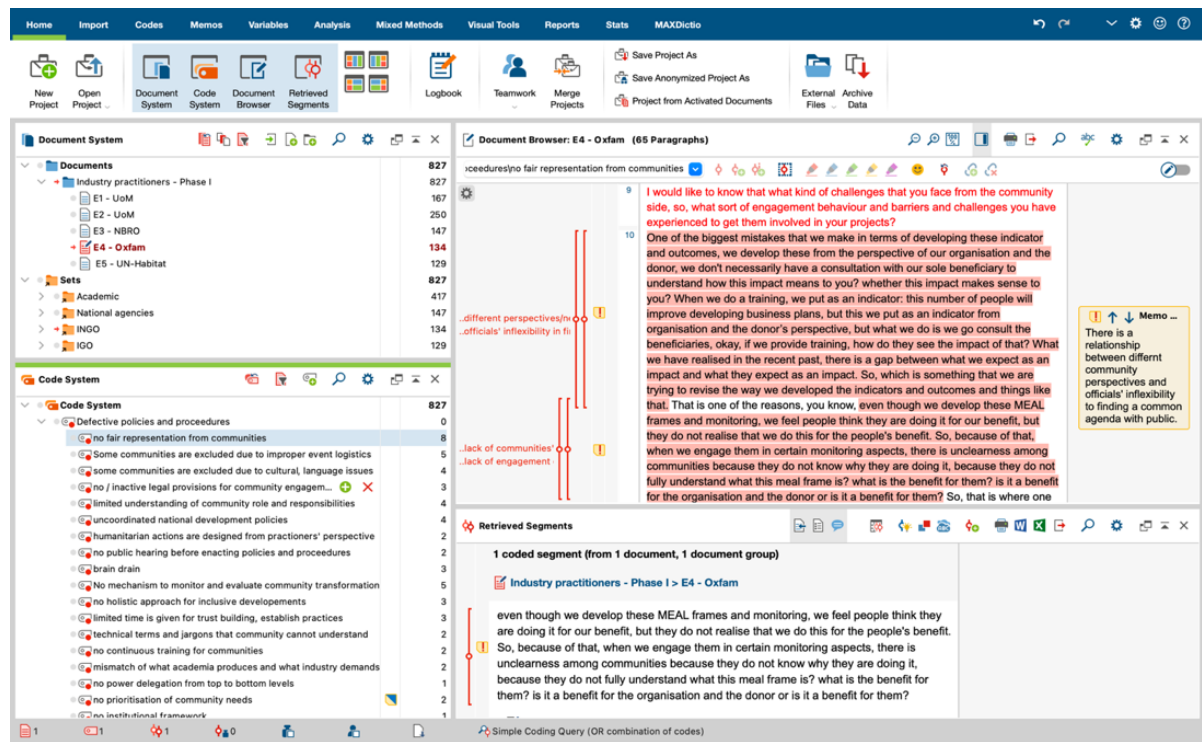


Figure 4. 1: MAXQDA open coding interface

As shown in Figure 4.1, in this stage, all codes were created with the use of the 'Open coding' function in MAXQDA as it facilitates extracting research participants' expressions as it is as coded segments while the researcher can provide an analytical label for each retrieved segment.

4.3 Phase II - Focus Coding

Focus coding is the process of identifying sub-concepts, properties, and dimensions to fully explain the continua of concepts and to show relationships between concepts. Sub-concepts are based on their properties and dimensions. Properties describe concepts; dimensions are continua of the properties (Corbin & Strauss, 2008). In this study, for focused coding, an advanced coding round was performed using the MAXQDA's 'Smart Coding Tool'. The Smart Coding Tool enables working with coded text segments while assigning new codes and removing existing codes from coded segments. This function further facilitates the researcher to review the coded text segments and thereby grasp an overview of the contents to form categories. Figure 4.2 presents an example smart coding interface from the study.

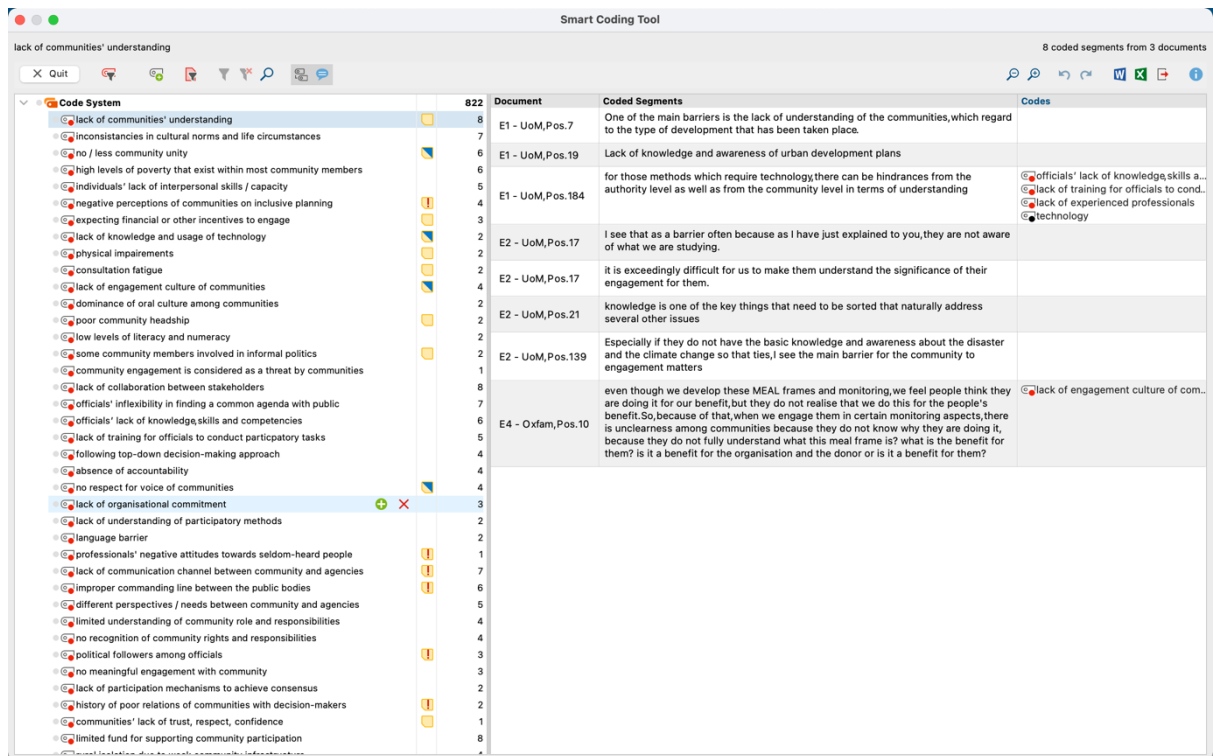


Figure 4. 2: MAXQDA smart coding interface

As a result of the smart coding performed, the total number of coded segments was increased from 51, which makes the total number of coded segments 3453. These open codes were then analysed further to identify commonalities and similarities and were combined and grouped into abstract ideas known as concepts. The concepts that shared common characteristics or properties were further grouped into categories. To aid in this process, the "Creative coding" function in MAXQDA was utilised, which helped to structure the classification of codes, concepts, and categories. Figure 4.3 provides a visual representation of this classification process.

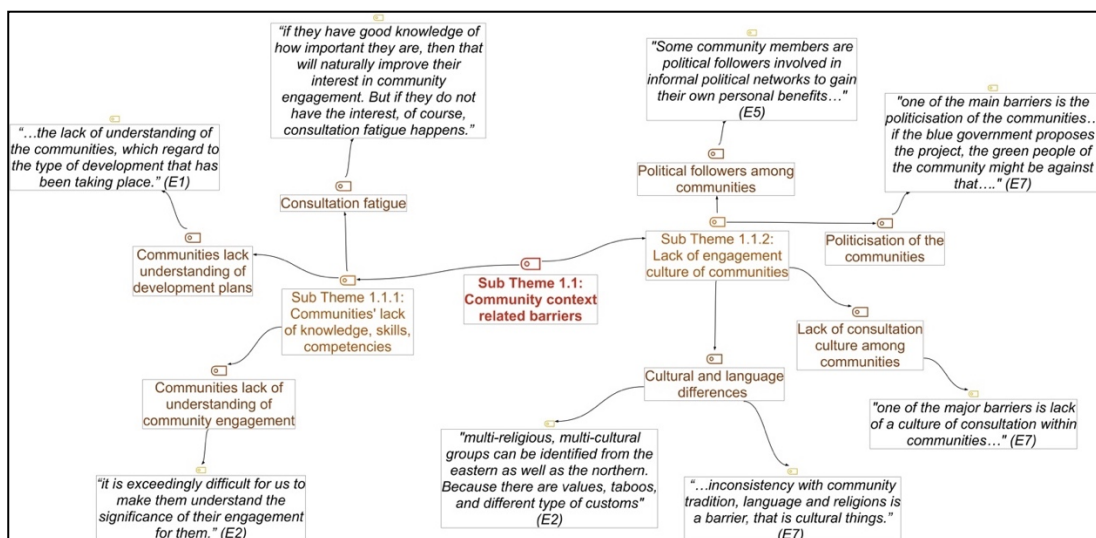


Figure 4. 3: A preview of the code-subcodes-segments model

4.4 Phase III - Theoretical Coding

Following the focused coding of all transcripts, theoretical coding was applied to all codes and sub-codes, thereby identifying the key themes resulting from the data. Theoretical coding is the process of developing a narrative of the GT by integrating the concepts and connections proposed during focused coding. Six key themes and their interdependencies and nexus emerged from the theoretical coding. These contributed to developing the final framework for facilitating community engagement in the decision-making of RSUPD. Table 4.1 below presents a sample of the coding process followed during the study and the emergence of the themes.

Following the process depicted in Table 4.1, the open codes were classified into six themes, namely:

1. the barriers to community engagement in the decision-making of RSUPD;
2. the enablers of community engagement in the decision-making of RSUPD;
3. stakeholders of community-inclusive decision-making for RSUPD;
4. stakeholder contributions/best practices to address the identified barriers and enablers;
5. participatory methods for fostering community-engaged decision-making during RSUPD;
6. indicators to assess community transformation through engagement in the decision-making of RSUPD.

Table 4.2 below summarises the key themes identified with their definitions and descriptive statistics from the three-phase GT analytical procedure.

Table 4. 1: Coding process: Generation of initial codes, categories, categories, and themes

Code #	Initial Coding		Focused Coding		Theoretical Coding (Themes)
	Interview Data Excerpt (Source)	Codes	Concepts	Categories	
Q1: As per your experience, why is community engagement hindered in the decision-making of disaster risk reduction/urban planning & developments in the Sri Lankan community context?					
1.1	"...the lack of understanding of the communities, which regard to the type of development that has been taking place." (E1)	Communities lack understanding of development plans	Concept 1: Communities' lack of knowledge, skills, competencies	Category 1: Community context related barriers	Theme 1: Barriers to inclusive risk-sensitive urban planning and development
1.2	"it is exceedingly difficult for us to make them understand the significance of their engagement for them." (E2)	Communities lack understanding of community engagement			
1.3	"if they have good knowledge of how important they are, then that will naturally improve their interest in community engagement. But if they do not have the interest, of course, consultation fatigue happens." (E2)	Consultation fatigue			
1.4	Some community members are political followers involved in informal political networks to gain their own personal benefits...(E5)	Political followers among communities	Concept 2: Lack of engagement culture in communities		
1.5	"one of the main barriers is the politicisation of the communities...if the blue government proposes the project, the green people of the community might be against that..." (E7)	Politicisation of the communities			
1.6	"one of the major barriers is lack of a culture of consultation within communities..." (E7)	Lack of consultation culture among communities			
1.7	"...inconsistency with community tradition, language and religions is a barrier, that is cultural things." (E7)	Cultural and language differences			
1.8	"multi-religious, multi-cultural groups can be identified from the eastern as well as the northern. Because there are values, taboos, and different type of customs" (E2)				

Table 4. 2: Key themes and categories emerged from the study

Theme	Description	Key categories	Frequency of codes-contributed to a theme (across all transcripts)		Frequency of participants contributed to a theme	
			No	%	No	%
1. Barriers	Existing difficulties or obstacles that may prevent or hinder community involvement in the decision-making process of urban planning, particularly in relation to managing and mitigating climate-induced disaster risks.	<ol style="list-style-type: none"> 1. Community-context 2. Institutional & policy 3. Practice related 4. Legal & political 5. Relational 	1073	31%	44	100%
2. Enablers	Existing factors, including resources, processes, and systems, that can facilitate or promote community involvement in the decision-making process of RSUPD.	<ol style="list-style-type: none"> 1. Community-context 2. Relational 3. Resource 4. Legal & policy 5. External support 	596	17%	44	100%
3. Stakeholders	Stakeholders are individuals, groups, or organisations with a vested interest in a particular issue or decision. They can be directly or indirectly impacted by the outcome of the community-inclusive decision-making and have varying degrees of interest and power to affect the community-inclusive decision-making in RSUPD.	<ol style="list-style-type: none"> 1. Government & the Ministries 2. State Departments 3. Statutory Boards 4. State Agencies 5. Provincial Government 6. Local Authorities 7. Civil Society 8. External (Other) 	202	6%	44	100%
4. Contributions/ best practices	Possible stakeholder contributions and recommended best practices gather the most effective and efficient ways of performing tasks or achieving specific outcomes based on evidence, research, and experience. They are methods, techniques, or strategies that have been shown to produce positive results and are widely accepted as the most effective approach to a particular task or problem. Best practices are often based on established standards, guidelines, or principles that are recognised as industry or field-specific benchmarks for success. Generally, best practices are used to ensure consistency and	<ol style="list-style-type: none"> 1. Community-context 2. Institutional 3. Practice related 4. Relational 5. Resource 6. Legal, political, & policy 7. External 	469	14%	24	55%

	quality in performance, reduce errors and issues, and achieve optimal outcomes.					
5. Participatory methods	Participatory methods refer to approaches and techniques involving active participation and collaboration of stakeholders, including community members, in decision-making processes. These methods are designed to engage stakeholders meaningfully, allowing them to contribute their knowledge, experience, and perspectives to the decision-making process. The goal of participatory methods is to create more inclusive, democratic, and effective decision-making processes that better reflect the needs and preferences of all stakeholders involved. In this case, participatory methods can be classified based on different selection criteria.	Selection criteria: 1. Phases of risk-sensitive urban planning & development 2. The spectrum of community engagement 3. Engagement purposes 4. Engagement context 5. Scale 6. Level	1021	30%	30	68%
6. Community transformation indicators	Community transformation indicators refer to measurable outcomes that reflect positive changes or improvements in a community's social, economic, environmental, and cultural well-being. These indicators can use to assess the effectiveness of community engagement/development initiatives, policies, and programs aimed at promoting inclusive, risk-sensitive, and equitable development and improving the quality of life for community members.	1. Knowledge indicators 2. Attitude indicators 3. Behaviour indicators	89	3%	7	16%
Total			3453	100%	44	100%

After identifying the key themes to promote community engagement in the context of RSUPD, it is crucial exploring the nexus between the key themes to convert them into a Holistic approach. Data collection and theoretical coding were continued until the full connectivity between the six key themes was explored. The process diagram between the six key themes was developed using the “Code intersection” features of the MAXQDA. An overview of the leading connections identified between the themes is presented in Table 4.3, supported by participants’ excerpts.

Table 4. 3: Relationships identified between the key themes

Theme	Linking theme	Reasoning for links	Excerpts (Source)
Barriers	Stakeholders	Who has power, resource, and interest to contribute overcoming the identified barriers?	<p>“...identifying those interested in contributing to overcoming barriers to community engagement can help build momentum and support for urban planning decisions that prioritise community engagement...” (E10)</p> <p>“...it is good to know who has the power and capacity to influence urban planning decisions as it helps ensure that decisions are made inclusively and equitably...” (E2)</p>
Enablers	Stakeholders	Who has power, resource, and interest to contribute promoting the identified enablers?	<p>”...it may be possible to ensure that the voices of all stakeholders are heard and that planning decisions reflect the needs and desires of the whole community by identifying those who have the power to support community engagement and engage with them...” (E3)</p> <p>“...by engaging with those who have the resources to support community engagement, it may be possible to develop engagement strategies that are tailored to the needs and context of the community...” (E9)</p> <p>“...different parties may have different influence on inclusive urban planning...a business owner may have the financial resources to support community engagement activities, while a community leader may have the social capital needed to mobilise and empower residents...” (E7)</p>
Stakeholders	Contributions/ best practices	How can key players contribute to enabling community engagement in the decision-making of RSUPD?	<p>“...understanding the specific contributions that key players can make encourages developing engagement strategies...for example, if an agency has expertise in policy-making, they may be able to build policy guidelines to promote community-based RSUP measures...” (E10)</p> <p>“...involving all stakeholders helps to build trust and strengthen relationships between stakeholders...” (E4)</p> <p>“...when key players are involved in the engagement process, they are more likely to feel invested in the outcomes and to support the planning decisions that are made...” (E7)</p>
Stakeholders	Participatory methods	How should the lead agency/conveyor group select participatory	<p>“...there is no proper tool to select participatory methods...though methods can identify based on different levels of engagement such as inform, consults etc., there are many other</p>

		methods to engage communities?	<p>aspects to consider when selecting engagement methods....” (E11)</p> <p>“...selecting right participatory methods can help to ensure that everyone has an opportunity to participate and that their voices are heard....” (E1)</p> <p>“...different communities may have different needs, preferences, and levels of capacity when it comes to engaging in the planning process....” (E13)</p> <p>“...by selecting methods that are appropriate for the specific urban planning phase and purpose, it is possible to that the community is engaged in a meaningful way....” (E7)</p> <p>“...selecting appropriate participatory methods can help to build trust between the community and the lead agency or other stakeholders....” (E5)</p> <p>“in many cases, the lead agency or conveyor group may hold the authority to select the participatory methods.... (E10)</p> <p>“...selecting participatory methods that are appropriate for engaging the community ensure that planning decisions reflect the needs of the entire community....and not just the interests of a select few.... (E2)</p>
Participatory methods	Community transformation indicators	How to measure community transformation intended to achieve through participatory intervention?	<p>“at present, there is no globally acceptable mechanism to evaluate how they (community) changed from a participatory work....” (E4)</p> <p>“...measuring community transformation helps in evaluating the effectiveness of participatory interventions. It helps to determine whether the interventions have achieved their intended outcomes and objectives....(E7)”</p> <p>“...you could have a set of indicators around knowledge, attitude and practice so that you could measure the transformation....” (E10)</p>

Once the links between the key themes were established using the evidence from the research data, a conceptual design was developed to create a process map for fostering community-inclusive RSUPD.

4.5 Approach to Theory Building and the Conceptual Design

The conceptual design presented in Figure 4.4 is developed from the findings of the GT coding procedure. It depicts the relationships identified between the six key themes and relevant categories to provide the basis for the final output: a holistic approach for fostering community engagement in the decision-making of RSUPD, which intends to develop from this study. Finally, the proposed holistic approach was developed by investigating the key constructs depicted in the conceptual design and depicting their findings in the form of a ToC (the use of ToC has been discussed in Section 9.2).

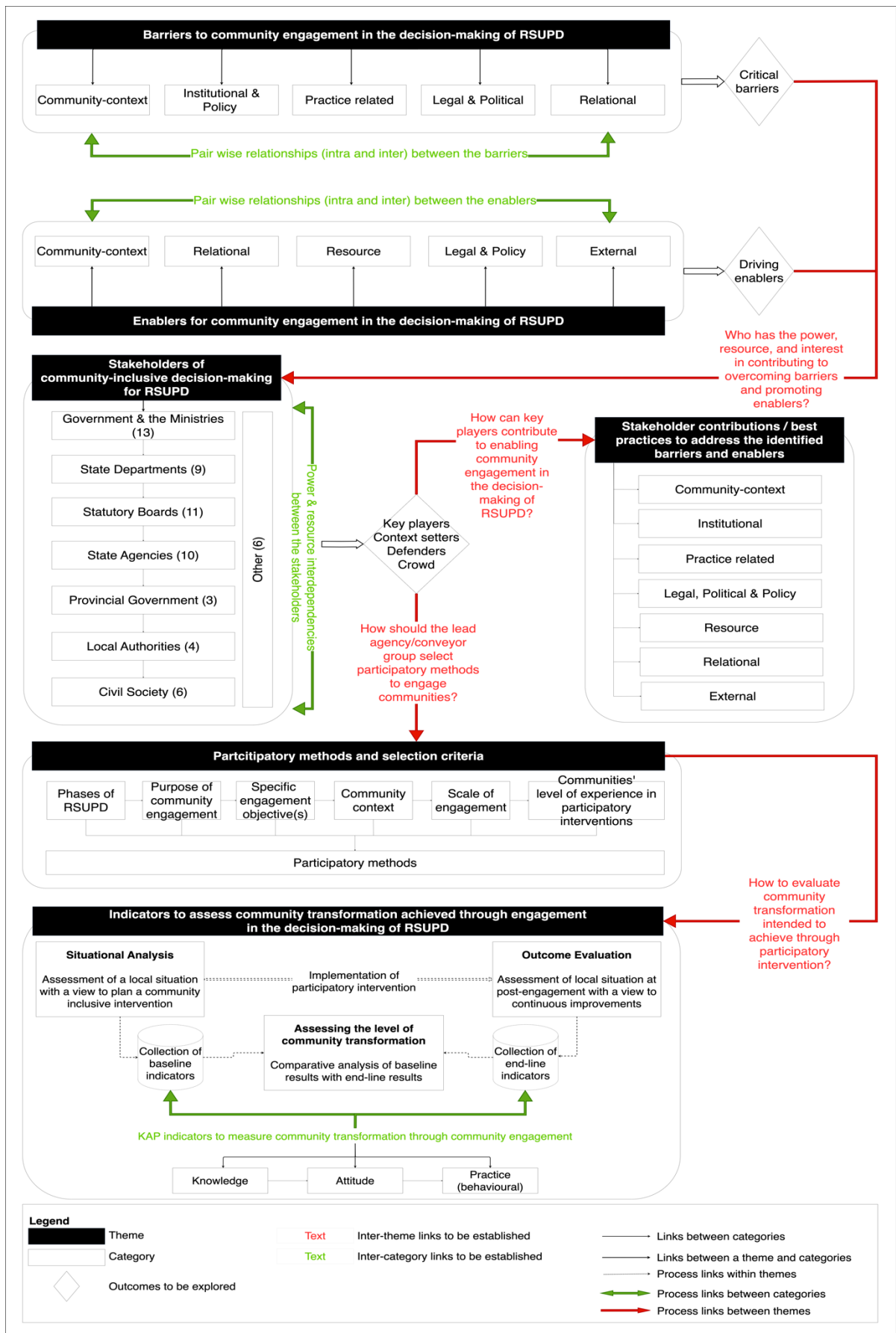


Figure 4. 4: Conceptual design created from grounded theory analytic procedure

The first theme, barriers to community engagement in the decision-making of RSUPD, is developed from five key categories: community-context barriers, institutional barriers, practice-related constraints, legal and political barriers, and relation barriers, identified from both the expert and community participants' views. Nineteen (19) hindrances to community engagement contributed to these five categories of barriers. As opined by many experts, identifying the barriers only will not serve the purpose of building a comprehensive understanding of the factors that hinders community engagement, but analysing complex interrelationships between the barriers identified is vital as it can help organisations to identify the critical barriers that need to be addressed first, prioritise actions, develop comprehensive strategies to mitigate/overcome the identified barriers and anticipate unintended consequences. This can help stakeholders to focus their resources and efforts on the most critical areas and make the most impact (P2, P9, P10). By understanding the interrelationships between different barriers, effective solutions can be developed that address multiple barriers simultaneously (P10). It further helps to identify and anticipate unintended consequences when addressing one barrier. The same concerns apply to the second theme, enablers of community engagement in the context of RSUPD. The enabler theme consists of 19 factors that support the community-inclusive decision-making of RSUPD. These were classified into five categories: community-context, relational, resource, legal & policy, and external enablers. These two themes link with the third theme: stakeholders of community-inclusive decision-making of RSUPD.

The GT analytic procedure resulted from eight stakeholder groups, including 62 stakeholders, classified into the government and the ministries, state departments, statutory boards, state agencies, provincial government, local authorities, civil society, and external stakeholders. Identifying related stakeholders who can contribute to overcoming the identified 19 barriers and strengthening the 19 enablers is crucial for several reasons. Mapping stakeholders with factors (barriers and enablers) influencing community engagement establishes the basis for mobilising their resources, such as finance, expertise, time and efforts, and utilising their power towards promoting inclusive decision-making in RSUPD (P7, P10). Analysing stakeholder contribution further helps to identify the resource and power interdependencies of different stakeholders who can influence multiple factors. As it is apparent that not all stakeholders have equal access, power, and interest in all factors, it is crucial identifying actors who can play a key role in different contexts, including community-level, institutional level, policy reforms etc. This implies the requirement of identifying

potential contributions and industry best practices to address the identified factors, which is the fourth theme.

Not all stakeholders have the power to lead UPD projects, especially when mainstreaming DRR and community engagement. Thus, a lead agency should be responsible for framing and implementing the participatory intervention (P7, P9, P10). On this note, the experts commented that the lead agency is accountable for selecting appropriate participatory methods (P5, P10). This establishes the link between stakeholders (lead agency particularly) and the fifth theme: participatory methods. They further opined that existing knowledge and their institutions also do not have a proper tool to select engagement methods; thus, the current practice mainly implements a few familiar methods despite their relevance (P7, P11). Serving this gap, the study participants further agreed on six participatory methods selection criteria, such as the RSUPD phases, the purpose of community engagement, specific engagement objective(s) (low-level purpose), community-context, the scale of engagement, and the level of local experience of engagement.

Though it is not evidenced by many participants, a few experts strongly believe that participatory interventions are only complete if it is evaluated (P7, P10). As P10 commented, evaluation can be done in different approaches, but what is important is to assess the change in communities that results from being part of an inclusive intervention. This serves as the basis for the relationship between participatory methods and the final theme: community transformation. After several rounds of data collection and analysis, it is confirmed that the intended change of a community through participatory planning & development can evaluate by using the KAP indicators. These KAP indicators consist of knowledge, attitudes, and practice (behaviour), which are the key categories identified in this theme. As depicted in Figure 4.4, the experts further commented on a mechanism for evaluating community transformation that will be discussed in subsequent analyses.

The proposed links between the key categories and the themes were further established through critical analyses of the data collected using the following methods and are presented in subsequent chapters: Chapters 5 to 9.

4.6 Summary and Link

This chapter presents the open coding, focused coding, and theoretical coding procedure followed in the study. In conclusion, the data coding resulted in 3453 coded segments, grouped into 370 codes and then into 34 categories that serve the development of six key themes. Inductive coding of thick data transcribed further revealed relationships between the key categories and the six themes, which serves as the basis for the holistic approach aimed to develop in the study. The GT based data coding emphasised the need for further analyses to develop the complete framework that are presented in subsequent chapters, as shown in Figure 4.5.

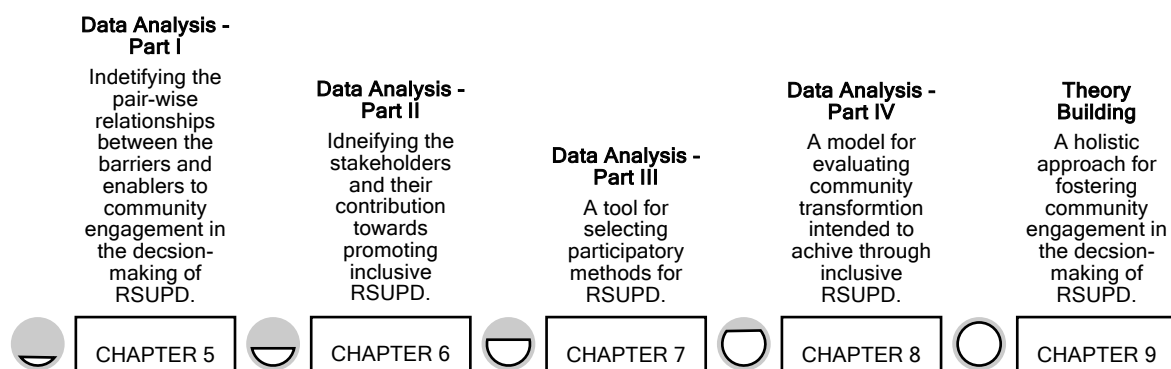


Figure 4. 5: Structure of the data analysis

CHAPTER FIVE

BARRIERS TO, AND ENABLERS OF, COMMUNITY ENGAGEMENT IN RISK-SENSITIVE URBAN PLANNING AND DEVELOPMENT

5.1 Introduction

This chapter presents the data analysis and resulting empirical findings related to the first two themes: (1) barriers and (2) enablers of qualitative data coding. Following the process depicted in Figure 4.4, Section 5.2 presents the analysis of barriers to community engagement in the decision-making of RSUPD, while Section 5.3 presents the data analysis and results regarding the enablers. The results are then interpreted in terms of structural modelling and MICMAC analysis outcomes. Finally, the key findings of the data analysis of the above two themes are summarised. The scope covered in this chapter is illustrated in Figure 5.1.

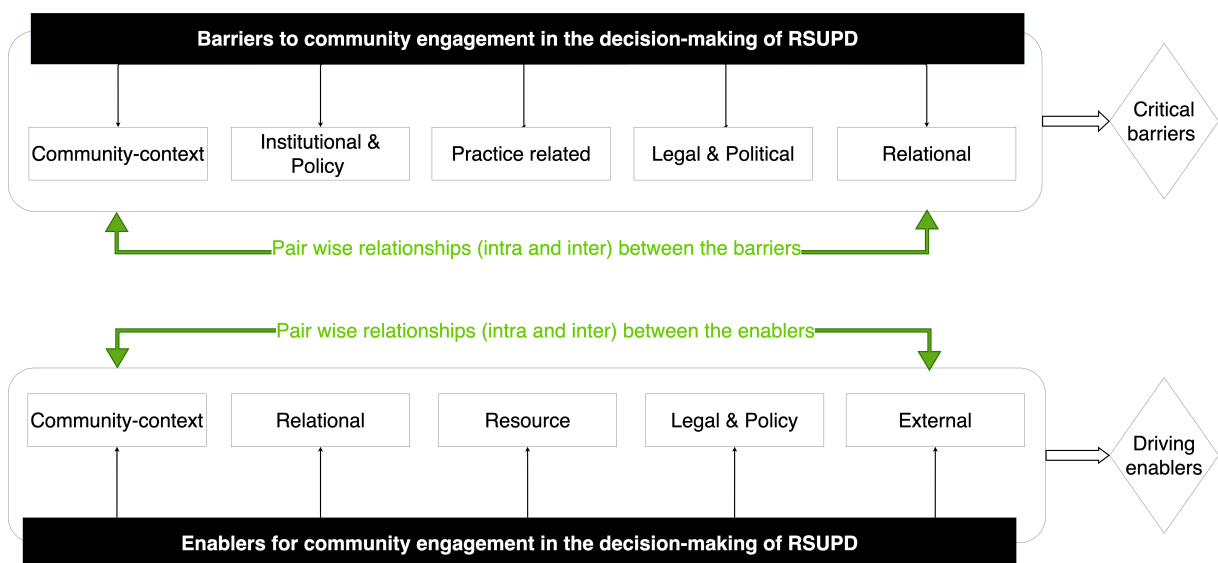


Figure 5. 1: Scope covered in Chapter Five

5.2 Barriers to Community Engagement in Risk-Sensitive Urban Planning and Development in Sri Lanka

The data garnered through inductive coding shed light on 19 themes of barriers to community entry and engagement in RSUPD, as shown in Table 5.1.

Table 5. 1: Statistics of the concepts identified for barriers

Barriers	Documents	Valid %	Segments	%
1. Communities' lack of knowledge, skills, competencies	12	50.0	123	11.5
2. Lack of engagement culture in communities	21	87.5	93	8.7
3. Less financial provision for community engagement	18	75.0	69	6.4
4. Absence of an inclusive policymaking process for DRR and UP	9	37.5	21	1.9
5. Absence of a strategic plan and a process for community selection and entry	21	87.5	120	11.2
6. Absence of/incomplete institutional framework	18	75.0	127	11.9
7. Absence of a local DRR mitigation and UD strategy	3	12.5	3	0.3
8. Top-down decision-making approach in UP	15	62.5	48	4.5
9. Less focus on community capacity building	3	12.5	3	0.3
10. No policy for employee training for community engagement	9	37.5	27	2.6
11. Lack of skilled and experienced practitioners for community engagement	18	75.0	86	8.0
12. Attitude of industry practitioners	12	50.0	82	7.7
13. Lack of stakeholder collaboration	18	75.0	110	10.3
14. Communication gaps between key domains: society, research groups, interest groups and policymakers	6	25.0	10	1.0
15. Absence of legal provisions for community engagement	9	37.5	21	1.9
16. Political dynamic	15	62.5	34	3.2
17. Conflicting interest between public and agencies	15	62.5	38	3.5
18. Poor relations of agencies with public	12	50.0	34	3.2
19. Limited time for trust building	9	37.5	21	1.9
ANALYSED DOCUMENTS	24	100.0	-	-
TOTAL SEGMENTS	-	-	1070	100.0

As observed from Table 5.1, a majority of the barriers (12) are coded in over 50% of the documents (i.e. 17 expert interviews and 7 FGD scripts). Furthermore, none of the barriers are opined by all the participants. Subcode statistics can further explain in terms of their valid percentage¹³ and the number of segments (Figure 5.2).

¹³ Valid percentage refers to the proportion of a particular code or category in relation to the total number of instances where the code or category could have been applied. This means that invalid codes, such as those that are blank or do not meet the criteria for the code, are excluded from the calculation. The valid percentage is a more accurate way of understanding the proportion of instances where a code or category is relevant.

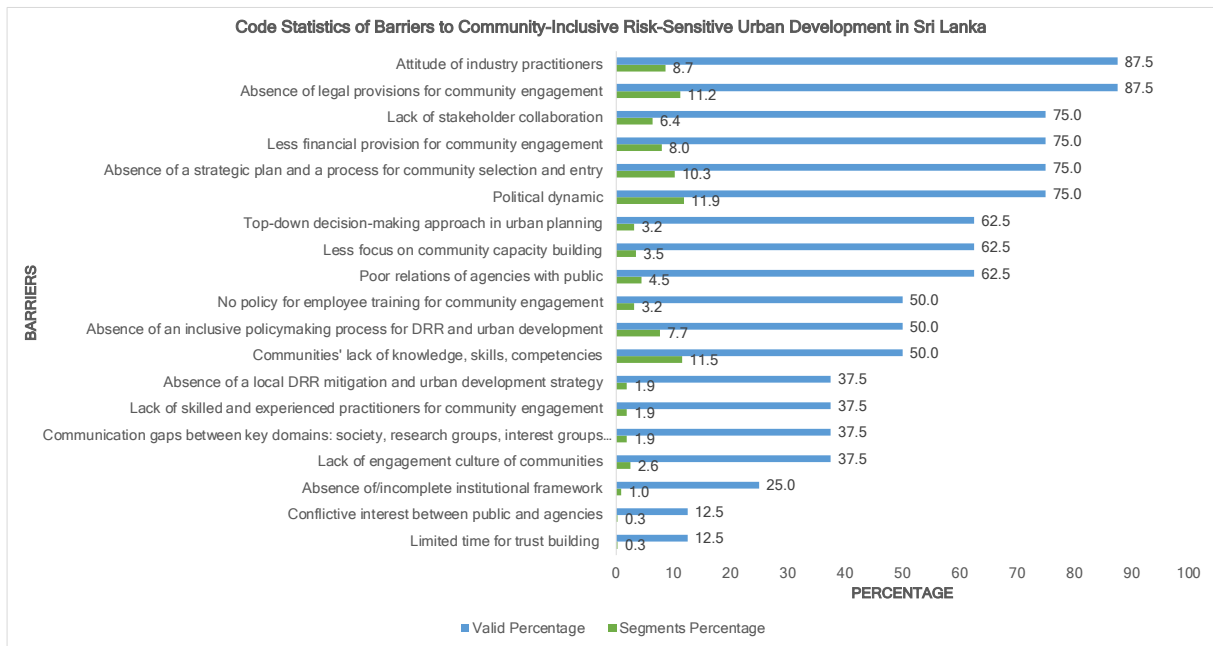


Figure 5. 2: Subcode statistics of the barriers

As shown above, the attitude of industry practitioners and the absence of legal provisions for community engagement have been included in 87% of documents. In comparison, conflictive interest between the public and agencies and the limited time for trust buildings are found only in 12% of interview scripts. However, the most cited barrier is the political dynamics and corruption (12%) in the country, followed by communities' lack of knowledge, skills and competencies of engagement (11%). Although this indicates political instability as the prime cause for hindering community inclusivity in the decision-making of UP, based on the participants' opinions, TISM and MICMAC analyses presented in subsequent sections were conducted to establish the validity of this fact.

The 19 themes of barriers identified were then classified into several categories, namely community context, institutional and policy, agency-practitioners-related, legal and political, and relational. These barrier themes are defined in Table 5.2.

Table 5. 2: Empirical data on barriers to community engagement in RSUPD in Sri Lanka

Category	Code	Barriers	Description	Concepts	Sources	
					Industry experts	Community representatives
Community-context	B1	Communities' lack of knowledge, skills, competencies	The general public have less knowledge of UP, DRR and CCA, as well as less understanding of the benefits of engagement and has no or limited skills and competencies to engage with decision-makers effectively.	<ul style="list-style-type: none"> I. Lack of knowledge and understanding of agencies' processes II. Lack of knowledge and understanding of DRR and UP III. Lack of knowledge and understanding of engagement IV. Less community capacity (skills) V. Consultation fatigue VI. Communities brain drain 	P1, P2, P3, P4, P8	C2, C3, C5, C9, C10, C16, C20, C21-C23, C25
	B2	Lack of engagement culture in communities	Communities are reluctant to come together and work for neighbourhood development due to diversities in ethnicities, religious beliefs, languages, political partisanship, and education and income levels.	<ul style="list-style-type: none"> I. Cultural, religious and language differences II. Differences in educational levels III. Differences in financial strengths (income) IV. Politicisation of communities V. Poor community leadership VI. Dominance of oral culture by a group of communities 	P1-P7, P10	C19, C20, C24, C26, C27
Institutional & policy	B3	Less financial provision for community engagement	Less budgetary allocations for community engagement in UP and DRR projects.	<ul style="list-style-type: none"> I. Limited funds for supporting community participation II. Poverty in communities 	P1-P4, P6, P7, P10	C1-C16, C24, C25
	B4	Absence of an inclusive policymaking process for DRR and UP	Communities are not allowed to make and amend policy decisions due to the absence of an entry point for locals.	<ul style="list-style-type: none"> I. Communities are not allowed to make and amend policies/decisions 	P4, P6, P7, P9, P11	C6, C19, C23, C26, C27
	B5	Absence of a strategic plan and a process for community selection and entry	Selection of community representatives as a random sample or based on political preferences without focusing on project objectives and to include a fair representation of communities.	<ul style="list-style-type: none"> II. No fair representation of communities III. Exclusion of community champions/leaders IV. Not following the constitution V. Not using the existing administrative structure to approach communities 	P1-P7, P11	C19, C21-C24, C26, C27
	B6	Absence of/incomplete	Governing agencies of UP and DRR have incomplete guidelines or no formal procedure, including the aim,	<ul style="list-style-type: none"> I. External parties implement decisions without community 	P1, P2, P4-P7	C19, C21-C24, C26, C27

		institutional framework	objectives, and purposes of engagement with participatory methods specific to varying purposes of community engagement.	<ul style="list-style-type: none"> II. No mechanism to monitor and evaluate community engagement/change III. No recognition of community rights and responsibilities 		
	B7	Absence of a local DRR mitigation and UD strategy	The country has less focus on developing local strategies for DRR and UD, thus following national strategies at the local level.	<ul style="list-style-type: none"> I. Increased vulnerability to disasters II. Missed opportunities for sustainability 	P6, P8	C19, C26, C27
	B8	Top-down decision-making approach in UP	UP and DRR decisions are made solely by ministries, national-level agency practitioners, urban planners, and politicians.	<ul style="list-style-type: none"> III. No power delegation from top to bottom levels IV. No prioritisation of community needs 	P1, P2, P4-P6	C19, C21-C24, C26, C27
	B9	Less focus on community capacity building	Less budgetary allocation for community capacity building in terms of community awareness, skill development, and empowerment towards influencing agency-made decisions.	<ul style="list-style-type: none"> I. Less financial support for vulnerable groups II. Less knowledge/skill development programmes 	P4, P10, P11	C2-C8, C22
	B10	No policy for employee training for community engagement	UPD-related agencies have no policy for periodic training for their field workers on community engagement and applying participatory methods for specific circumstances.	<ul style="list-style-type: none"> I. Resource constraints II. Informal workflow 	P1, P2, P7, P9	-
Agency-practitioners-related	B11	Lack of skilled and experienced practitioners for community engagement	Current workforce has less knowledge and skills to engage with communities effectively.	<ul style="list-style-type: none"> I. Lack of skills and competencies in community engagement II. Lack of experienced practitioners III. Lack of knowledge of participatory methods 	P1, P2, P4, P5-P7	C19
	B12	Attitude of industry practitioners	Industry practitioners lack confidence and satisfaction with locals and their opinion.	<ul style="list-style-type: none"> I. Ego II. Negative attitudes towards seldom-heard people III. No attempt for meaningful engagement with the community IV. Lack of organisational commitment and accountability 	P1, P2, P4, P7	C19, C21-23, C26
	B13	Lack of stakeholder collaboration	Silo approaches to community engagement are followed by stakeholders representing three key domains of risk-sensitive UP: UP, DRR and CCA.	<ul style="list-style-type: none"> I. Improper commanding lines between the public bodies II. Isolated development policies III. Lack of inter-organisational collaboration 	P1- P6	C19

	B14	Communication gaps between key domains: society, research groups, interest groups and policymakers.	The theoretical and practical implications of the research are not used in the form of data and information by the decision makers, neither to make decisions nor to legitimise decisions. Conversely, what research produces is not from proper analysis of inground situations or what industry demands.	<ul style="list-style-type: none"> I. Inevitable realities: gaps between interest groups and policymakers II. Mismatch of academic research and industry demands 	P2, P6, P9, P10	C19, C21-24, C26, C27
Legal & political	B15	Absence of legal provisions for community engagement	There is no national law to enforce community engagement in UP.	<ul style="list-style-type: none"> I. Inactive legal provisions II. No law for community engagement 	P4, P5, P7	-
	B16	Political dynamic	Dynamics in political governance and political corruption discourage community entry and inclusion in government-led development projects.	<ul style="list-style-type: none"> I. Changing master plans for UD II. Political influence and corruption III. Political followers among officials 	P1, P2, P4, P6, P7, P10	C2, C19, C24, C26, C27
Relational	B17	Conflictive interest between public and agencies	Communities' requirements are not captured in agency-led project plans.	<ul style="list-style-type: none"> I. Gaps between policymakers and society's needs II. Inflexibility in finding a common agenda with public 	P1-P4, P7, P10	C17, C19-C24, C26
	B18	Poor relations of agencies with public	Decision-makers/implementors and communities are reluctant to engage with each other due to lessons learnt from previous inclusive projects.	<ul style="list-style-type: none"> I. Use of technical language that cannot understand by public II. Communities' lack of trust, respect, and confidence in public procedures III. Lessons learnt - bad experience 	P1, P2, P4, P5, P11	-
	B19	Limited time for trust building	Projects with a short life span provide no or less time for practitioners to build trust with communities thus, resulted in community protest.	<ul style="list-style-type: none"> I. Project with shorter timespan II. Limited budget for engagement 	P1, P2, P4, P11	C19, C26, C27

As shown in Table 5.2, the barriers were opined by both experts and communities but from different perspectives and frequencies. Figure 5.3 below presents the experts' and communities' perspectives towards these barriers in terms of the number of participants.

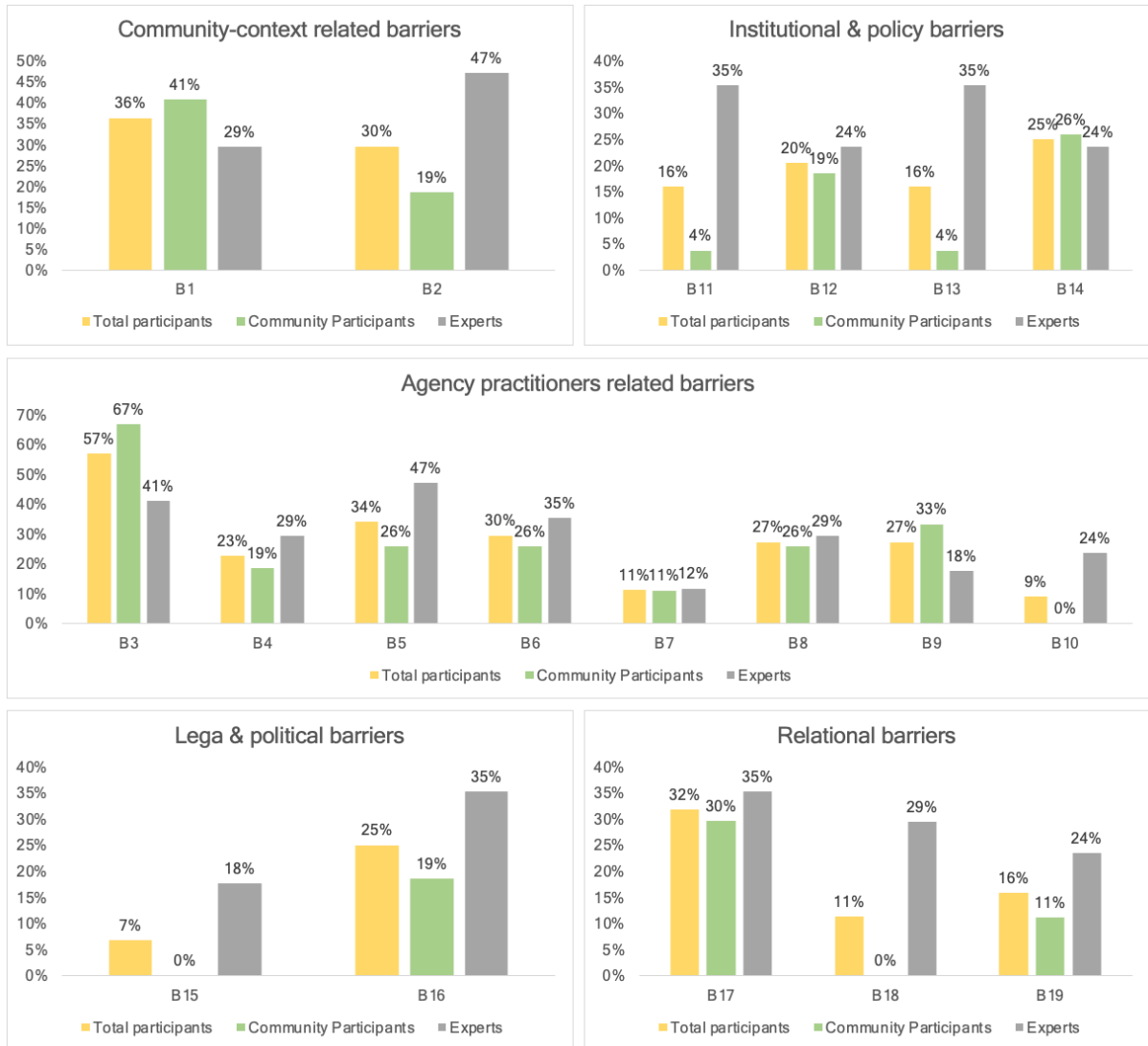


Figure 5. 3: Analysis of the study participants' contribution to identifying the barriers

As shown in Figure 5.3, the most cited barrier is the fewer financial provisions for engagement (B3), which is also the primary concern of community participants. In contrast, experts highlight two key barriers: a lack of engagement culture within communities (B2) and the absence of a strategic plan and selection process for community involvement (B5). Furthermore, industry practitioners acknowledge all 19 barriers but prioritise them differently. Community participants, on the other hand, seem unaware of how the absence of an employee training policy (B10), legal provisions (B15), or poor relationships between agencies and the public (B18) can

affect community engagement. Moreover, it is noteworthy that the absence of a local DRR and UD strategy is the least recognised barrier among experts.

5.2.1 Determination of pair-wise relationships between barriers through interpretation of contextual relationships

The next step is to define the contextual relationships between the listed barriers. Here, pair-wise contextual relationships were identified between each barrier using experts' opinions (i.e., whether B1 is influencing B2 or B2 is influencing B1 or both B1 and B2 are influencing each other, and so on). For this study, the logical reasons for how each barrier influences or is influenced by another were recorded as a logical knowledge base, as presented in Appendix 7(a). Since the study considers 19 barriers, the total number of possible relationships is 342 (19*18). Of all, 60 pair-wise relationships between the 19 barriers were established with reasoning. The knowledge base provides a single interpretive statement formed by combining opinions provided by the experts for each pair-wise relationship.

5.2.2 Structural Self-Interaction Matrix (SSIM)

Experts' interpretations of the contextual relationships of the barriers presented in Appendix 7(a) were converted to a nominal matrix of $i \times j$ (i.e., where i and j represent row variables and column variables, respectively) based on the directions of pair-wise relationships. According to the TISM methodology, the four symbols stated below were applied to represent the direction of relationships between two barriers (i and j):

- V : Barrier “i” influences barrier “j”, e.g., B1 influences B4; thus, the relationship is denoted as 'V' in the SSIM;
- A : Barrier “i” is influenced by barrier “j”, e.g., B9 is influenced by B1; thus, the relationship is denoted as 'A' in the SSIM;
- X : Barriers “i” and “j” influence each other, e.g., B1 and B2 influence each other; thus, the relationship is denoted as 'X' in the SSIM;
- O : Barriers “i” and “j” are unrelated, e.g., there is no relationship between B1 and B3; thus, the relationship is denoted as 'O' in the SSIM.

Using these symbols as contextual relationships, Table 5.3 was prepared for 19 barriers.

Table 5. 3: Structural Self-Interaction Matrix (SSIM) of barriers to community engagement in RSUPD in Sri Lanka

Barrier Theme	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12	B13	B14	B15	B16	B17	B18	B19
B1		X	O	V	O	O	O	O	A	O	O	O	O	O	O	O	O	O	O
B2			O	O	O	O	O	O	A	O	O	O	O	O	O	O	O	O	O
B3				V	O	X	A	O	V	V	O	A	A	A	A	A	O	V	O
B4					A	A	O	O	O	O	A	A	O	O	A	A	V	O	O
B5						A	O	O	O	O	A	A	A	O	O	A	O	V	O
B6							A	O	V	O	A	A	O	O	A	A	O	O	O
B7								O	V	O	O	O	O	O	O	A	O	O	O
B8									O	O	O	O	O	O	A	A	V	O	O
B9										O	A	A	O	A	A	O	O	O	O
B10											V	A	O	O	A	O	O	O	O
B11												O	O	V	O	O	O	V	O
B12													O	O	O	A	O	V	O
B13														A	O	O	O	O	O
B14															O	O	V	V	O
B15																X	O	O	O
B16																	O	V	O
B17																		O	A
B18																			A
B19																			

5.2.3 Initial reachability matrix (IRM)

Next, the SSIM was transformed into an IRM. All the V, A, X, and O entries of SSIM were transformed into binary digits (1's and 0's). The rules for converting SSIM into an IRM are explained below:

- Each V in the SSIM, cell (j, i) entry becomes 0 and cell (i, j) entry becomes 1
- Each A in the SSIM, cell (j, i) entry becomes 1 and cell (i, j) entry becomes 0
- Each X in the SSIM, entries in both cells (j, i) and (i, j) become 1
- Each O in the SSIM, entries in both cells (j, i) and (i, j) become 0

Using these correlations, the reachability matrix given in Table 5.4 is composed.

Table 5. 4: Initial Reachability Matrix (IRM) of barriers to community engagement in RSUPD in Sri Lanka

Barrier Theme	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12	B13	B14	B15	B16	B17	B18	B19
B1	1	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
B2	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
B3	0	0	1	1	0	1	0	0	1	1	0	0	0	0	0	0	0	1	0
B4	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0

B5	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0
B6	0	0	1	1	1	1	0	0	1	0	0	0	0	0	0	0	0	0	0
B7	0	0	1	0	0	1	1	0	1	0	0	0	0	0	0	0	0	0	0
B8	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0
B9	1	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
B10	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0
B11	0	0	0	1	1	1	0	0	1	0	1	0	0	1	0	0	0	1	0
B12	0	0	1	1	1	1	0	0	1	1	0	1	0	0	0	0	0	1	0
B13	0	0	1	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0
B14	0	0	1	0	0	0	0	0	1	0	0	0	1	1	0	0	1	1	0
B15	0	0	1	1	0	1	0	1	1	1	0	0	0	0	1	1	0	0	0
B16	0	0	1	1	1	1	1	1	0	0	0	1	0	0	1	1	0	1	0
B17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
B18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
B19	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1

5.2.4 Check for transitive links and develop the Final Reachability Matrix (FRM)

Having composed the IRM, the transitivity rule was applied to contextual pair-wise relationships identified for the barrier themes. The transitivity rule refers to if factor "i" affects factor "j" and factor "j" affects factor "k", then factor "i" will affect "k". Accordingly, the IRM was checked for existing transitive links, and the transitive links generated were then indicated as "1*". The FRM was updated until full transitivity was established, thereby identifying 89 transitive links, as shown in Table 5.5. The FRM can reveal whether there is a path connecting one barrier to another. If the cell (i, j) in the final reachable matrix is equal to 0, then there is no direct or indirect relationship from factor "i" to factor "j".

Table 5. 5: Final Reachability Matrix (FRM) of barriers to community engagement in RSUPD in Sri Lanka

Barrier Theme	B 1	B 2	B 3	B 4	B 5	B 6	B 7	B 8	B 9	B 10	B 11	B 12	B 13	B 14	B 15	B 16	B 17	B 18	B 19
B1	1	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1*	0	0
B2	1	1	0	1*	0	0	0	0	0	0	0	0	0	0	0	0	1*	0	0
B3	1*	1*	1	1	1*	1	0	0	1	1	1*	0	1*	1*	0	0	1*	1	0
B4	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
B5	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	1*	1	0
B6	1*	1*	1	1	1	1	0	0	1	1*	1*	0	1*	1*	0	0	1*	1*	0
B7	1*	1*	1	1*	1*	1	1	0	1	1*	1*	0	1*	1*	0	0	1*	1*	0
B8	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0
B9	1	1	0	1*	0	0	0	0	1	0	0	0	0	0	0	0	1*	0	0
B10	1*	1*	1*	1*	1*	1*	0	0	1*	1	1	0	1*	1*	0	0	1*	1*	0
B11	1*	1*	1*	1	1	1	0	0	1	1*	1	0	1*	1	0	0	1*	1	0
B12	1*	1*	1	1	1	1	0	0	1	1	1*	1	1*	1*	0	0	1*	1	0
B13	1*	1*	1	1*	1	1*	0	0	1*	1*	1*	0	1	1*	0	0	1*	1*	0
B14	1*	1*	1	1*	1*	1*	0	0	1	1*	1*	0	1	1	0	0	1	1	0
B15	1*	1*	1	1	1*	1	1*	1	1	1	1*	1*	1*	1*	1	1	1*	1*	0
B16	1*	1*	1	1	1	1	1	1	1*	1*	1*	1	1*	1*	1	1	1*	1	0
B17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0

B18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
B19	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1

5.2.5 Level determination by partitioning the FRM

The level partitioning allows for identifying the level-wise placement of barriers. These levels make the basis for the digraph and TISM model. Using the FRM in Table 5.5, the reachability set, antecedent set, and intersection set were computed for each barrier theme to establish their partition levels. The reachability set is the assembly of the barrier themes that are affected by other barriers and themselves. In contrast, the antecedent set assembles the barrier themes that affect the other barriers and themselves. The intersection set includes barrier themes common to both the reachability and antecedent sets. The barrier for which the intersection set is the same as the reachability set was designated the topmost level (Level I) and the Level I barriers were removed from the entire set for the following iteration table. This process was continued until each barrier was assigned its corresponding levels. Finally, after seven iterations, all the barrier themes were assigned their levels, and this iterative process is represented in Table 5.6.

Table 5. 6: Hierarchical partitioning of barriers to community engagement in RSUPD in Sri Lanka

Barrier Theme (Mi)	Reachability Set R(Mi)	Antecedent Set A(Ni)	Intersection Set $R(Mi) \cap A(Ni)$	Level
B17	17	1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,19	17	1
B18	18	3,5,6,7,10,11,12,13,14,15,16,18,19	18	1
B4	4	1,2,3,4,5,6,7,9,10,11,12,13,14,15,16	4	2
B8	8	8,15,16	8	2
B19	19	19	19	2
B1	1,2	1,2,3,6,7,9,10,11,12,13,14,15,16	1,2	3
B2	1,2	1,2,3,6,7,9,10,11,12,13,14,15,17	1,2	3
B5	5	3,5,6,7,10,11,12,13,14,15,16	5	3
B9	9	3,6,7,9,10,11,12,13,14,15,16	9	4
B3	3,6,10,11,13,14	3,6,7,10,11,12,13,14,15,16	3,6,10,11,13,14	5
B6	3,6,10,11,13,14	3,6,7,10,11,12,13,14,15,16	3,6,10,11,13,14	5
B10	3,6,10,11,13,14	3,6,7,10,11,12,13,14,15,16	3,6,10,11,13,14	5
B11	3,6,10,11,13,14	3,6,7,10,11,12,13,14,15,16	3,6,10,11,13,14	5
B13	3,6,10,11,13,14	3,6,7,10,11,12,13,14,15,16	3,6,10,11,13,14	5
B14	3,6,10,11,13,14	3,6,7,10,11,12,13,14,15,16	3,6,10,11,13,14	5
B7	7	7,15,16	7	6
B12	12	12,15,16	12	6
B15	15,16	15,16	15,16	7
B16	15,16	15,16	15,16	7

5.2.6 Satisfy with transitive test and modification of interpretive logic knowledge base with transitive link interpretations

In this step, the transitive links established in the FRM were revisited to identify the corresponding barriers which manipulated such transitive interrelationships. A transitive link may cause not only one element but several elements. For example, B1 is transitively related to B17 due to B4, while B7 is transitively linked to B4, given the impact of two elements: B3 and B6. Afterwards, the transitive relations were presented to the experts involved in phase 2 data collection and discussed to establish the validity of the resulting transitive links. Following, the logic knowledge base developed in Appendix 7(a) was updated to incorporate experts' opinions for satisfied transitive links (see Appendix 7(b)). In this exercise, it is observed that the experts accept not all the transitive links; hence, the unsatisfied transitive links were eliminated from further study. Accordingly, at the end of phase 2 data collection, the experts found that only 10 out of 89 transitive links were satisfied by the experts while eliminating 79 transitive links.

5.2.7 Binary interaction matrix of the themes of barriers

Following the transitive link test and considering the experts' interpretations of transitive links, the binary interaction matrix was developed to include all direct and approved significant transitive links. Accordingly, the binary interaction matrix was developed by entering "1"s in the FRM and "1*" approved by the experts as "1"s, and the original "0"s in the FRM, and unsatisfied transitive links were input as "0"s, as shown in Table 5.7.

Table 5. 7: Binary interaction matrix of barriers to community engagement in RSUPD in Sri Lanka

Barrier Theme	B 1	B 2	B 3	B 4	B 5	B 6	B 7	B 8	B 9	B 10	B 11	B 12	B 13	B 14	B 15	B 16	B 17	B 18	B 19	Driving Power
B1	1	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
B2	1	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
B3	0	0	1	1	1	1	0	0	1	1	0	0	0	0	0	0	0	1	0	7
B4	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	2
B5	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	3
B6	0	0	1	1	1	1	0	0	1	0	0	0	0	0	0	0	0	0	0	5
B7	0	0	1	0	0	1	1	0	1	1	0	0	0	0	0	0	0	0	0	5
B8	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0	2
B9	1	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	3
B10	0	0	0	0	1	0	0	0	1	1	1	0	0	0	0	0	0	0	0	4
B11	0	0	0	1	1	1	0	0	1	0	1	0	0	1	0	0	0	1	0	7
B12	0	0	1	1	1	1	0	0	1	1	1	1	0	0	0	0	0	1	0	9
B13	0	0	1	0	1	0	0	0	1	0	0	0	1	0	0	0	0	0	0	4
B14	0	0	1	0	1	0	0	0	1	0	0	0	1	1	0	0	1	1	0	7

B15	0	0	1	1	0	1	1	1	1	0	1	0	0	1	1	0	0	0	10
B16	0	0	1	1	1	1	1	0	0	0	1	0	0	1	1	0	0	0	9
B17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
B18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
B19	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	3
Dependent Power	3	3	8	10	9	7	3	3	10	5	3	2	2	2	2	5	7	1	

5.2.8 Develop a digraph with significant transitive links

The direct graph (digraph) represents the hierarchy of barriers to participatory RSUPD in Sri Lanka. While ISM drops all transitive links in developing the digraph, one of the strengths of TISM is to retain transitive links that have distinct influences (i.e., accepted by the experts). Accordingly, the 19 barrier themes were placed in respective positions of the hierarchy based on their levels determined in Table 5.7, and the links between the barriers are symbolised with arrows referring to the binary interaction matrix in Table 5.7. The digraph developed is illustrated in Figure 5.4 below.

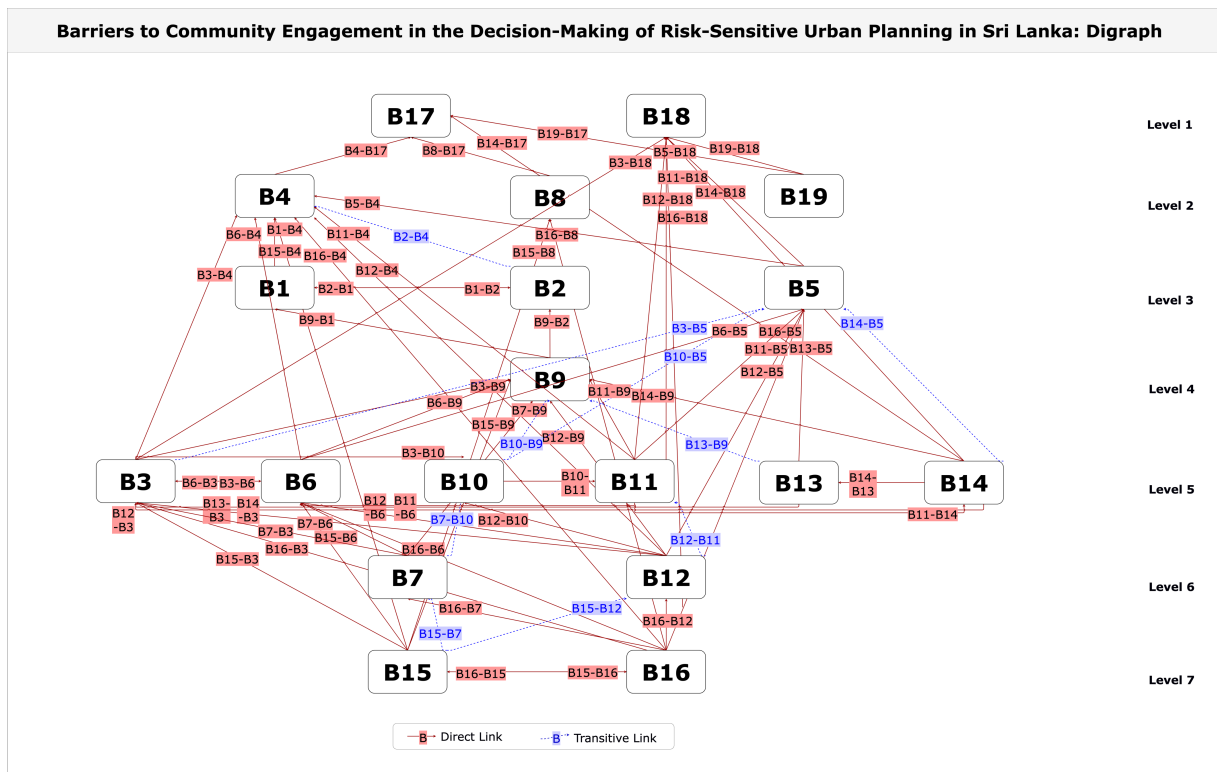


Figure 5. 4: Digraph of barriers to community engagement in RSUPD in Sri Lanka

Figure 5.4 includes 60 direct links established via the opinions of the industry experts and community representatives, with ten significant transitive links retained with valid interpretations of experts. The digraph provides an indication of the driving barrier to the dependent barrier for each link to enhance the clarity of the presentation; this helps to understand the driving barrier when the linked barriers are positioned at distance levels. For example, the arrow text of "B3-B18" clearly indicates that this arrow is

coming from B3 at level 5 to B12 at level 1 (B3 and B12 are related but positioned at distance levels).

5.2.9 Interpretive matrix

The interpretive matrix provides an overview of each direct and satisfying transitive link's interpretations. The interpretive matrix is obtained by interpreting all cells with the value '1' in the binary interaction matrix. Appendix 7 (a and b) presents the interpretations established through participants' opinions for the interactions between the 19 barrier themes.

5.2.10 Develop the total interpretive structural model

The final step is the development of the TISM model. Here, the information in the interpretive matrix is portrayed over the respective links in the obtained digraph, thereby obtaining the fully reasoned model, as shown in Figure 5.5.

Barriers to Community Engagement in the Decision-Making of Risk-Sensitive Urban Planning in Sri Lanka: TISM

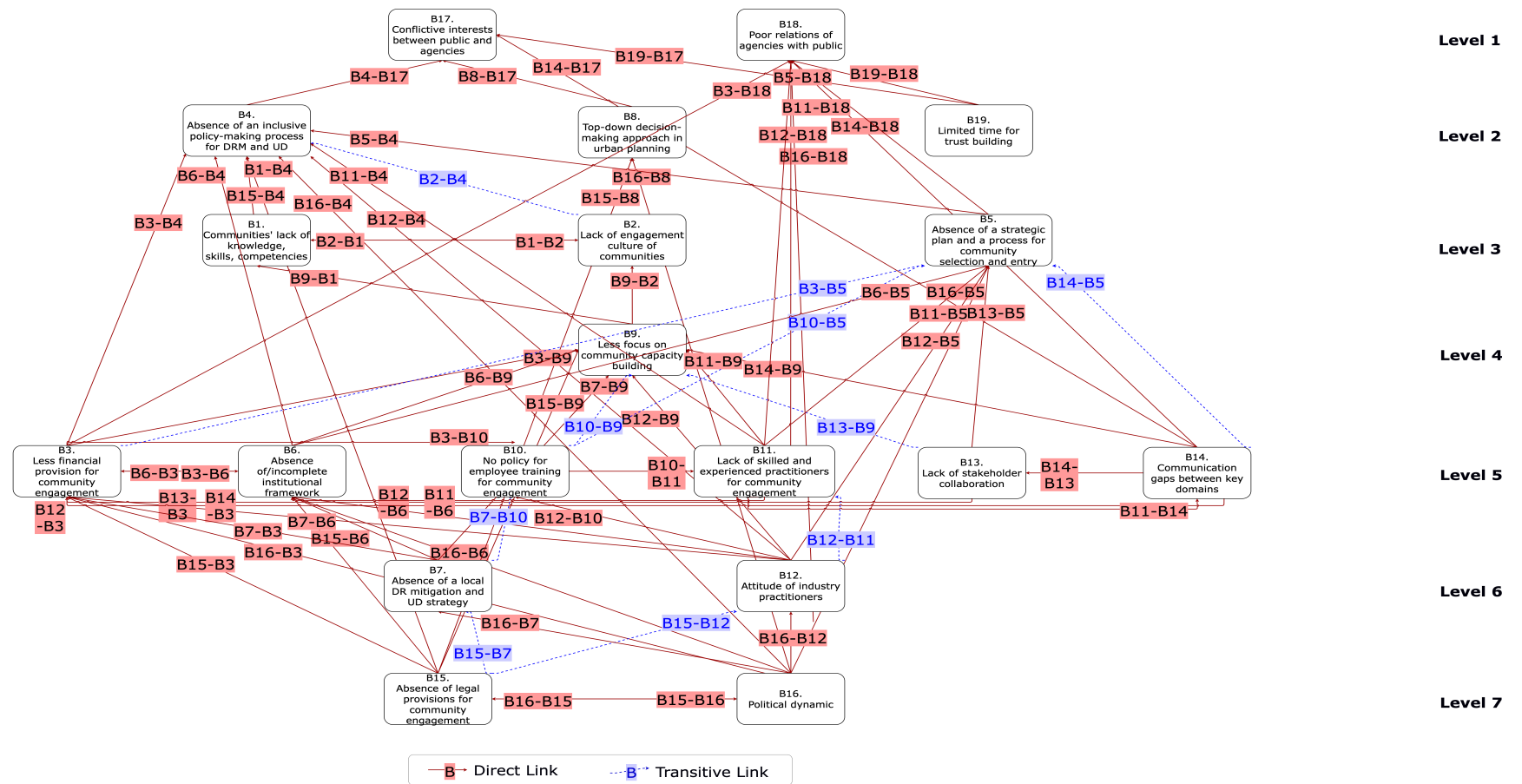


Figure 5. 5: Total interpretive structural model of barrier to community engagement in RSUPD in Sri Lanka (DRM - Disaster Risk Management, UP - Urban planning)

A seven-level TISM model (Figure 5.5) was obtained with driving barriers positioned at the bottom of the hierarchy while the dependent barriers are placed at the top. Accordingly, the absence of political dynamics and corruption in Sri Lanka (B16) and the absence of legal provisions (B15) are the driving force for all other barriers. Notably, both barriers belong to the legal and political barriers. Political dynamics in Sri Lanka are complex and divisive, often resulting in power struggles and conflicts between political parties and interest groups. This challenges community engagement in decision-making processes, as "communities may be marginalised or excluded from the decision-making process if they are not aligned with those in power" (P2, P4, P9). Furthermore, corruption is a major issue in Sri Lanka, with reports of bribery, nepotism, and cronyism in government and public institutions. Thus, decision-making is influenced by personal interests rather than the needs of the community, leading to decisions that may not be in the community's best interests or may even put them at risk (P1, P7). Additionally, the lack of a master plan for UD due to changing governments is highlighted. P7 stated, "...in countries like India, no matter what government changes, they have a master plan for whatever number of years...in our country, we have so many short-term quick planning processes...that creates much confusion both for the policymakers as well as for the community members because they do not see the big picture".

Even though the government system in Sri Lanka is separate from its law, the legal system in Sri Lanka is influenced by and subject to political control to some extent. Historically, the Sri Lankan government has been criticised for undermining the independence of the judiciary and interfering in legal proceedings, particularly in cases related to human rights violations and political controversies. This can compromise the independence and impartiality of the legal system for enforcing legal provisions for inclusive UP. Without clear legal frameworks and legislative support, "the funds for inclusive planning may not be allocated" (P4). From a community point of view, "communities may not have a clear understanding of their rights and responsibilities in the decision-making process...this can lead to a lack of participation and engagement from community members, as they may not feel empowered to voice their opinions or concerns..." (P5). P4 reiterated above stating, "community members may be hesitant to speak out against proposed projects or plans that they believe could be detrimental to their communities without legal protections in place". On the contrary, P7 posits, "whether we have legislation or not, community engagement is part and parcel of most planning processes...what constraints it is not the absence of legal support but

ignorance during the practice". However, many believe that the political dynamic and the absence of legal provisions can result in a lack of accountability and transparency in the decision-making process. This can lead to mistrust between community members and decision-makers, as well as a lack of confidence in the decision-making process itself. Thus, prioritising actions to address these two driving barriers may create a supportive setting for inclusive UP.

As observed from the model, the legal and political factors influence the institutions, policy, and industry practitioners (See level 6). Mainly, the absence of a master plan restricts local DR mitigation and UD strategies (B7). As not only the general public but also industry practitioners have political partisanship; thus, they tend to "select locals from their political parties for participatory initiatives" (P5). From a different viewpoint, practitioners' negative attitude on seldom-heard (P1, P2, P11, P13, P15) and lack of organisational commitment and accountability (P1, P2) constraints effective engagement. All the above consequences are due to the negative attitude of industry practitioners (B12).

Most of the barriers, 6 out of 19, are positioned at level 5. They are also institutional, policy or industry practitioner-related constraints. These barriers include fewer financial provisions (B3), absence of/incomplete institutional framework (B6), no policy for employee training (B10), lack of skilled and experienced practitioners (B11), lack of stakeholder collaboration (B13), and communication gaps between the key domains (i.e., society, research groups, industry practitioners, and policymakers) (B14). As observed from Table 9, these barriers influence and are influenced by each other, while a few other barriers of B7, B12, B15 and B16 further drove these.

Less focus on community capacity building (B9) is the only barrier at the fourth level, the middle level of the hierarchy. B9 is influenced by all other barriers, except B16, discussed above.

Three barriers, namely communities' lack of knowledge, skills, and competencies (B1), lack of engagement culture of communities (B2), and absence of a strategic plan and a process for community selection and entry (B5), are positioned at level 3. Communities themselves induce both B1 and B2 but seem to remain over the years due to the agencies' less focus on community capacity building (B9).

The next set of most minor driving but most dependent barriers are the absence of an inclusive policymaking process (B4), a top-down decision-making approach following in UP (B8), and limited time given for trust-building (B19) that are positioned at level 2.

Many practitioners opined that "most of the decisions are being done by the moderator, animators or community mobilisers, and the solution might not work" (P7,) while P4 added, "we were not able to fully collaborate.... because we do not engage beneficiaries during the design of the project". This is crucial because P7 opined that "according to law, there is a nice sugar-coded word like 60 days for public hearing...do you think the community has access to that type of document? No...and did you see any kind of visuals in your GN's office or a Samurdhi office or a DS office? No, everything is in the government ministries...".

Conflictive interests between the general public and agencies (B17) and poor relations of agencies with the public (B18) at level 1 are the minor influential barriers. P2 opined, "...if the overall project is not trying to address the social, cultural, and economic aspects of the community, then they might not consider these projects as better options, then getting their participation can be incredibly challenging...". Seconding that, P1 stated "...practitioners have to be a bit flexible in terms of accommodating the needs of the community...". As these are found at the topmost layer of the model, it infers that these barriers are not the pivotal barriers to the inclusion of communities in the decision-making of RSUPD but may be influenced by other critical barriers.

5.2.11 MICMAC Analysis of the barriers to community engagement in risk-sensitive urban planning and development in Sri Lanka

MICMAC analysis helps segregate factors regarding their dependence and driving power. The driving power and dependence power for each barrier were calculated by summation of rows to analyse the driving power and columns to study the dependence power for each barrier. This was facilitated through a cross-impact matrix multiplication of the binary interaction matrix shown in Table 5.7. In the TISM approach, MICMAC analysis was used to cluster the barriers into four quadrants comprising (1) autonomous barriers, (2) dependent barriers, (3) linkage barriers, and (4) independent barriers (as explained in section 3.8.2.3). Illustrating the above classification, Figure 5.6 shows the cluster diagram of the barriers to community engagement in RSUPD in Sri Lanka.

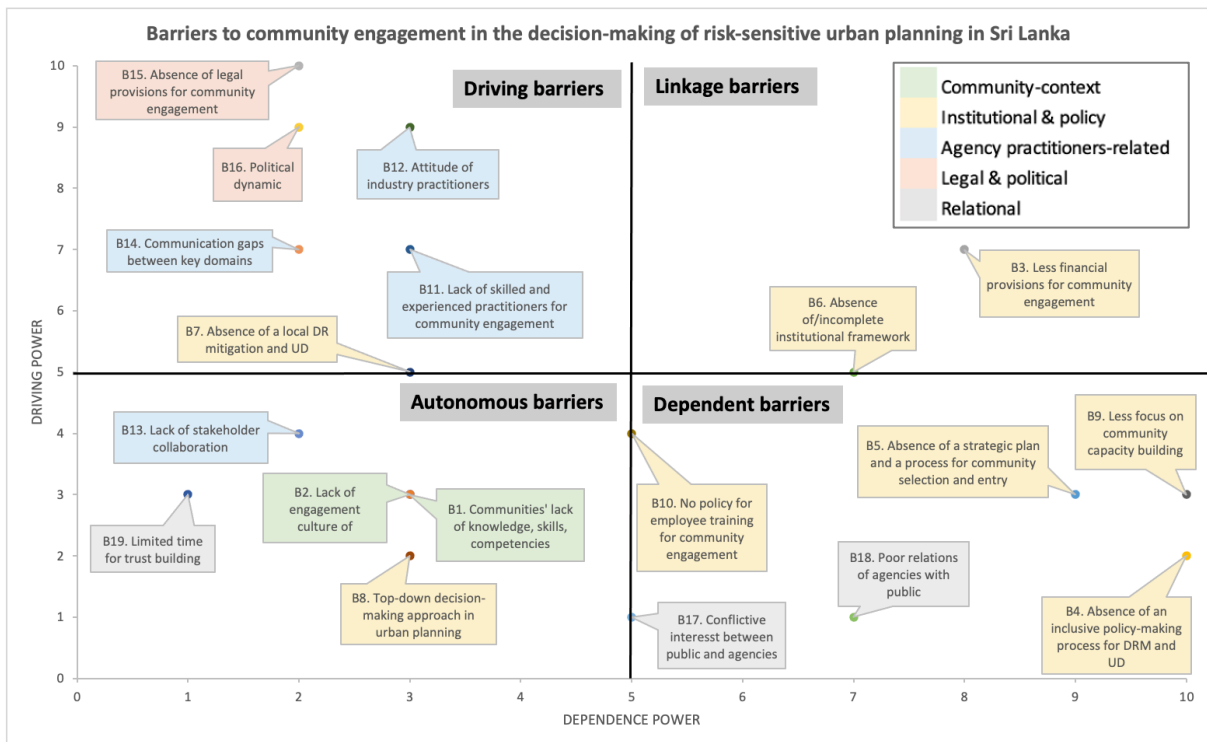


Figure 5. 6: Cluster diagram of barriers to community engagement in RSUPD in Sri Lanka

As observed from the MICMAC graph, six out of 19 barriers have resulted as independent or driving factors that impede inclusivity in RSUPD. These are the absence of legal provisions (B15); political dynamics and corruption in the country (B16); attitude of industry practitioners (B12); communication gap between the key domains (i.e., policymakers, practitioners, academics, and locals) (B14); lack of skilled and experienced practitioners (B11); and the absence of local strategies for DR mitigation and regional development (B7). Hence, these act as the root cause for the other barriers and should be treated with topmost priority and eliminated first. Amongst, B15 and B16 are the most significant, placing them at the bottom of the structural model. Notably, both of these barriers are legal and political factors, whereas three other barriers result from agency practitioners' bad practices. This implies that most of the factors that impede community entry and participation in making and executing the inclusive decisions of RSUPD in Sri Lanka can be lowered by enacting an act for community engagement or by introducing strict legal provisions for community engagement in DRM and UPD and through employee training and attitude development.

Two barriers fall in the linkage quadrant: fewer financial provisions (B3) and the absence of an institutional framework (B6) for community engagement. These factors

are the most volatile part of the TISM, as any changes to these will disturb the entire system either positively or negatively (Mathivathanan et al., 2021). The structural model also confirms this, as B3 and B6 are placed middle of the hierarchy. B3 influencing B4, B9, B10, and B18 leads to no or less funding for situational analysis involving communities, capacity building, and employee training. B6 is affiliated with B10, B11, B13 and B14. Thus, resulting in no methods defined for inclusive policymaking, ill-defined community selection criteria, and no guideline for community capacity-building. Hence, these two are critical barriers to the entire system because they have the strength and also show high dependence. Observing both the driving and linkage barriers, the study indicates that community inclusion in the decision-making of RSUPD in Sri Lanka is predominantly impeded by their government, relevant institutions, and agency practitioners.

Six barriers fall in the dependent region. Hence, it can be inferred that institutional barriers such as the absence of an inclusive policymaking process for DRM and UP (B4), less focus on community capacity building (B9), absence of a strategic plan and a process for community selection and entry (B5), and no employee training policy for community engagement (B10) and two relational barriers of poor practitioner-public relationship (B18) and conflictive interest between public and agencies (B17) are highly dependent on driving and linkage factors. Given their low driving power, these cannot individually or highly disrupt the system (Mathivathanan et al., 2021). Given that B17 and B18 occupy the top of the structural model because of their higher dependency, these two factors can be overcome by addressing the institutional barriers.

Five of 19 barriers, namely limited time for trust building (B19), lack of stakeholder collaboration (B13), top-down decision-making approach in UP (B8), lack of engagement culture of communities (B2), and communities' lack of knowledge, skills and competencies (B1), fall in the autonomous region. These are silent barriers, thus not critical constraints to community engagement in the decision-making and implementation of RSUPD in Sri Lanka. They do not practically affect the system positively or negatively (Mathivathanan et al., 2021). Notably, the study proves that the two factors (B1 and B2) arising from the community context are not the central causes of the lack of community participation in RSUPD in Sri Lanka.

5.3 Enablers of Community Engagement in Risk-Sensitive Urban Planning and Development in Sri Lanka

Similar steps were followed in analysing the enablers of community entry and engagement in RSUPD in Sri Lanka. Similar to the barriers, the inductive coding identified 19 themes of enablers of community entry and engagement in RSUPD in Sri Lanka, as shown in Table 5.8.

Table 5. 8: Statistics of the concepts identified for enablers

Enablers	Documents	Valid %	Segments	%
1. Communities' lived experience	3	12.5	17	3.2
2. Community literacy	7	25.0	10	1.9
3. Community-based organisations (CBOs)	10	37.5	21	3.8
4. Community committees	10	37.5	24	4.4
5. Community leaders	7	25.0	17	3.2
6. Monitoring and feedback from communities	21	75.0	154	28.5
7. Support from field workers	7	25.0	21	3.8
8. Technical experts	7	25.0	14	2.5
9. Impact research	7	25.0	17	3.2
10. Trust built with communities	7	25.0	14	2.5
11. External funds	7	25.0	21	3.8
12. Monetary incentives to communities	14	50.0	21	3.8
13. Social media	14	50.0	48	8.9
14. Digital telecommunication infrastructure	3	12.5	10	1.9
15. Administration system till the village level	3	12.5	3	0.6
16. Right to Information Policy	7	25.0	7	1.3
17. Divisional level acts	14	50.0	24	4.4
18. International collaboration	3	12.5	7	1.3
19. Non-governmental organisations (NGOs)	14	50.0	93	17.1
ANALYSED DOCUMENTS	24	100.0	-	-
TOTAL SEGMENTS	-	-	542	100.0

As observed from Table 5.8, only six enablers are coded in over 50% of the documents (i.e. 17 expert interviews and 7 FGD scripts). Furthermore, none of the enablers is opined by all the participants.

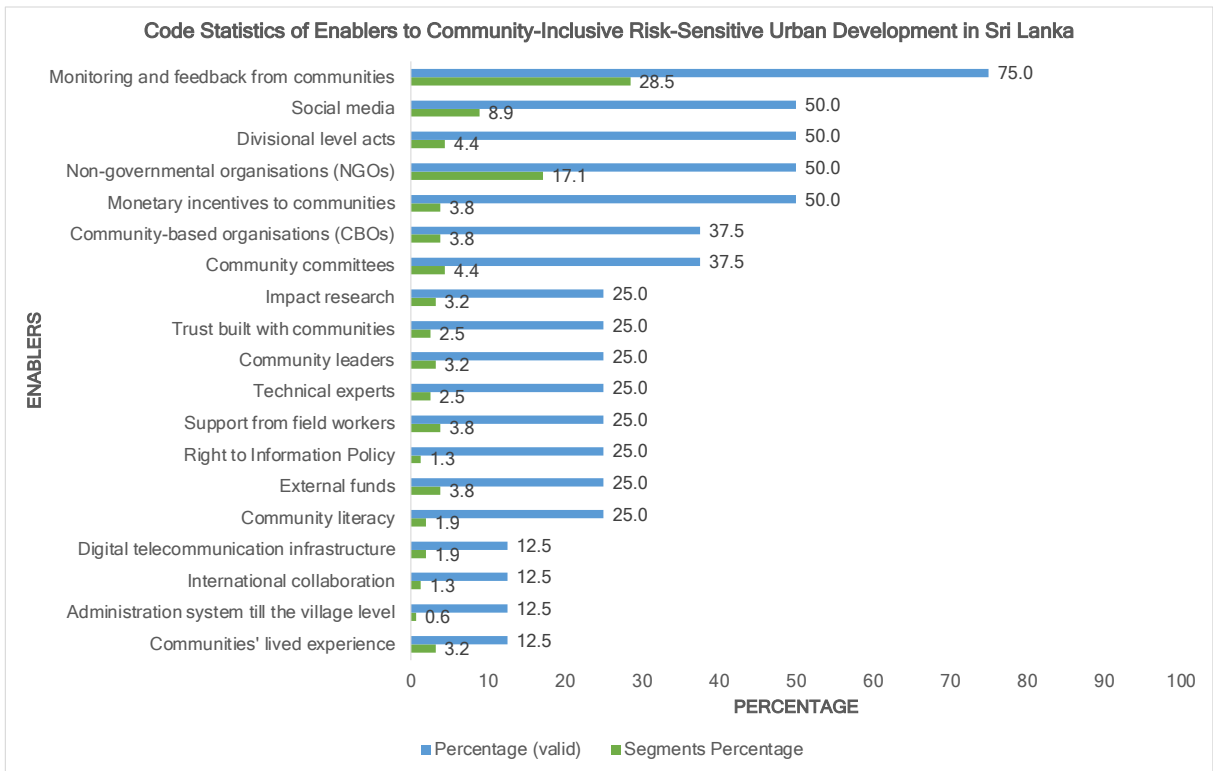


Figure 5. 7: Subcode statistics of the enablers

As shown above, community monitoring and feedback (E7) was found to be the top enabler included in a majority (75%) of data collection scripts, which is also the most cited enabler. In comparison, digital telecommunication infrastructure (E6), international collaborations (E18), communities' live experience (E1), and admin system till the village level (E15) seem to be found only in 12% of interview scripts, which is the least. E15 is also the least highlighted enabler. As this indicated, E7 is the most highlighted enabler for promoting community engagement in the decision-making of RSUPD in Sri Lanka; it is vital understanding the driving and depending enablers based on their interlinks.

The 19 themes of enablers identified are classified into community context, relational, resource, legal and policy, and external. These enabler themes are defined in Table 5.9.

Table 5. 9: Empirical data on enablers of community engagement in RSUPD in Sri Lanka

Category	Code	Enabler	Description	Concepts	Sources	
					Experts	Community representatives
Community-context	E1	Communities' lived experience	Locals' tacit knowledge and hand on experience in coping with hazards and disaster events in their locality.	I. Tacit knowledge about the locality due to living in a specific area for a long time II. Local adaptation strategies	P2, P10	C9-C12
	E2	Community literacy	Locals' ability to read, write, speak and listen in a way that lets them communicate effectively.	I. Ability to understand written and verbal information II. Ability to express opinions effectively III. Ability to provide written and verbal feedback	P1, P2, P10, B13, P16	C17, C20, C25
	E3	Community-based organisations (CBO)	Organisation aimed at making desired improvements to a community's social health, well-being, and overall functioning.	I. Community-based disaster management groups	P4, P5, P7, P11, P13, P14, P17	C1-C3, C17-C19, C21, C22
	E4	Community committees	Representative bodies established as intermediaries between the government and the residents of a particular area.	I. Religious committees II. Rural development committees III. Women society IV. Standing committee V. Citizen charter	P3-P5, P10, P16, P17	C1, C5, C9-C11, C17-C20
	E5	Community leaders	A person widely perceived to represent a community.	I. Religious leaders II. School principals and teachers III. Local businessman	P1, P2, P10, P16, P17	C17-C20, C25
	E6	Monitoring and feedback receiving from communities	Using community members to monitor implementations and their feedback on participatory initiatives helps to effectively revise future plans and actions.	I. Community feedback on the process II. Community feedback on outcomes III. Community monitors to supervise implementations IV. Community as real-time information providers	P2-P7	C17
Relational	E7	Support from field workers	Best practices of field-level officers promote the engagement of locals	I. Village officer's links with the community II. Development officers III. Village task forces (appointed by the Disaster Management Centre) IV. Positive attitudes of operational level workers V. Good relationship with the community	P1, P2, P8, P9, P11-P13	
	E8	Technical experts	The country is rich with technical experts who can provide tech-based solutions.	I. Technical knowledge II. Technology	P2, P7-P9, P11-P13	
	E9	Impact research	Research studies that have an effect beyond academia;	I. Collaborative research	P1-P7	

			influence of research or its 'effect on an individual, a community, the development of policy, or the creation of a new product or service.			
	E10	Trust built with communities	Trust that industry practitioners have already established with locals from previous participatory projects.	I. Assessing and incorporating community needs into agency plans II. By providing monetary incentives III. Through capacity building IV. Giving co-leadership in decision-making	P1, P2, P10, P11, P13, P14, P17	
Resource	E11	External funds	Funds originate from a source outside the government/corporation to aid inclusive efforts.	I. Research grants II. Donations from NGOs and IGOs	P3, P4, P11, P13	C3, C7, C8, C17
	E12	Monetary incentives to financially vulnerable groups	Financial giveaways to poor locals to motivate and attract them to engage in development activities or to appreciate their contribution.	I. Some financial benefits of the activities II. Provide some money to relocate III. Provide housing loans	P1-P3, P6, P10, P11, P13, P14, P16, P17	C1-C8, C13, C22, C23,
	E13	Social media	The means of interactions among people in which they create, share, or exchange information and ideas in virtual communities and networks.	I. Youths spend more time on social media II. WhatsApp III. Facebook IV. Transparent source of media	P1-P5, P7, P11, P13-P17	C17-C20, C25-C27
	E14	Digital telecommunication infrastructure	The country has good internet coverage and mobile penetration to support distance communication.	I. High mobile penetration II. Social media platforms	P7, P12, P15	
Legal & policy	E15	Administration system till the village level	Sri Lanka is one of the few countries with an administrative structure till the village level, where several administrative officers govern each small area.	I. Village officer II. Samurddhi officer III. Agriculture officer IV. Midwife V. Economic development officer	P7, P10, P16	
	E16	Right to information policy	Sri Lanka's Right to Information (RTI) Act comes into effect by promising open government, citizens' active participation in governance, and accountability to the country's people.	I. Allows to implement of feedback and complaint process II. Access to information	P4, P7-P9, P11-P13	
	E17	Divisional level acts	Community engagement provisions included in divisional-level acts	I. Pradeshiya Saba Act in 1987 II. Section of public hearing for development	P2, P3, P5, P7, P10-P17	C17, C27

External	E18	International collaboration	Administrative and financial assistance received from UD, DRR and humanitarian-related organisations in other countries.	I. DRR training activities II. Transfer global knowledge, technology, and experience III. ADPC IV. JICA V. KOICA	P3, P11, P13	
	E19	NGOs	Voluntarily formed non-profit entities to execute welfare projects to address various concerns and issues prevailing within society.	I. Deal with community II. Have enough knowledge and awareness about the community III. Can approach locals easily IV. Financial aid, facilities, and space for people to engage	P2, P4, P6, P7, P10, P11, P13, P14, P16, P17	C5, C17-C27

As shown in Table 5.9, the barriers were opined by both experts and communities but from different angles and frequencies. Figure 5.8 below presents the experts' and communities' perspectives towards these barriers in terms of the number of participants.

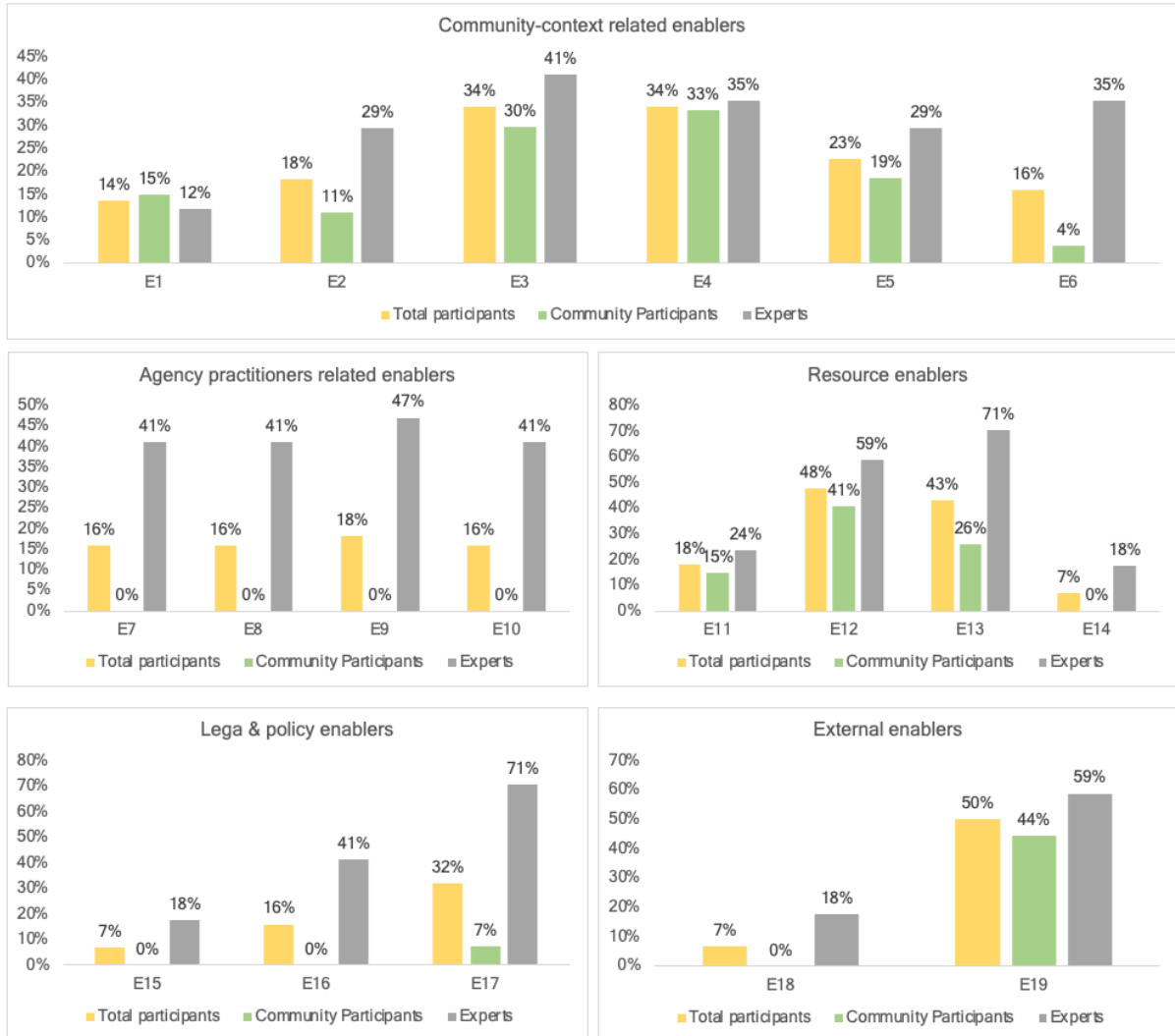


Figure 5. 8: Analysis of the study participants' contribution to identifying the enablers

Overall, the most cited enabler is the NGO (E19), which is also the primary concern of community participants. In contrast, experts highlight two key enablers: social media (E13) and divisional acts with community engagement provisions (E17). Furthermore, industry practitioners acknowledge all 19 enablers, while community participants have identified only about 11 enablers. On the other hand, community participants seem not to think agency practitioners and their practices enable inclusive decision-making. Moreover, digital telecommunication infrastructure (E14), administration system till the village level (E15), and international collaboration (E18) are the least recognised enablers.

5.3.1 Determination of pair-wise relationships between enablers through interpretation of contextual relationships

Similar to the analysis of the barriers, the pair-wise contextual relationships between the enablers were also identified using experts' opinions. This study recorded the logical reasons for how each enabler influences or depends on another as a logical knowledge base, as presented in Appendix 7(c). Of 342 possible links, 28 pair-wise relationships between the 19 enablers were established with reasoning. The knowledge base provides a single interpretive statement formed by combining opinions provided by the experts for each pair-wise relationship.

5.3.2 Structural Self-Interaction Matrix (SSIM)

Experts' interpretations of the contextual relationships between the enablers presented in Appendix 7(c) were converted to a nominal matrix of $i^{19} \times j^{19}$ and thereby developed an SSIM, as presented in Table 5.10.

Table 5. 10: Structural Self-Interaction Matrix (SSIM) of enablers of community engagement in RSUPD in Sri Lanka

Enabler Theme	E1	E2	E3	E4	E5	E6	E7	E8	E9	E10	E11	E12	E13	E14	E15	E16	E17	E18	E19
E1		O	V	O	V	V	O	O	O	O	O	O	O	O	O	O	O	O	O
E2			O	O	O	V	O	O	O	O	O	O	O	O	O	O	O	O	O
E3				A	A	O	A	O	O	O	O	O	O	O	O	O	O	O	O
E4					X	V	A	O	O	O	O	O	O	O	O	O	O	O	O
E5						V	O	O	O	O	O	O	O	O	O	O	O	O	O
E6							O	O	O	O	O	O	A	A	O	O	O	O	O
E7								O	V	V	O	O	O	O	O	O	O	O	O
E8									V	O	O	O	O	O	O	O	O	O	O
E9										V	A	O	O	O	O	O	O	A	O
E10											O	A	O	O	A	O	O	O	O
E11												V	O	O	O	O	O	A	A
E12														O	O	O	O	O	A
E13															A	O	O	O	O
E14																O	O	O	V
E15																O	O	O	O
E16																	O	O	O
E17																		O	O
E18																			O
E19																			

5.3.3 Develop the Initial Reachability Matrix (IRM)

Followed by the SSIM, an IRM was developed. This is presented in Table 5.11.

Table 5. 11: Initial Reachability Matrix (IRM) of enablers of community engagement in RSUPD in Sri Lanka

Enabler Theme	E1	E2	E3	E4	E5	E6	E7	E8	E9	E10	E11	E12	E13	E14	E15	E16	E17	E18	E19
E1	1	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0
E2	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
E3	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
E4	0	0	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0
E5	0	0	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0
E6	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
E7	0	0	1	1	0	0	1	0	1	1	0	0	0	0	0	0	0	0	0
E8	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0
E9	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0
E10	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
E11	0	0	0	0	0	0	0	0	1	0	1	1	0	0	0	0	0	0	0
E12	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0
E13	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0
E14	0	0	0	0	0	1	0	0	0	0	0	0	1	1	0	0	0	1	0
E15	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0
E16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
E17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
E18	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	1	0
E19	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	1

5.3.4 Check for transitive links and develop the Final Reachability Matrix (FRM)

In the next step, the FRM is prepared by introducing transitive links to the IRM.

Table 5. 12: Final Reachability Matrix (FRM) of enablers of community engagement in RSUPD in Sri Lanka

Enabler Theme	E1	E2	E3	E4	E5	E6	E7	E8	E9	E10	E11	E12	E13	E14	E15	E16	E17	E18	E19
E1	1	0	1	1*	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0
E2	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
E3	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
E4	0	0	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0
E5	0	0	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0
E6	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
E7	0	0	1	1	1*	1*	1	0	1	1	0	0	0	0	0	0	0	0	0
E8	0	0	0	0	0	0	0	1	1	1*	0	0	0	0	0	0	0	0	0
E9	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0
E10	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
E11	0	0	0	0	0	0	0	0	1	1*	1	1	0	0	0	0	0	0	0
E12	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0
E13	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0
E14	0	0	0	0	0	1	0	0	1*	1*	1*	1*	1	1	0	0	0	1	0
E15	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0
E16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
E17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
E18	0	0	0	0	0	0	0	0	1	1*	1	1*	0	0	0	0	0	1	0
E19	0	0	0	0	0	0	0	0	1*	1*	1	1	0	0	0	0	0	0	1

5.3.5 Level determination by partitioning the FRM

The FRM is subsequently converted into the level-wise placement of enablers. After five iterations, the enablers were placed in five levels, and this iterative process is summarised in Table 5.13.

Table 5. 13: Hierarchical partitioning of enablers of community engagement in RSUPD in Sri Lanka

Enabler Theme (Mi)	Reachability Set R(Mi)	Antecedent Set A(Ni)	Intersection Set $R(Mi) \cap A(Ni)$	Level
E3	3	1, 3, 4, 5, 7	3	1
E6	6	1, 2, 4, 5, 6, 7, 13, 14	6	1
E10	10	7, 8, 9, 10, 11, 12, 14, 15, 18, 19	10	1
E16	16	16	16	1
E17	17	17	17	1
E2	2	2	2	2
E4	4, 5	1, 4, 5, 7	4, 5	2
E5	4, 5	1, 4, 5, 7	4, 5	2
E9	9	7, 8, 9, 11, 14, 18, 19	9	2
E12	12	11, 12, 14, 18, 19	12	2
E13	13	13, 14	13	2
E15	15	15	15	2
E1	1	1	1	3
E7	7	7	7	3
E8	8	8	8	3
E11	11	11, 14, 18, 19	11	3
E18	18	14, 18	18	4
E19	19	19	19	4
E14	14	14	14	5

5.3.6 Satisfy with transitive test and modification of interpretive logic knowledge base with transitive link interpretations

The 13 transitive relations that resulted in developing the FRM were presented to the experts involved in phase 2 data collection. Their opinions were sought to establish the validity of those transitive links. The experts found that only five out of 13 transitive links, namely E1-E4, E7-E5, E14-E9, E14-E11, and E18-E12, are satisfying while eliminating eight transitive links. Accordingly, the logic knowledge base developed in Appendix 7(c) was updated to incorporate experts' opinions for satisfied transitive links (see Appendix 7(d)).

5.3.7 Binary interaction matrix of the enabler themes

The binary interaction matrix was developed to include all direct and approved significant transitive links, as shown in Table 5.14.

Table 5. 14: Binary interaction matrix of enablers of community engagement in RSUPD in Sri Lanka

Enabler Theme	E 1	E 2	E 3	E 4	E 5	E 6	E 7	E 8	E 9	E 10	E 11	E 12	E 13	E 14	E 15	E 16	E 17	E 18	E 19	Driving power
E1	1	0	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	5
E2	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	2
E3	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
E4	0	0	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	4
E5	0	0	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	4
E6	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
E7	0	0	1	1	1	0	1	0	1	1	0	0	0	0	0	0	0	0	0	6
E8	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	2
E9	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	2
E10	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1
E11	0	0	0	0	0	0	0	0	1	0	1	1	0	0	0	0	0	0	0	3
E12	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	2
E13	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	2
E14	0	0	0	0	0	1	0	0	1	0	1	0	1	1	0	0	0	1	0	6
E15	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	2
E16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1
E17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
E18	0	0	0	0	0	0	0	0	1	0	1	1	0	0	0	0	0	1	0	4
E19	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	1	3
Dependent power	1	1	5	4	4	7	1	1	6	5	4	4	2	1	1	1	1	2	1	

5.3.8 Develop a digraph with significant transitive links

The digraph developed to represent the hierarchy of enablers of community engagement in RSUPD in Sri Lanka is illustrated in Figure 5.9 below. The digraph includes 28 direct links established via the opinions of the industry experts and community representatives, with five significant transitive links retained with valid interpretations of experts.

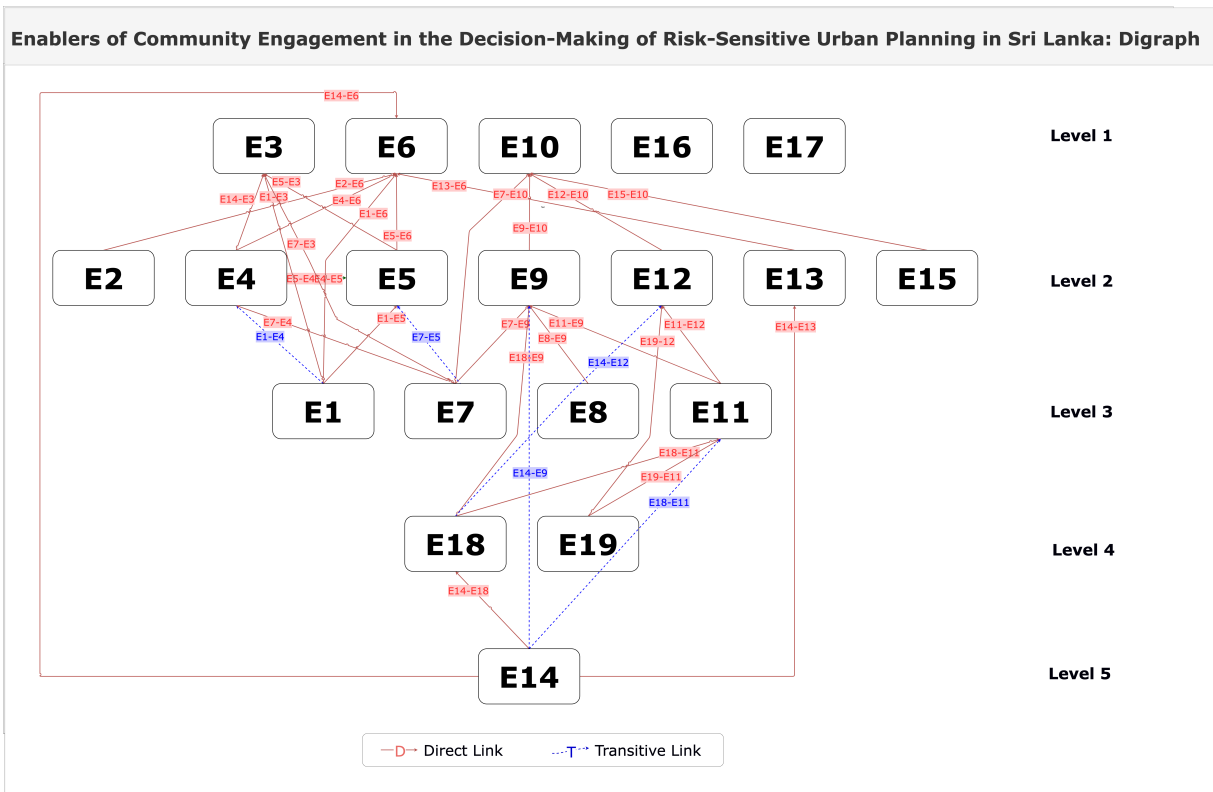


Figure 5. 9: Digraph of enablers of community engagement in RSUPD in Sri Lanka

5.3.9 Interpretive matrix of the enabler themes

Appendix 7(c and d) presents the interpretations established through participants' opinions for the interactions between the 19 enabler themes.

5.3.10 Develop the total interpretive structural model

Finally, the information in the interpretive matrix is portrayed over the respective links in the obtained digraph, thereby obtaining the fully reasoned structural model, as shown in Figure 5.10.

Enablers of Community Engagement in the Decision-Making of Risk-Sensitive Urban Planning in Sri Lanka: Digraph

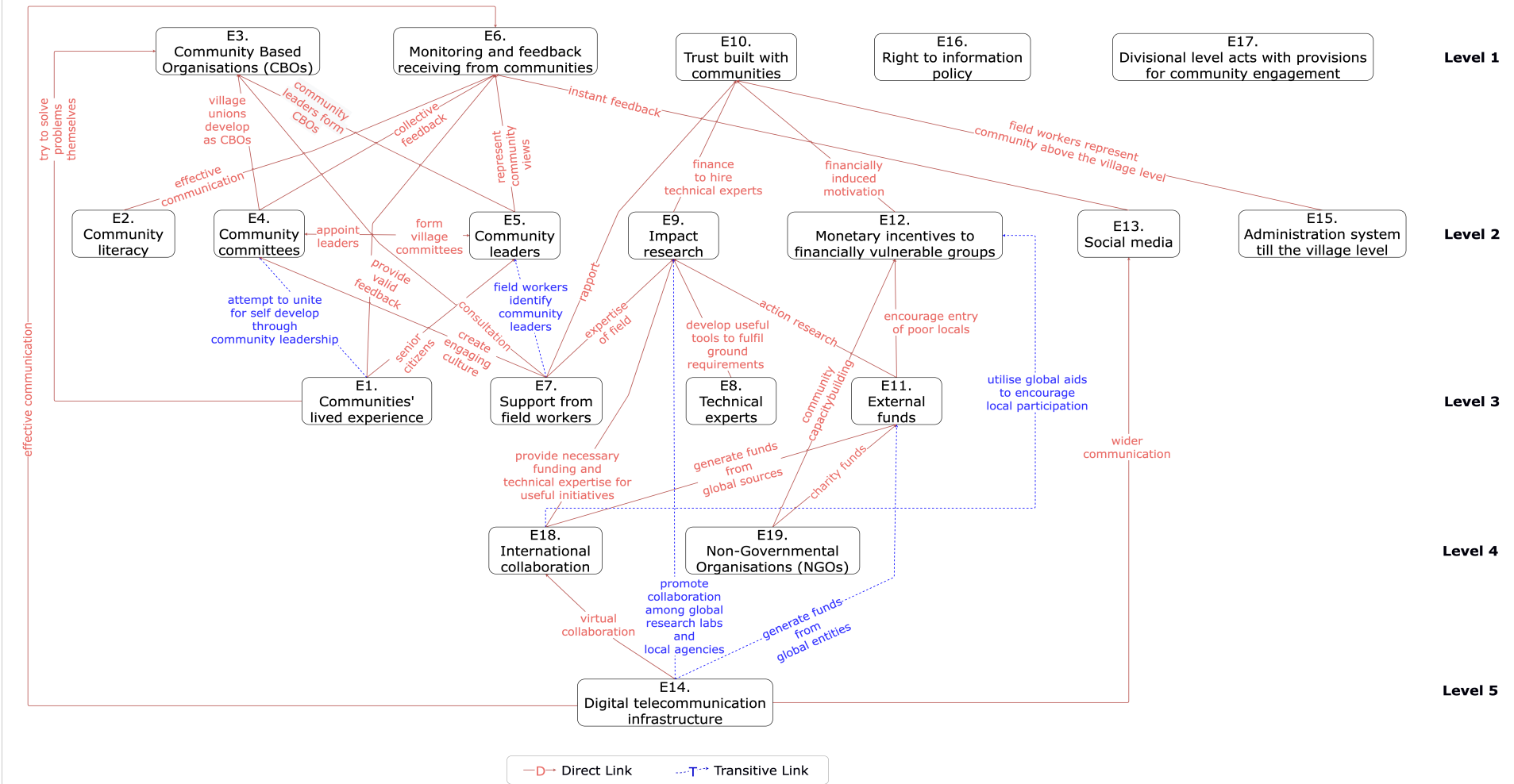


Figure 5. 10: Total interpretive structural model of enablers of community engagement in RSUPD in Sri Lanka

A five-level TISM model (Figure 5.10) was obtained. In this hierarchy, the most crucial enablers are placed at the bottom: the fifth level. Digital telecommunication infrastructure (E14), the most driving enabler in this case, promotes international collaboration (E18), which is placed at the fourth level. P1, P2, P3, and P7 established this link by stating that uninterrupted communication networks facilitate virtual collaboration, especially with global agencies. They further stressed that digital telecommunication infrastructure plays a vital role in allowing people to communicate and proceed with business interruptedly during the recent pandemic. E14 and E18 further enable collaboration with international education institutes that bring the opportunity for impact research to implement actions on the ground (P1, P2, P15). These two enablers attract global funds, either research grants or humanitarian aid (P1, P2, P5, P11, P15).

Accompanied by E18, NGOs (E19) was placed at level 4. This enabler is not driven by any other enabler but supports generating external funds (E11) and providing monetary incentives to financially vulnerable groups (E12). NGOs mostly donate their charity funds to support locals in rebuilding, especially during disaster events (P4, P8, P10). Many community participants opined the same as C3: “we are earning daily wages, thus even though we want, it is impossible for us to attend inclusive activities unless we get paid”. Thus, incentives provided by NGOs and aid by global agencies encourage such locals to participate in development decision-making (P4, P8, P10, P15).

There are four enablers placed in the middle layer (third level). External funds (E11) generated through various means thereby can be utilised to support community research (E9) and financially vulnerable locals (E12) (P5, P6, P8, P16). Furthermore, communities lived experience (E1) in coping with local disasters inspired them to form village committees (E4) to self-develop through community leadership (E5), and eventually, these small unions converted to CBOs (E3). Locals' tacit knowledge and experiences (E1) can be identified as one of the leading enablers; many practitioners opined that community feedback at planning stages and participatory monitoring (E6) during implementations is key to achieving RSUPD (P5, P7, P8, P17). Another pivotal enabler is the support received from field workers (E7), including village officers, economic development officers, Samurdhi officers, mid-wife, agriculture officers, and DMC's village task force appointed to each village in Sri Lanka. These field workers strongly interfere in appointing community leaders (E5) and forming village committees (E4) and CBOs (E3); thus, they are the primary source of community trust building

(E10) (P10, P13, P14, P16, P17). In addition, technical experts (E8) enable the effective participation of communities by providing technical and software solutions to fulfil community requirements, thus supporting impact research (E9) (P1, P2, P3).

The second layer consists of a majority of enablers. As opined by many practitioners (P4, P5, P10, P11, P16, P17, P13), community literacy (E2) ensures effective communication between the public and agencies, therefore, can obtain productive feedback and monitoring from communities (E6). Similarly, community committees (E4) and community leaders (E5) encourage E6 through collective feedback, while social media (E13) allows instant communication as well as collaboration (P1-P17). E4 and E5 influence each other because community committees appoint leaders to continue such unions and vice versa (P10, P16, P17). The next enabler is impact research (E9); community-based action research is another means of community trust building (E10) because it provides the necessary fund and scientific and technical expertise to transform communities (P1, P2, P3). Monetary incentives to financially vulnerable groups (E12), placed in the second layer, is also an excellent way to build community trust (E10). Because it helps to abolish locals' thinking of industry practitioners ignoring their presence and involvement (P7, P12). In addition, the administration system till the village level (E15) is another enabler in building community trust (E10) because, in most cases, field workers represent communities above the village level (P7, P11, P16, P17).

The first layer, the top-most layer of the enablers' hierarchy, includes five enablers. Of all five enablers, three enablers, namely, CBOs (E3), monitoring and feedback receiving from communities (E6), and trust built with communities (E10), are highly but differently supported by other enablers. There is a noteworthy link: E6 is supported by Digital telecommunication infrastructure (E14), the most significant enabler, by facilitating effective communication channels (P3, P9). Besides, there are two enablers: the right to information policy (E16) and divisional level acts with community engagement provisions (E17) which are not dependent on or drive other enablers, thus placed independently.

5.3.11 MICMAC analysis of the enablers of community engagement in risk-sensitive urban planning and development in Sri Lanka

A MICMAC analysis was conducted to classify the 19 enablers into driving, linkage, dependent, and autonomous enablers. For this, position coordinates were determined using the driving and dependence power calculated in the binary interaction matrix

(Table 5.14). Subsequently, the position coordinates are further displayed in a scatter plot, as shown in Figure 5.11.

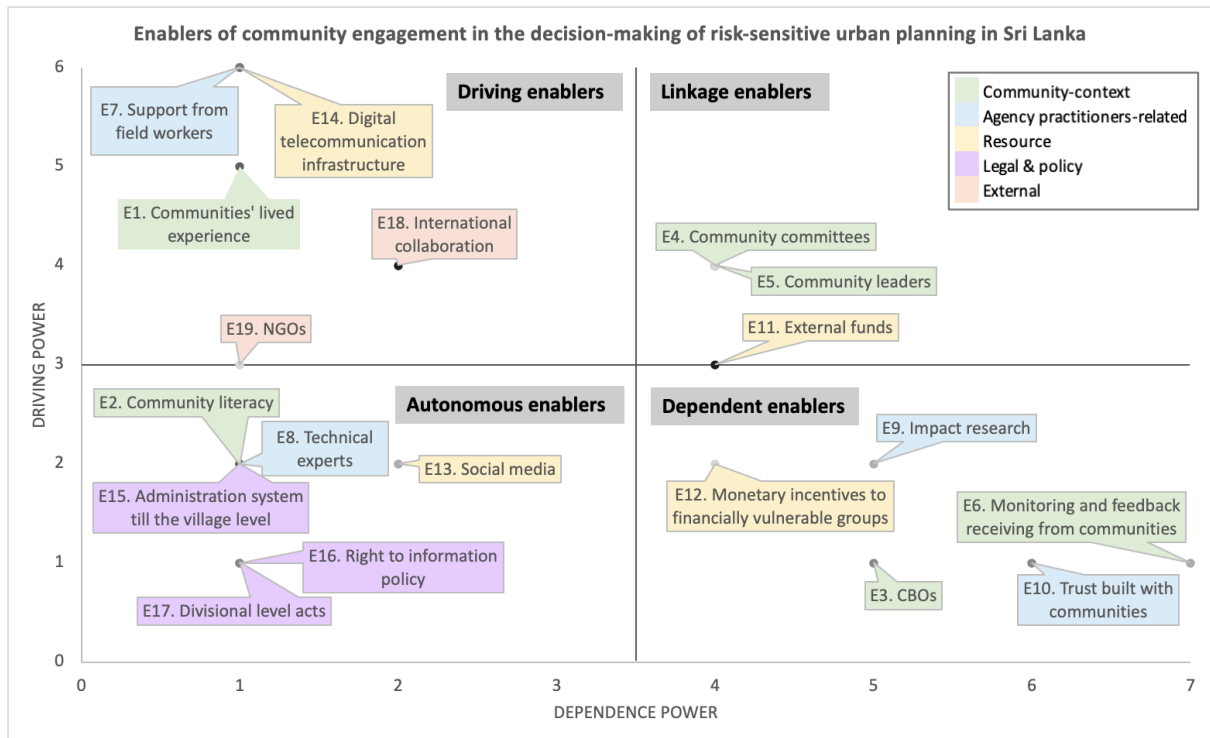


Figure 5. 11: Cluster diagram of enablers of community engagement in RSUPD in Sri Lanka

As observed from the MICMAC graph, five out of 19 enablers have resulted as independent or driving barriers. Hence, these are the most significant enablers driving the inclusive RSUPD process. This implies that community participation in RSUPD can be intensified through existing digital telecommunication infrastructure (E14), supportive field workers (E7), incorporation of communities' lived experience (E1), international collaborations (E18), and NGOs (E19). Here, E14 is placed at the bottom of the enablers' hierarchy, while other enablers are in the fourth and third levels. Of five driving enablers, two are external enablers, while others represent a mix of resource, agency practitioners and community context related factors.

There are three linkage enablers: community committees (E4), community leaders (E5), and external funding (E11). This implies that the community act as a vital stakeholder in making inclusive RSUPD in Sri Lanka. Hence, from the community end, not forming community committees and lacking local leaders will restrict their entry into urban decision-making. For practitioners, not working with community committees and leaders will hinder the possibility of achieving inclusive RSUPD.

Another five enablers have been placed under dependent enablers. It can be inferred that monitoring and feedback from communities (E6), CBOs (E3), trust built with communities (E10), impact research (E9), and monetary incentives (E12) have a high dependence on other enablers. Notably, two of them are community-related, and another two are influenced by industry practitioners.

The last cluster comprises six autonomous enablers with lower driving and dependence power, thus silent enablers. These are divisional-level acts (E17), right-to-information policy (E26), admin system tills to the village level (E15), community literacy (E2), technical expertise (E8), and social media (E13). The enablers included in this category indicate less significance to the entire system; thus, strengthening these enablers will not do much to facilitate inclusive RSUPD. Notably, all three existing legal and policy enablers belong to this cluster, implying that existing legal and policy frameworks had not had much influence on promoting inclusive development in Sri Lanka. Furthermore, in spite of Sri Lanka's considerably higher literacy rate (above 93%), community literacy (E2) and social media (E8) are also determined to be autonomous. However, social media is also a part of digital telecommunication infrastructure; thus, it cannot be considered completely autonomous. It can infer that these enablers are self-sufficient and operate on their own without requiring much external support or influence, and at the same time, contribute to the overall system but have a relatively lower impact compared to other more significant enablers.

5.4 Discussion

The GT coding procedure revealed 38 factors influencing communities' engagement in decision-making, particularly in the context of RSUPD in Sri Lanka. Half the factors (19) impede community engagement, while the others support inclusive decision-making. Experts and community participants frequently cite the lack of financial provisions for engagement (B3) and NGOs (E19) as the most significant factors. Experts highlight a few other vital factors, such as a lack of engagement culture within communities (B2), the absence of a strategic plan and selection process for community involvement (B5), social media (E13), and divisional acts with community engagement provisions (E13). Contrarily, the absence of local DRR and UD strategies (B7) is the least recognised barrier by the experts. While they perceive digital telecommunication infrastructure (E14), administration system till the village level (E15), and international collaboration (E18) as the least supportive factors.

Confronting the statistical emphasis, the TISM introduces the underlying causal relationships and dependencies between the identified factors. Despite the fact that communities are unaware of the impact of the absence of legal provisions for community engagement (B15), B15 with political dynamics and corruption (B16) appears to be the most crucial hindrance to participatory decision-making. Thus, obstacles from the current legal and political systems were found to be the drivers of, or the causes of, other constraints. Instead, digital telecommunication infrastructure (E14) resulted as the most supportive factor, followed by NGOs (E19) and international collaboration (E18).

Digital communication tools can facilitate transparency and accountability in decision-making by providing a platform for sharing information and updates with the public. For example, social media campaigns or online petitions can raise awareness about the importance of community engagement and hold government officials accountable for their commitments to community engagement. By connecting stakeholders from different regions and countries, digital communication tools can facilitate the exchange of knowledge and best practices for promoting community engagement in the face of political interference. This can prevent political interference by ensuring decisions are made based on objective criteria rather than political expediency. Political interference can lead to the delay or outright rejection of laws and policies that promote community engagement, particularly if they are perceived to conflict with the interests of those in power. If those in power stand to gain financially from certain projects, they may be less likely to prioritise community engagement and may even actively work to prevent laws or policies that promote it. Hence, avoiding political interference through building a culture of transparency and accountability would create an environment for developing new and enforcing existing laws and policies to promote inclusive development. Hence, the TISM and MICMAC methodologies effectively utilised a system thinking approach to expose the deficiencies of the country's legal and political systems, which obstruct inclusive RSUPD. The study participants' criticisms towards related institutions, practitioners, and communities' practices were aptly appraised with this approach.

While some contextual factors echo the previous studies, the study has found obstacles and enabling factors specific to community engagement in the context of RSUPD. Effective engagement in RSUPD requires communities to be knowledgeable not only about the implication and benefits of, have competencies, and experience in community engagement, as emphasised by Alawadi and Dooling (2015), Haaland and

van den Bosch (2015), Harden et al. (2015), Protik et al. (2018), and Swapan (2016), but also about the specific local hazards, development requirements, and available resources. Additionally, participation in UPD can be limited if a country lacks an all-encompassing decision-making procedure for DRR and UPD and/or if there are no DRR and development strategies at the local level. However, limited literacy, exclusion of women from participation, lack of technology and technical expertise, and weak local government structures are not central or noticeable in occurrence in Sri Lanka. In fact, Sri Lanka surpasses the regional and global averages with a literacy rate of 93.3%, with 92.3% of women being literate (Central Bank of Sri Lanka, 2022). Women also have equal access to free education. Thus, if the necessary actions are taken to improve their understanding and awareness, they will be well-positioned to engage. Especially in urban settings, there is a well-educated workforce with many young people interested in pursuing careers in technology and related fields.

On the other hand, the study revealed several context-specific supportive factors that were not learned from the literature. Sri Lanka is one of the few countries with a well-maintained administrative system at the grassroots level, with a village officer and a few other local officers assigned to each village, the smallest administrative unit in Sri Lanka. Such local officers can act as a facilitator and an effective communication channel between the community members and the relevant authorities to initiate engagement with local communities, understand their needs, concerns and aspirations related to RSUPD, and monitor and evaluate community engagement and their transformation. Furthermore, the RTI Act in Sri Lanka can be utilised for public awareness, to allow citizens to request information related to RSUD plans, policies and projects, and as a feedback mechanism. Contradicts to Dias et al. (2018), bottom-up decision-making was not acknowledged. This could be due to the country predominantly having a top-down governance system with few bottom-up elements. However, the experts also stressed that a purely bottom-up approach would not work in a country like Sri Lanka with limited resources available for communities, thus proposing integrating top-down and bottom-up actions, which is aligned with Walton et al. (2016) and Gaillard et al. (2016).

The MICMAC analysis further confirms that community engagement is drastically constrained by those with legal and political powers, agency practitioners and institutions with minimal impact from the grassroots level. On the other hand, it is confirmed that the NGOs and international collaboration are central to the current supportive system, followed by the communities' lived experience and existing

community committees and leaders. Overall, the study disproves the misconception that achieving inclusive development is impossible due to the perceived shortcomings of uneducated and impoverished communities or their lack of engagement culture. On the contrary, it strongly asserts that the main obstacles to inclusive development are the corrupted and misguided practices of the central government, with external factors (e.g., NGOs) and communities playing a supportive role.

The above findings contribute to the elaboration of the first two themes of the study: barriers to and enablers of community engagement for inclusive decision-making in the context of RSUPD. The two themes provide insights into the factors that hinder or facilitate community engagement and can inform the development of strategies and interventions to overcome barriers and enhance enablers. Thus, it is important to recognise and include barriers and enablers in a theory of change for community engagement in RSUPD because these factors can significantly influence the success or failure of community engagement efforts. For instance, the theory can include strategies to overcome political interference and enforce legal provisions for inclusive RSUPD since these are found to be the most critical barriers. On the other hand, the holistic approach can focus on strengthening the identified enabling factors to promote community engagement. By identifying these factors and incorporating them into the theory, the likelihood of successful engagement can be improved. Moreover, a critical understanding of the barriers and enablers to community engagement can help ensure that the holistic approach is contextually appropriate and relevant. The success of community engagement efforts in RSUPD depends on the unique needs and challenges of the local context. Thus, an understanding of the barriers and enablers specific to the context can help to develop effective strategies and interventions that are responsive to local needs.

5.5 Summary and Link

The chapter presents the TISM and MICMAC analysis conducted to establish the pairwise relationships between the 19 barriers and the 19 enablers. Separate models were developed for barriers and enablers with seven and five layers, respectively. While TISM provides the hierarchical positioning of factors, the MICMAC analysis concludes that the absence of legal provisions for community engagement, political dynamics, the attitude of industry practitioners, communication gap between key domains, lack of skilled practitioners, and absences of local DRR and UD strategies are the key

obstacles to inclusive UP. At the same time, digital telecommunication infrastructure drives engagement in urban settings with support from field workers, communities' lived experience, international collaboration, and NGOs.

Upon identifying the critical barriers and vital enablers, the next chapter expands the analysis to establish the links between the first three themes: barriers, enablers and stakeholders. Accordingly, the next chapter answered which stakeholders have the power, resource, and interest to contribute to overcoming the identified barriers while promoting the identified enablers.

CHAPTER SIX

STAKEHOLDER MAPPING FOR PROMOTING COMMUNITY ENGAGEMENT IN RISK-SENSITIVE URBAN PLANNING AND DEVELOPMENT

6.1 Introduction

This chapter presents the analysis of the third and fourth themes: stakeholders and their contributions to promoting community engagement in RSUPD, which were derived from the intensive data coding discussed in Chapter 4. Stakeholder contribution was analysed by combining two stakeholder mapping techniques: SNA and SA, as presented in Figure 3.15. The chapter begins by identifying the stakeholders of RSUPD in Sri Lanka and mapping their contributions towards overcoming/minimising the barriers and promoting the enablers of community engagement discussed in Chapter 5. The SA then examines each stakeholder's power and interest in enabling community engagement to identify the key players. Section 6.5 presents the recommended best practices and suggestions for ways in which the key players, in different contexts, can promote achieving inclusive UP for risk-sensitive and equitable cities. Figure 6.1 illustrates the chapter's contribution to the development of the proposed holistic approach.

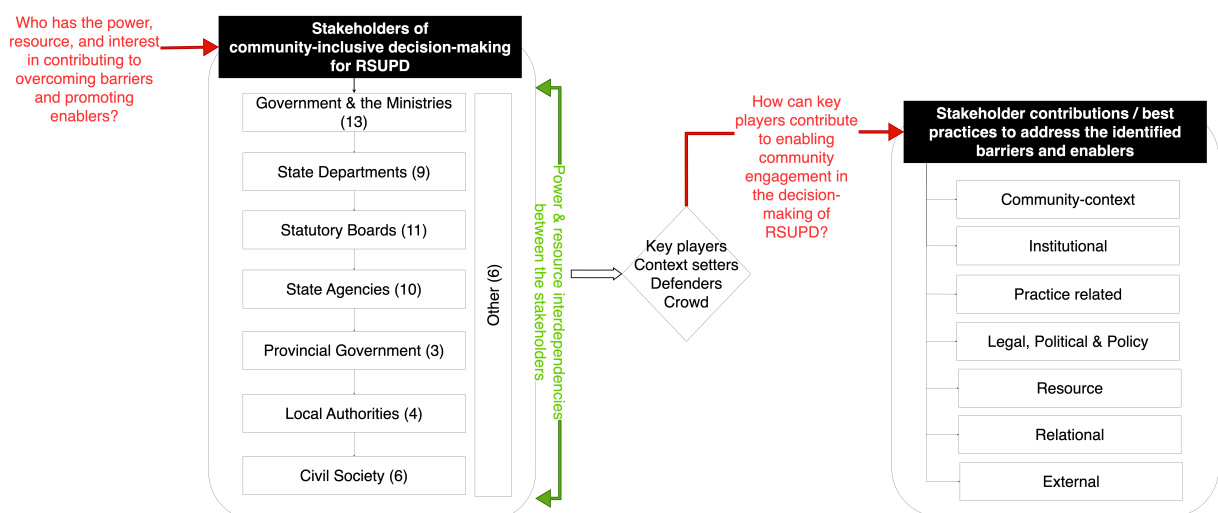


Figure 6. 1: Scope covered in Chapter Six

6.2 Identifying the Stakeholders of Risk-Sensitive Urban Planning and Development in Sri Lanka

Sri Lanka has already enforced the Sri Lanka Sustainable Development Act, No.19 of 2017, which provides for the development and implementation of a national policy and strategy on sustainable development and for the establishment of a sustainable development council (Ministry of Sustainable Development, Wildlife and Regional Development, 2018). This Government development agenda that focuses on 'Transformation towards sustainable and resilient societies' has described a multi-stakeholder approach towards inclusive and equitable developments.

The governance mechanism of Sri Lanka comprises three layers of institutions, namely (1) central government, (2) provincial government and (3) local government bodies. The central government refers to the national-level government responsible for the country's overall governance. It comprises the President, the Parliament, and the Cabinet of Ministers. Parliament is responsible for making laws, approving the government's budget, and overseeing the activities of the government. Ministries are responsible for developing and implementing policies and programs in their respective areas of responsibility. The Cabinet of Ministers, headed by the President, consists of Ministers responsible for different areas such as finance, health, education, and defence. Various statutory departments, boards and agencies come under each ministry that looks after specialised areas of broad subjects handled by the ministry.

The provincial government has local representation through regional/local branches of different line agencies and a uniform system of district administration comprising Provincial Councils (PC), District Secretariats (Dis. Sec), and Divisional Secretariats (Div. Sec). These entities jointly cover a broad range of subject areas and have the power to make decisions on matters such as land use, economic development, education, and healthcare.

There are three types of local governments in Sri Lanka: Municipal Councils (MC), Urban Councils (UC), and Divisional Councils (DC), which are governed by locally elected people's representatives. They are responsible for providing essential services to the people in their locality, such as garbage collection, road maintenance, and water supply. These local authorities handle subjects devolved under the PCs Act of 1987 and powers vested by three local government acts within specified geographical boundaries of respective units.

Following the above leads from the literature and informal discussions with industry practitioners, the process depicted in Figure 6.2 was followed to identify the stakeholders.

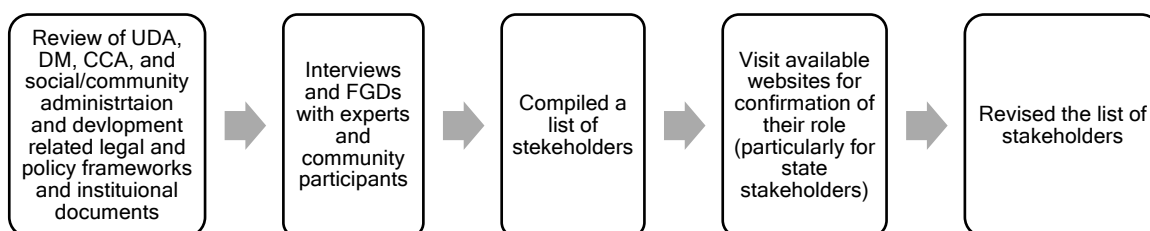


Figure 6. 2: Steps followed in identifying the stakeholders

The review findings and subsequent analysis of the in-depth interviews conducted covering all groups of stakeholders revealed an extensive list of stakeholders who can contribute to addressing the barriers to and promoting enablers of inclusive RSUPD at different power, competency and resource scales. The stakeholder list with their specialised area and role are presented in Table 6.1.

Table 6. 1: List of stakeholders in inclusive RSUPD in Sri Lanka

Code	Stakeholder Name	Code Name	Specialised Area	Role
Parliament & the Ministries				
S1	Parliament	Parliament	All	Governance (Law and policy making)
S2	1. Ministry of Urban Development and Housing	MoUDH	UPD	
S3	2. Ministry of Defence	MoD	DRM	
S4	3. Ministry of Tourism and Lands	MoTL	UPD	
S5	4. Ministry of Environment	MoE	UPD+DRM	
S6	5. Ministry of Irrigation	MoI	UPD	
S7	6. Ministry of Finance, Economic Stabilization & National Policies	MoFESNP	SD	
S8	7. Ministry of Public Administration, Home Affairs, Provincial Councils and Local Government	MoPHPL	SD	
S9	8. Ministry of Transport and Highways	MoTH	UPD	
S10	9. Ministry of Water Supply	MoWS	UPD+SD	
S11	10. Ministry of Mass Media	MoMM	SD	
S12	11. Ministry of Education	MoEdu	SD	
S13	12. State Ministry of Higher Education	SMoHE	SD	
State Departments				
S14	1.1 National Physical Planning Department	NPPD	UPD	Policy making & implementation
S15	2.1 Department of Meteorology	DoM	DRM	
S16	3.1 Survey Department	DoS	UPD	
S17	3.2 Land Commissioner General's Department	LCGD	UPD	
S18	3.3 Land Use Policy Planning Department	LUPPD	UPD	
S19	5.1 Irrigation Department	DoI	UPD	
S20	6.1 Department of National Planning	DoNP	SD	
S21	6.2 Department of Telecommunications	DoT	SD	
S22	8.1 Sri Lanka Railways Department	SLRD	UPD	
Statutory Boards				
S23	2.2 National Council for Disaster Management	NCDM	DRM	Policy making &
S24	2.3 National Disaster Relief Services Centre	NDRSC	DRM	
S25	2.4 National Disaster Management Committee	NDMC	DRM	

S26	2.5 National Disaster Management Coordination Committee	NDMCC	DRM	implementation
S27	2.6 National Building Research Organisation	NBRO	DRM	
S28	4.1 Central Environmental Authority	CEA	UPD+DRM	
S29	4.2 Climate Change Secretariat Sri Lanka	CCSSL	CCA	
S30	8.2 Road Development Authority	RDA	UPD	
S31	10.1 Right to Information Commission of Sri Lanka	RICSL	Generic	
S32	11.1 National Institute of Education	NIE	Education	
S33	Institute of Policy Studies of Sri Lanka	IPSSL	All	
State Agencies				
S34	1.2 Urban Development Authority	UDA	UPD	Policy implementation
S35	1.3 Urban Settlement Development Authority	USDA	UPD	
S36	1.4 Sri Lanka Land Development Corporation	SLLDC	UPD	
S37	2.7 Disaster Management Centre	DMC	DRM	
S38	2.7.1 District Disaster Management Centre	DDMC	DRM	
S39	2.7.2 Disaster Management Committees-District, Divisional, Village	DM Committee	DRM	
S40	2.7.3 District Disaster Management Coordination Units	DDMCU	DRM	
S41	9.1 National Water Supply and Drainage Board	NWSDB	UPD+SD	
S42	10.2 Sri Lanka Transport Board	SLTB	UPD	
S43	Sri Lanka Standards Institute	SLSI	All	
Provincial Government				
S44	Provincial councils (9)	PC	All	Policy & programme implementation
S45	District secretariate offices (25)	Dis. Sec.	All	
S46	Divisional secretariate offices (331)	Div. Sec	All	
Local Authorities				
S47	Municipal councils (24)	MC	All	Local service provider
S48	Urban councils (41)	UC	All	
S49	Divisional councils (276)	DC	All	
S50	Village offices (14,022)	GN	CD	
Civil Society				
S51	Community committees	Com. committee	CD	Participant + Beneficiary
S52	Community-based organisations	CBO	CD	
S53	Community leaders	Com. leaders	CD	
S54	Religious leaders	Religious leaders	CD	
S55	Civil society organisations	CSO	CD	
S56	Locals	Locals	CD	
Other				
S57	Non-governmental organisations	NGO	CD	Influencer + Provider
S58	Private sector (local) organisations	Private companies	Any specific	Provider
S59	International organisations	International Org.	Any specific	Provider
S60	Media	Media	All	Influencer
S61	Universities	Universities	All	Provider
S62	Inter-governmental organisations	IGO	All	Influencer + Provider

Note: UPD: Urban planning & development, DRM: Disaster risk management; CD: Community development, SD: Social development

6.3 Social Network Analysis

The study participants proposed a multi-stakeholder approach to incorporate activities designed and conducted by government bodies in Sri Lanka and other spheres such as the civil society, NGOs, private sector (e.g., LIRNEasia, Janathakshan (GTE) Limited), academia, media, international organisations, as well as IGOs such as UN, WB, and ADB. Their role in addressing the factors impeding and fostering community participation in the course of RSUPD are analysed through SNA and presented in subsequent sections.

6.3.1 Stakeholder-factor adjacency matrices for barriers and enablers

The element of the stakeholder-factor adjacency matrix refers to the stakeholders' power status over the factors. Here, two stakeholder-factor adjacency matrices were developed to identify the above-identified stakeholders' contribution towards eliminating/minimising the barriers and promoting the identified enablers. Stakeholder-factor interlinks were established based on the study participants' opinions. The stakeholder barrier adjacency matrix (a) is formed by a set of stakeholders (X) as well as a set of barriers/enablers (Y). X_i represents each of the identified 62 stakeholders; Y_j represents each of the 19 barriers/19 enablers; and a_{ij} represents whether stakeholder X_i has the power to tackle factor Y_j , defined as follows:

- $a_{ij} = 1$, barrier/enabler Y_j can be addressed by stakeholder X_i ;
- $a_{ij} = 0$, barrier/enabler Y_j cannot be addressed by stakeholder X_i ;

In the stakeholder-barrier adjacency matrix, if two stakeholders have the power to address the same barrier, these two stakeholders can be regarded as co-attended, which can be captured by the coattended stakeholder-stakeholder matrix. The developed stakeholder-barrier adjacency matrix is shown in Table 6.2.

Table 6. 2: The adjacency matrix of the stakeholder-barriers network

	B 1	B 2	B 3	B 4	B 5	B 6	B 7	B 8	B 9	B 10	B 11	B 12	B 13	B 14	B 15	B 16	B 17	B 18	B 19	SUM
S1	1	0	1	1	0	0	1	1	1	0	0	0	1	0	1	1	0	0	0	9
S2	1	0	1	1	1	0	1	1	0	1	0	0	0	0	1	1	0	0	0	9
S3	1	0	1	0	1	0	1	0	0	1	0	0	0	0	1	1	0	0	0	7
S4	1	0	0	0	0	0	1	1	0	1	0	0	0	0	1	1	0	0	0	6
S5	1	0	0	0	0	0	0	0	0	1	0	0	0	0	1	1	0	0	0	4
S6	1	0	0	0	0	0	0	0	0	1	0	0	0	0	1	1	0	0	0	4
S7	1	0	1	0	0	0	0	0	1	0	0	0	0	0	1	1	0	0	0	5
S8	1	1	1	0	1	0	0	0	1	0	0	0	0	0	1	1	0	0	0	7
S9	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	1	0	0	0	3

S10	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	1	0	0	0	3
S11	1	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	3
S12	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	
S13	1	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	3	
S14	1	0	0	1	0	0	1	1	0	0	0	0	0	0	0	0	0	0	4	
S15	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	2	
S16	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	
S17	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	2	
S18	1	0	0	1	0	0	1	1	0	0	0	0	0	0	0	0	0	0	4	
S19	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	
S20	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	2	
S21	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	2	
S22	1	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	3	
S23	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	
S24	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	
S25	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	
S26	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	
S27	1	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	3	
S28	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	
S29	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	
S30	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	
S31	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	2	
S32	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	
S33	1	0	1	1	0	0	1	1	1	0	0	0	0	0	1	1	0	0	8	
S34	1	0	1	1	1	1	1	1	0	0	1	1	1	1	0	0	1	1	14	
S35	1	0	0	0	1	1	1	0	0	0	1	1	1	1	0	0	1	1	11	
S36	1	0	0	0	1	1	1	0	0	0	1	1	1	1	0	0	1	1	11	
S37	1	0	1	1	1	1	1	0	0	0	1	1	1	1	0	0	1	1	13	
S38	1	0	0	0	1	1	1	0	0	0	1	1	1	1	0	0	1	1	11	
S39	1	0	0	0	1	1	1	0	0	0	1	1	1	1	0	0	1	1	11	
S40	1	0	0	0	1	1	1	0	0	0	1	1	1	1	0	0	1	1	11	
S41	0	0	0	0	0	0	0	0	0	0	1	1	1	1	0	0	1	1	7	
S42	0	0	0	0	0	0	0	0	0	0	1	1	1	1	0	0	1	1	7	
S43	0	0	1	1	1	1	1	1	1	1	0	0	0	0	1	0	0	0	9	
S44	1	0	0	0	1	0	1	0	1	0	0	0	0	0	0	0	0	0	4	
S45	1	0	0	0	1	0	1	0	1	0	0	0	0	0	0	0	0	0	4	
S46	1	0	0	0	1	0	1	0	1	0	0	0	0	0	0	0	0	0	4	
S47	1	0	0	0	1	0	1	0	1	0	0	0	0	0	0	0	0	0	4	
S48	1	1	0	0	1	0	1	0	1	0	0	0	0	0	0	0	0	0	5	
S49	1	1	0	0	1	0	1	0	1	0	0	0	0	0	0	0	0	0	5	
S50	1	1	0	0	1	0	0	0	1	0	0	0	0	0	0	0	1	1	6	
S51	1	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	3	
S52	1	1	0	0	1	0	0	0	1	0	0	0	0	0	0	0	1	1	6	
S53	1	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	3	
S54	1	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	3	
S55	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	2	
S56	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	
S57	1	1	1	0	1	0	0	0	1	0	0	0	0	1	0	0	1	1	9	
S58	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	
S59	1	0	1	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	4	
S60	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	2	
S61	1	0	1	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	4	
S62	1	0	1	1	1	0	0	0	1	0	1	1	0	0	0	0	0	1	8	
SUM	53	10	13	11	22	9	25	9	21	8	12	13	10	15	12	11	12	12	11	

Regarding the influencing power of different stakeholder groups, Table 6.2 indicates that UDA (S34) has the power to address the highest number of barriers (14 barriers) among all the stakeholder groups, followed by the DMC (S37), which can contribute to addressing 13 barriers. Five other statutory boards, namely USDA (S35), SLLDC

(S36), DDMC (S38), DM Committee (S39) and DDMCU (S40), placed third by showing the potential to address more than 50% of the barriers (11 barriers). This claims that the government's statutory boards and state agencies have more responsibility and power towards addressing most of the identified barriers. Proving the role of NGOs in making inclusive cities, in the case of Sri Lanka, NGOs (S57) have shown control over nine barriers that can be dealt with through interactions with communities on the ground. Representing the community stakeholder groups, only CBOs (S52) have the power to contribute to overcoming at least six barriers where all other community-centred stakeholders can help to resolve less than 25% of the barriers identified. Overall, only 11% of stakeholders are contributing to overcoming more than 50% of the barriers to community engagement in the case of RSUPD in Sri Lanka.

Conversely, regarding the stakeholders' capacity to address the barriers, a majority of the stakeholders (53) identified as having the required capacity to address communities' lack of knowledge, skills and competencies (B1). Following the absence of a local DR mitigation and UD strategy (B7), the absence of a strategic plan and a process for community selection and entry (B5), and less focus on community capacity building (B9) seek the attention of more than 50% of stakeholder groups. Nine stakeholders, including community groups (S51-S54), local authorities (S48-S50), NGOs (S57), and the MoPHPL (S8), have high power over community-centric barriers (B1 and B2). Only SLSI (S43) possess power over controlling all institutional barriers as all of these can be overcome through policy implications. 11 stakeholders, including the parliament (S1), IPSSL (S33), and nine ministries (S2-S10), have the power over addressing the absence of legal provisions for community engagement (B15) and influence of political dynamics and corruption on inclusive planning (B16) that are the most driving barriers.

Similarly, the stakeholder-enabler adjacency matrix refers to the stakeholders' power status over strengthening the identified 19 themes of enablers. The developed stakeholder-enabler adjacency matrix is shown in Table 6.3.

Table 6. 3: The adjacency matrix of the stakeholder-enabler network

	E 1	E 2	E 3	E 4	E 5	E 6	E 7	E 8	E 9	E 10	E 11	E 12	E 13	E 14	E 15	E 16	E 17	E 18	E 19	SUM
S1	0	0	0	0	0	0	0	0	0	0	1	1	0	0	1	1	1	1	0	6
S2	0	0	0	0	0	0	0	1	0	0	1	1	0	0	0	0	0	1	0	4
S3	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1
S4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
S5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
S6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
S7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

S8	0	1	1	0	0	0	0	1	0	1	1	1	0	0	1	0	0	0	0	7
S9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
S10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
S11	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	2
S12	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	2
S13	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	2
S14	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0	3
S15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
S16	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	2
S17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
S18	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0	3
S19	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
S20	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0	3
S21	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	2
S22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
S23	1	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	1	0	4
S24	1	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	1	0	4
S25	1	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	1	0	4
S26	1	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	1	0	4
S27	1	0	0	0	0	1	0	0	1	0	1	0	0	0	0	0	0	1	0	5
S28	1	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	1	0	4
S29	1	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	1	0	4
S30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
S31	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1
S32	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	2
S33	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	3
S34	1	0	0	0	0	1	1	1	0	0	1	1	0	0	0	0	0	1	0	7
S35	1	0	0	0	0	1	0	0	0	0	1	1	0	0	0	0	0	1	0	5
S36	1	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	1	0	4
S37	1	0	0	0	0	0	1	1	0	0	1	1	0	0	0	0	0	1	0	6
S38	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	3
S39	1	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	1	0	0	4
S40	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	3
S41	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
S42	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
S43	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	2
S44	1	0	0	0	0	0	1	0	0	0	0	1	0	0	1	0	1	0	1	6
S45	1	0	0	0	0	0	1	0	0	0	0	1	0	0	1	0	1	0	1	6
S46	1	0	0	0	0	0	1	0	0	0	0	1	0	0	1	0	1	0	1	6
S47	1	0	1	0	0	1	1	0	0	1	0	1	0	0	1	0	0	0	1	8
S48	1	0	1	0	0	1	1	0	0	1	0	1	0	0	1	0	0	0	1	8
S49	1	0	1	0	0	1	1	0	0	1	0	1	0	0	1	0	0	0	1	8
S50	1	0	1	1	1	1	0	0	0	1	0	0	0	0	1	0	0	0	1	8
S51	1	0	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	5
S52	1	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1	5
S53	1	0	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	5
S54	1	0	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	5
S55	1	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1	5
S56	1	0	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	5
S57	1	1	1	1	1	0	0	0	1	1	1	1	0	0	0	0	0	1	1	11
S58	0	0	0	0	0	0	0	1	1	0	1	1	0	0	0	0	0	0	0	4
S59	1	0	1	0	0	0	0	1	1	0	1	1	0	0	0	0	0	1	0	7
S60	0	0	0	0	0	1	0	0	0	1	0	0	1	1	0	0	0	0	0	4
S61	0	1	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	1	0	4
S62	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	1	1	14
SUM	35	7	15	7	9	26	12	9	9	9	18	17	3	3	9	4	7	21	11	

As observed in Table 6.3, IGOs (S62) have the power to promote the highest number of enablers (14 enablers), followed by NGOs (S57) who can contribute to 11 enabling factors. Next, four stakeholder groups (S47-S50) representing local authority bodies,

namely MCs, UCs, DCs, and GN offices, show the potential to promote eight enablers, which is 42% of all enablers identified. In contrast to national government agencies' highest capacity in dealing with barriers, the study revealed that external stakeholders and local government possess more power and capacity to promote the identified enablers. However, 12 stakeholders (S4, S6, S7, S9, S10, S15, S17, S19, S22, S30, S41, S42), particularly within the government sector, seem to have no contribution to strengthening the identified enablers. Overall, only 3% of stakeholders show the potential to stimulate more than 50% of the enablers of community engagement in the case of RSUPD in Sri Lanka.

In terms of the enablers, more than 50% of stakeholders (35) can support integrating communities' lived experiences (E1) into development planning, followed by monitoring and feedback received from communities (E6) that 26 stakeholders can promote. Both of these enablers are community-centric. Another prominent enabler is international collaborations (E18) that 21 stakeholders can uphold. Two resource enablers, such as external funds (E11) and monetary incentives to financially vulnerable groups (E12), show the following highest capacity to be promoted by 18 and 17 stakeholders, respectively. Notably, only three stakeholders, namely MoMM (S11), DoT (S21) and Media (S60), can take action to enhance digital telecommunication infrastructure in the country, which is the most potent enabler.

6.3.2 Factor-factor adjacency matrices for barriers and enablers

Next, the stakeholder-factor matrices were converted to factor-factor matrices to understand the resource similarity in dealing with barriers/enablers. A resource similarity matrix in social network analysis is a tool used to measure the similarity of resources between nodes (or stakeholders) in a social network. Resources can include anything from knowledge and skills to access to information or funding.

Accordingly, the stakeholder-barrier matrix, shown in Table 6.1, was converted into a barrier-barrier matrix. The resource similarity for the barriers can be examined in Table 6.4.

Table 6. 4: Barrier-barrier matrix

	B 1	B 2	B 3	B 4	B 5	B 6	B 7	B 8	B 9	B 10	B 11	B 12	B 13	B 14	B 15	B 16	B 17	B 18	B 19
B1	53																		
B2	9	10																	
B3	12	2	13																
B4	9	0	7	11															
B5	21	6	5	5	22														

B6	8	0	9	3	9	9													
B7	22	2	8	8	16	8	25												
B8	8	0	8	8	3	2	8	9											
B9	20	9	3	4	12	1	9	3	21										
B10	5	0	1	2	3	1	4	3	1	8									
B11	10	0	0	3	8	7	7	1	2	0	12								
B12	11	0	11	3	8	7	7	1	1	0	11	13							
B13	8	0	9	3	7	7	8	2	1	0	9	9	10						
B14	13	1	9	2	8	7	7	1	1	0	9	11	9	15					
B15	9	1	0	4	4	1	6	5	5	8	0	0	1	0	12				
B16	9	1	11	3	3	0	5	4	4	7	0	0	1	0	11	11			
B17	10	3	0	2	10	7	7	1	3	0	9	9	9	10	0	0	12		
B18	10	3	12	2	10	7	7	1	3	0	9	9	9	10	0	0	12	12	
B19	9	1	10	3	9	7	7	1	2	0	10	10	9	10	0	0	10	10	11

As observed in the barrier-barrier matrix, not all values exceed 1. This indicates that some pairs of barriers cannot be addressed by at least one same stakeholder group. The matrix suggests that 22 stakeholder groups have the resources to influence both barriers B1 and B7. Next, 21 and 20 similar stakeholder groups can contribute to overcoming B1 with B5 and B9, respectively. This implies that these pairs of barriers have high resource similarity, requiring the actions of similar stakeholder groups. Similarly, the matrix indicates 20 pairs of barriers with the slightest resource similarity. For example, B2 with B14, B15, B16 and B19, as well as B3 and B10, thus can be identified as inappropriate business models. These pairs of barriers are very different from each other and require different stakeholders' actions to tackle.

Following similar steps, the stakeholder-enabler matrix was converted into an enabler-enabler matrix, as shown in Table 6.5.

Table 6. 5: Enabler-enabler matrix

	E 1	E 2	E 3	E 4	E 5	E 6	E 7	E 8	E 9	E 10	E 11	E 12	E 13	E 14	E 15	E 16	E 17	E 18	E 19
E1	35																		
E2	2	7																	
E3	14	3	15																
E4	7	2	7	7															
E5	9	2	9	7	9														
E6	24	1	11	6	8	26													
E7	12	1	4	1	1	5	12												
E8	4	3	3	1	1	2	3	9											
E9	4	6	3	2	2	2	1	4	9										
E10	7	3	7	3	3	6	5	2	2	9									
E11	14	3	4	2	2	10	3	7	5	3	18								
E12	13	3	7	2	2	6	9	7	4	6	11	17							
E13	0	0	0	0	0	1	0	0	0	1	0	0	3						
E14	0	0	0	0	0	1	0	0	0	1	0	0	3	3					
E15	7	1	5	1	1	4	6	1	0	5	2	8	0	0	9				
E16	1	0	1	0	0	1	0	0	0	0	1	1	0	0	1	4			
E17	6	0	0	0	0	0	6	0	0	1	1	4	0	0	4	1	7		
E18	17	3	3	2	2	13	3	6	5	2	16	9	0	0	1	1	1	21	
E19	11	2	8	3	5	7	7	1	2	6	2	8	0	0	7	0	3	2	11

Similar to the barrier-barrier matrix, not all the values are larger than 1. 46 pairs of enablers cannot be fostered by at least one same stakeholder group. As the highest relational value, 24 stakeholder groups have the power to promote both enablers E1 and E6. However, the analysis revealed very slight resource similarity in promoting enablers because only three pairs of enablers (i.e., E1 and E6, E1 and E18, and E11 and E18) show resource similarity over 25% of stakeholders.

6.3.3 Stakeholder-stakeholder adjacency matrices for barriers and enablers

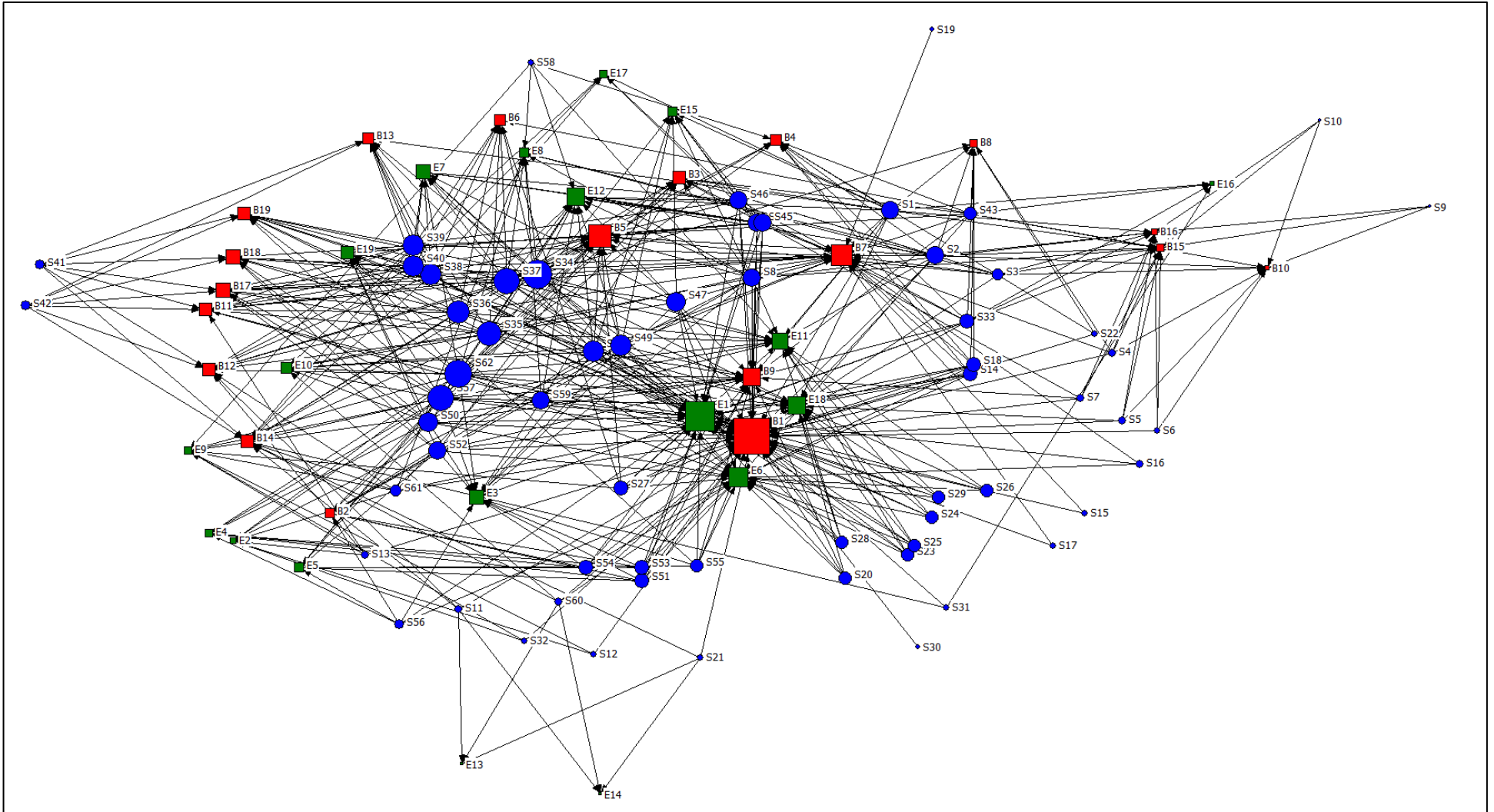
A stakeholder-stakeholder matrix is a tool used in social network analysis to visualise and analyse the relationships and interactions between stakeholders in a particular system or context. This matrix is typically constructed by identifying key stakeholders and mapping their relationships with each other. Accordingly, two stakeholder-stakeholder matrices were constructed by calculating the co-attended barriers and enablers between stakeholders. According to Li et al. (2014), the formula ' $X_i \cap X_j$ ' represents the number of co-attended barriers over which stakeholder 'i' and stakeholder 'j' both have influencing power to address. This value can be interpreted as the power similarity of different stakeholders, suggesting their collaborative potential.

Table 6.6 presents the stakeholder-stakeholder matrix for barriers that the pairs of stakeholder groups have the power to address. As shown in Table 6.6, the power similarity between UDA (S34) and DMC (S37) is the highest of all the stakeholder pairs. Both S34 and S37 have the power to overcome 13 barriers accounting for nearly 70% of the total number of barriers. The stakeholders of USDA (S35), SLLDC (S36), DDMC (S38), DM Committees (S39), and DDMCU (S40) also have high power similarity over 50% of barriers. In contrast, there are 348 pairs of stakeholders with no identical barriers that particular stakeholders have the power to address, for example, MoTH (S9) and MoMM (S11). These stakeholder pairs deal with different barriers.

Similarly, the co-attended enabler matrix is presented in Table 6.7. As shown in Table 6.7, the power similarity between NGOs (S57) and IGOs (S62) is the highest of all the stakeholder pairs. Both S57 and S62 have the power to promote 11 enablers accounting for nearly 58% of the total number of enablers. Additionally, three local authority groups (S47, S48, S49) also have a high-power similarity of 42% of enablers. In contrast, there are 1057 pairs of stakeholders with no identical enablers, thus supporting different enablers.

6.3.4 Visualising and analysing the stakeholder-factor network

Based on the stakeholder-factor adjacency matrices and the stakeholder-stakeholder matrices developed for both the barriers and enablers, the social network can be visualised using the UCINET software (Figure 6.3). In the graph, stakeholders, barriers, and enablers were represented blue, red, and green nodes, respectively.



*Figure 6. 3: Visualisation of the stakeholder-factor network
(In the graph, stakeholders, barriers, and enablers are denoted in blue, red, and green nodes, respectively)*

As shown above, the most concerned barrier to the stakeholders is the communities' lack of knowledge, skills and competencies (B1), followed by the absence of a strategic plan and process for community selection and entry (B5). Furthermore, the communities' live experience (E1) followed by community monitoring and feedback (E6) are found to be the top enablers that a majority of stakeholders can contribute to enhancing. Also, UDA (S34), IGOs (S62), NGOs (S57), and DMC (S37) are at the forefront of facilitating community engagement in decision-making in the context of RSUPD in Sri Lanka.

6.3.4.1 Measures of centrality¹⁴

Subsequently, the relative positions of the nodes in the stakeholder-factor network were determined by calculating the centrality measures, as shown in Table 6.8.

Table 6. 8: The centrality of nodes in the stakeholder-factor network

	Degree		Betweenness		Eigenvector
S62	0.790	S62	0.051	S34	0.260
S34	0.579	S57	0.043	S62	0.254
S57	0.553	S34	0.040	S37	0.239
S37	0.526	S1	0.037	S57	0.231
S35	0.500	S37	0.030	S35	0.220
S1	0.421	S8	0.027	S36	0.205
S36	0.395	S2	0.025	S39	0.187
S39	0.395	S33	0.022	S48	0.184
S8	0.395	S35	0.021	S49	0.184
S38	0.368	S39	0.019	S38	0.179

The degree of centrality is reflected by the size of the nodes in Figure 6.3. The larger size of nodes represents a higher degree of centrality. As shown in Table 6.8, the stakeholder group with the highest degree of centrality is IGOs (S62). The IGOs, such as the UN, World Bank, and Asian Development Bank, have access to diverse resources to influence barriers and enablers. Other stakeholder groups with high centrality degrees include UDA (S34), NGOs (S57), DMC (S37), and USDA (S35), impacting over 50% of factors. Regarding the betweenness centrality, the stakeholder with the highest scores is IGOs (S62). High betweenness centrality of these stakeholders indicates that they possess prominent positions in the network, act as mediators, and can exert considerable influence on barriers and enablers to inclusive RSUPD. Regarding the eigenvector centrality, the stakeholder with the highest score

¹⁴ Explanations are provided in Section 3.8.2.4.

is UDA (S34). The ranking of eigenvector centrality is generally in line with degree centrality and betweenness. This confirms that UDA has high access to diverse resources and power to facilitate community engagement in UP and is also connected to other highly central nodes, making it an important and influential node in the network.

Conversely, the centrality measures of the factor-factor matrices are also presented for the barriers and enablers in Table 6.9.

Table 6. 9: The centrality of nodes in the factor-factor networks

Barrier	Degree	Betweenness	Eigenvector	Enabler	Degree	Betweenness	Eigenvector
B1	0.855	0.338	-0.436	E1	0.565	0.07	-0.352
B7	0.403	0.065	-0.242	E6	0.419	0.04	-0.231
B5	0.355	0.028	-0.266	E18	0.339	0.02	-0.207
B9	0.339	0.027	-0.212	E11	0.290	0.02	-0.189
B14	0.242	0.024	-0.145	E12	0.274	0.01	-0.208
B3	0.210	0.012	-0.141	E3	0.242	0.01	-0.157
B12	0.210	0.013	-0.140	E7	0.194	0	-0.156
B11	0.194	0.009	-0.141	E19	0.177	0	-0.131
B15	0.194	0.023	-0.070	E5	0.145	0	-0.091
B17	0.194	0.009	-0.148	E8	0.145	0	-0.097
B18	0.194	0.009	-0.148	E9	0.145	0	-0.070
B4	0.177	0.010	-0.109	E10	0.145	0	-0.110
B16	0.177	0.019	-0.063	E15	0.145	0	-0.101
B19	0.177	0.007	-0.142	E2	0.113	0	-0.059
B2	0.161	0.004	-0.101	E4	0.113	0	-0.073
B13	0.161	0.008	-0.12	E17	0.113	0	-0.078
B6	0.145	0.003	-0.116	E16	0.065	0	-0.029
B8	0.145	0.005	-0.077	E13	0.048	0	-0.011
B10	0.129	0	-0.036	E14	0.048	0	-0.011

The barrier with the highest degree of centrality is communities' lack of knowledge, skills, and competencies (B1), while the enabler is community literacy (E1). This reflects the high complexity of addressing B1 as well as the high potentiality to promote E1 as more stakeholders are involved. The same barrier and the enabler show the highest value of betweenness centrality, which confirms that more stakeholder groups can influence these factors. Regarding the eigenvector centrality, the barrier and the enabler with the highest score is the absence of an employee training policy on community engagement (B10) and social media (E13), respectively. This indicates that B10 and E13 have high connectivity to other factors to influence the entire system negatively and positively, respectively.

6.3.4.2 Core-periphery network structure¹⁵

The second analytical presentation from the SNA is the core-periphery structure (explanations are provided in Section 3.8.2.4), as presented below in Figure 6.4.

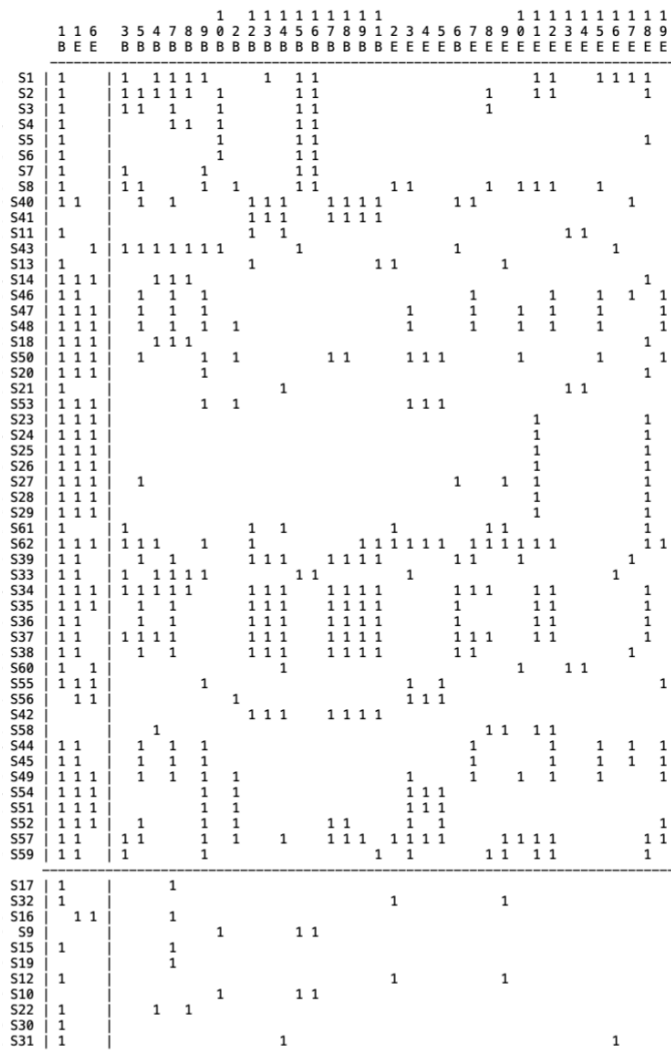


Figure 6. 4: Core-periphery structure model of stakeholder-factor network

The core stakeholders and factors are identified in Figure 6.4. Fifty-one (51) stakeholders, one barrier (B1) and two enablers (E1, E6) are located in the core position, denoted by the top left corner. The 51 core stakeholders include the parliament and nine ministries (S2-S8, S11, S13), four state departments (S14, S18, S20, S21), eight statutory boards (S23-S29, S33), all ten state agencies (S34-S43), all provincial and local government bodies (S44-S50), all groups of community stakeholders (S51-S56), NGOs (S57), private organisations (S58), international organisations (S59), media (S60), universities (S61), and IGOs (S62). This indicates

¹⁵ Explanations are provided in Section 3.8.2.4.

that 82% of the stakeholders are core to addressing barriers and promoting enablers of inclusive RSUPD in Sri Lanka.

6.3.4.3 Density matrix analysis¹⁶

As core stakeholders are more likely to address these core barriers, dense interactions between core stakeholders can happen. This could be the same for the core enablers as well. This facilitates information flow among these core stakeholders who could contribute to the formation of shared values, attitudes and interests towards inclusive RSUPD. The results of the core-periphery model analysis are represented by the density matrix, as shown in Table 6.10.

Table 6. 10: Core-periphery model analysis

		Factor	
		Core	Periphery
Stakeholder	Core	0.680	0.219
	Periphery	0.273	0.045
Overall network density: 0.526			
Final fitness: 0.687			

The final fitness of 0.687 implies that the real structure of the stakeholder-factor network highly approximates that of an ideal core/periphery structure. The density of interactions between core stakeholders and factors is 0.680, which suggests that intensive relationships exist between stakeholders (S34, S62, S37, S57, S35) and factors (B1, E1, E6) in the core position. The partial densities of the intersections between core stakeholders and periphery factors and between core factors and periphery stakeholders are 0.219 and 0.273, respectively. This indicates that the core stakeholders are loosely connected to the peripheral factors, and the core factors are also loosely connected to the peripheral stakeholders. Therefore, it can be argued that the stakeholder-factor network presents a core-periphery structure.

The core-periphery structure identified in this study provides instructions on developing an active stakeholder collaborative network for facilitating inclusive decision-making for enabling RSUPD in Sri Lanka. For instance, IGOs (S62) situated in the core position have the power to address 22 factors, including all three core factors. The three core factors are more likely to be addressed by the core stakeholders, as indicated in Figure 6.4. Therefore, collaborations should be developed between these core stakeholders and S62. Due to the higher centrality indices, S62 should play a critical intermediary role in fostering collaborative partnerships between these core stakeholders. The 11

¹⁶ Explanations are provided in Section 3.8.2.4.

periphery stakeholders listed in the lower left corner of Figure 6.4 also have some power to address these core factors, even though the influence is weaker than the core stakeholders. Thus, the core stakeholders could also construct collaborative relationships with the periphery stakeholders when tackling the core factors. Regarding the 35 periphery factors, they could be tackled not only by the core stakeholders but also by periphery stakeholders.

6.4 Stakeholder Analysis

Following the development of stakeholder-stakeholder matrices, two power versus interest grids were developed for barriers and enablers to understand each stakeholder's interest and power over enabling community engagement in the context of RSUPD in Sri Lanka. Here, the 'X' axis denotes interest, while the 'Y' axis denotes power. Power can be defined as the ability to influence others and achieve one's goals. In contrast, interest can be defined as the degree to which an actor is invested in the actions and outcomes of other actors in the network. Stakeholders' interest for each factor was calculated by the summation of rows in the stakeholder-factor matrix, whereas power values were calculated by using the '(COUNTIF,">0") of rows+(COUNTIF,">0") of columns-1' function for the stakeholder-stakeholder matrix¹⁷. The matrix is typically divided into four quadrants (as explained in section 3.8.2.5), namely key players, context setters, defenders, and crowd, based on high or low levels of power and interest to identify different types of relationships between actors in the network.

6.4.1 Power-interest matrix for barriers

Figure 6.5, below, presents the stakeholder power-interest grid for barriers to support the assessment of the relevance of 62 stakeholders towards overcoming/minimising the 19 barriers identified.

¹⁷ Table 6.2 (interest) - Table 6.6 (power) and Table 6.3 (interest) - Table 6.7 (power) were considered for developing the interest and power axis for barriers and enablers, respectively.

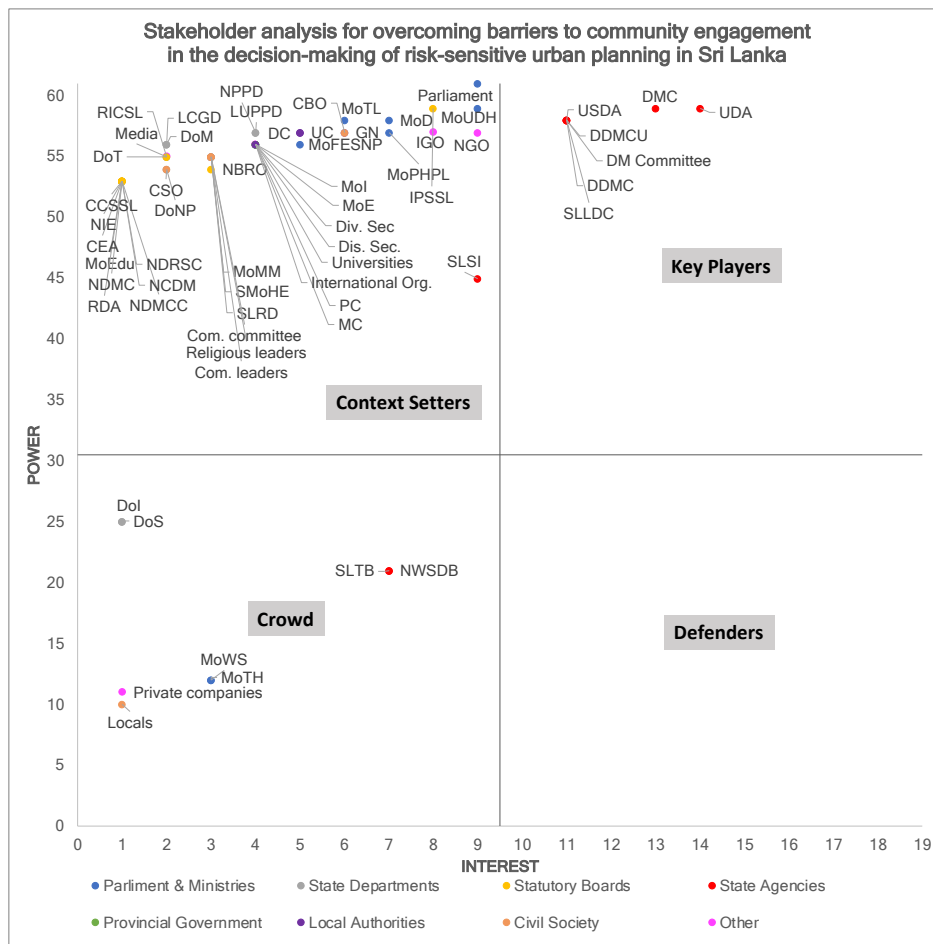


Figure 6. 5: Stakeholder analysis for overcoming barriers to community engagement in RSUPD in Sri Lanka

From Figure 6.5, the 'key players' quadrant is occupied by seven state agencies, namely UDA (S33), DMC (S37), USDA (S34), SLLDC (S36), DDMC (S38), DM committee (S39), and DDMC (S40). It is noteworthy that this group of stakeholders is highly homogeneous, which presents a promising opportunity to address the barriers to community engagement in RUSD. This finding is consistent with the MICMAC analysis (Figure 5.6), which placed legal and political constraints (B15 and B16), agency practitioners' bad practices (B11, B12) and the absence of an institutional framework for community engagement (B7) as driving barriers. Therefore, the fact that the seven most relevant state agencies with considerable power to influence UPD policies have come together as key players is promising. However, this positive outcome is contingent on the presence of a coordinated work environment where these key players collaborate to establish shared objectives, prioritise actions, and mobilise resources.

The 'context setters' quadrant is heavily populated (46) and comprises stakeholders covering all groups. A majority (30) of these stakeholders represent the national

government, indicating that the responsibility for establishing the context of community engagement in decision-making for RSUPD still rests with national governance. This group further includes all provincial government bodies and local authorities, highlighting the significant role played by these stakeholders in shaping the framework for community engagement. Moreover, all community stakeholder groups except locals, NGOs, and IGOs are also identified as context setters. In contrast, no 'defenders' are identified for overcoming the barriers to community engagement.

The 'crowd' quadrant has only eight stakeholders: two ministries, two state departments, two state agencies, general public and private sector. These 25 stakeholders cannot be ignored, and their actions must be closely monitored. Mishandling these stakeholders and failing to establish effective communication channels can turn them into fierce opponents of the system. Therefore, investing significant time and effort to secure their interest and power towards the system is crucial. This is an essential requirement for establishing an inclusive RSUPD that functions effectively. For instance, ensuring the general public's understanding and support for the system is crucial to prevent conflicts and misunderstandings.

Followed by the stakeholder analysis, including all the barriers, separate stakeholder power-interest matrices were developed for each category of barriers, as shown in Figure 6.6. This helps to expand the understanding of stakeholder contribution towards overcoming barriers that are caused by different actors and causes.

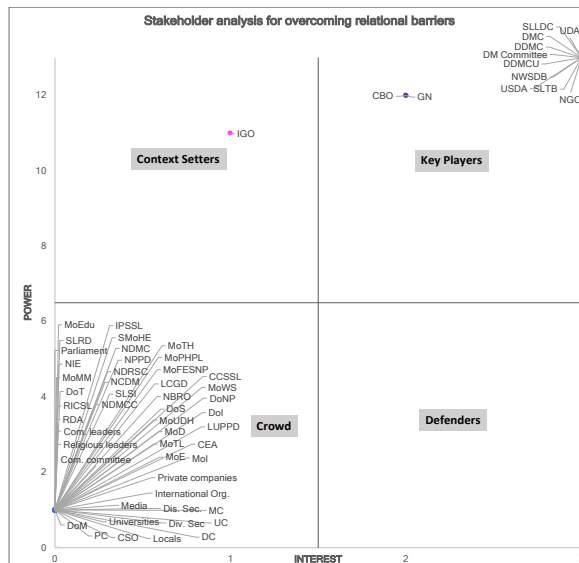
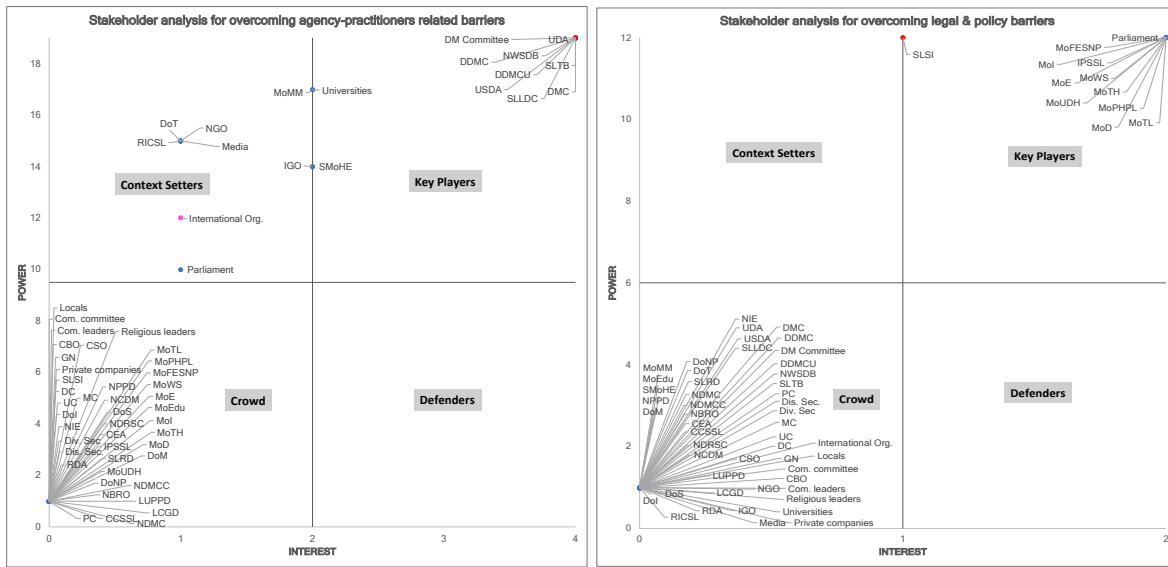
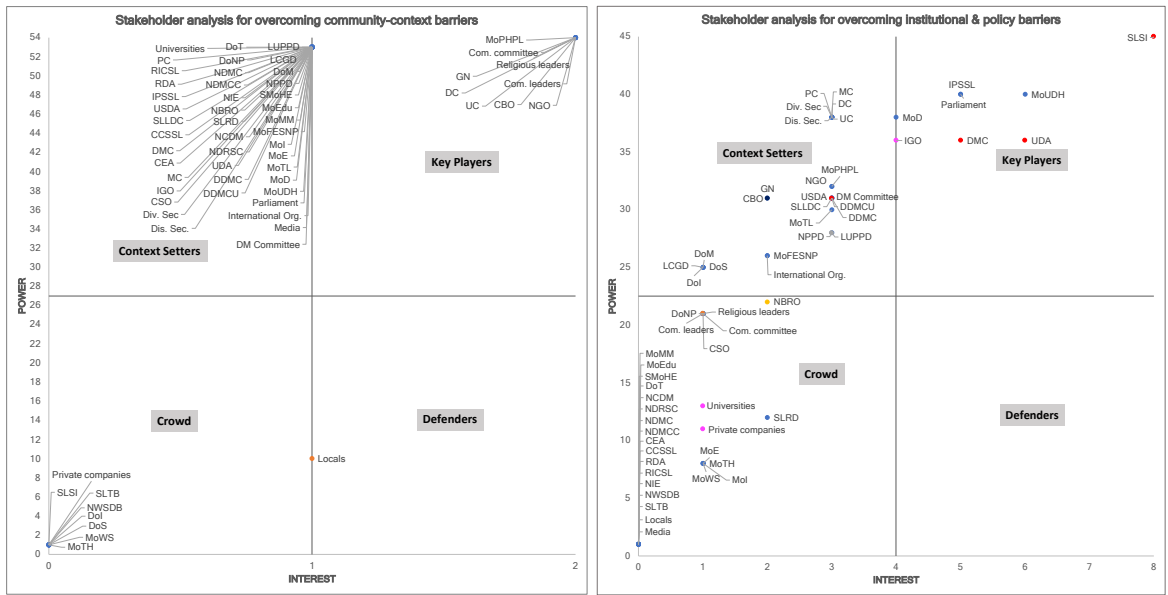


Figure 6. 6: Stakeholder analysis for overcoming different categories of barriers

As shown above, a majority of the stakeholders are gathered in the crowd quadrant except for the barriers caused by the community context. This could be due to possible contributions from many actors towards building community awareness and knowledge on participatory development. On the other hand, no defenders are identified for many categories except locals in the community barriers. It is acceptable as locals need to be informed about strategies for enhancing their knowledge, awareness, and engagement culture. Notably, key players are not the same for all types of barriers, which implies that different stakeholders should involve in mitigating barriers caused by different parties. This is discussed in section 6.5, in combination with the key players identified for different types of enablers.

6.4.2 Power-interest matrix for enablers

Similarly, a stakeholder power-interest grid for the 19 enablers is also developed to analyse who has the power, capacity and internet to promote existing supportive factors to engage communities in the decision-making of RSUPD in Sri Lanka. This is presented in Figure 6.7.

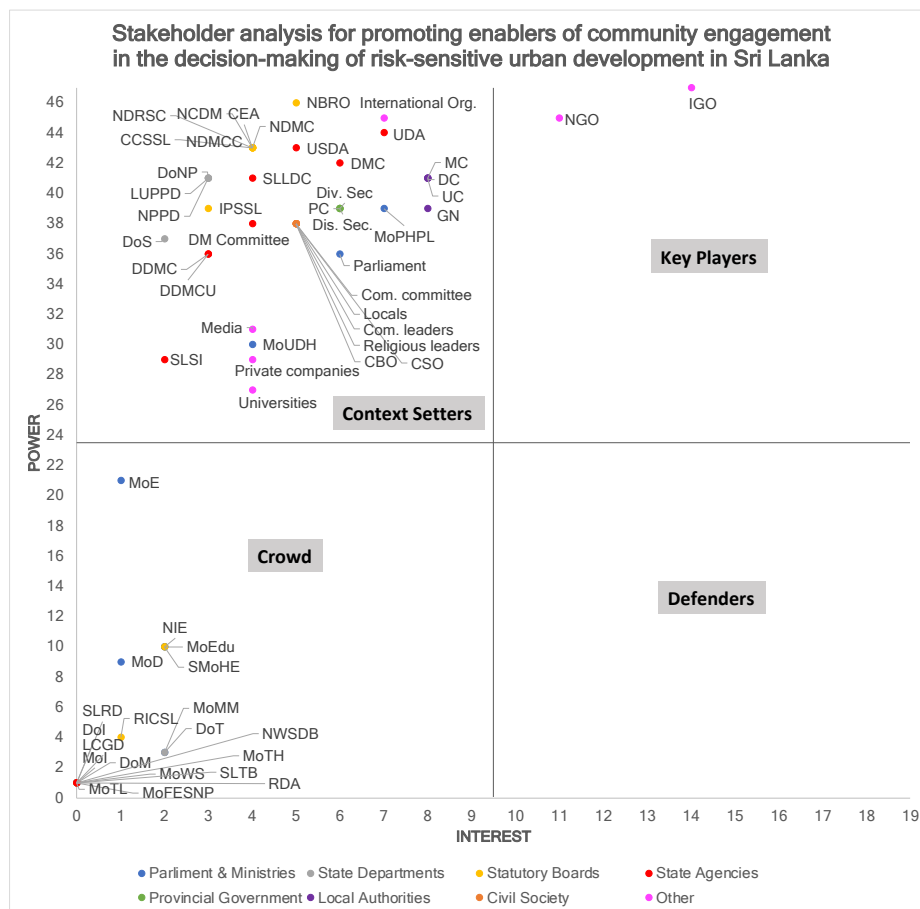


Figure 6. 7: Stakeholder analysis for overcoming enablers of community engagement in RSUPD in Sri Lanka

In contrast to the 'key players' (state agencies) in overcoming barriers to engagement, two external stakeholders such as IGO (S62) and NGOs (S57), have the highest power and interest in further strengthening the positive factors that exist within the country that support participatory development. This could be due to many enabling factors (E1 to E6) identified inducing from communities and their context and NGOs and IGOs being key actors interacting with people on the ground. This is also confirmed by international collaboration (E18) and NGOs (E19) being the driving enablers. However, it is important to examine the power dynamics at play here critically. While NGOs and IGOs may have a vested interest in promoting participatory development, they may also have their own agendas and priorities that may not align with the needs and aspirations of local communities. Furthermore, the reliance on external actors to drive change may perpetuate a sense of dependency among local communities rather than empowering them to take charge of their own development. Therefore, it is crucial to strike a balance between the involvement of external stakeholders and the agency of local communities in driving participatory development. Collaborative efforts between all stakeholders must be grounded in a deep understanding of the local context and needs, focusing on building long-term capacity and empowering local communities to take charge of their own development.

Similar to the barriers grid, the 'context setters' quadrant is heavily populated (40) and comprises stakeholders from all groups. This consists of the parliament, two ministries, four state departments, eight statutory boards, and eight state agencies. These actors have significant power in various areas, such as UP, DRR, and policymaking (IPSSL and SLSI). Notably, all provincial government, local authorities, and civil society actors have also been identified as context setters. In addition, other stakeholders, such as international organisations (S59), media (S60), private companies (S58), and universities (S61), also have the high power to promote community engagement. However, their level of interest is comparatively at a lower level. Amongst local authorities, UDA and international organisations are prominent context setters. Similar to the analysis of the barriers, no 'defenders' are identified for promoting the enablers of community engagement, indicating that all remaining actors belong to the 'crowd' quadrant.

Overall, the analysis underscores the importance of a multi-stakeholder approach in promoting community engagement and the need to ensure that the interests of local communities are at the forefront of any development efforts. It also emphasises the need for ongoing dialogue and collaboration among stakeholders to address any power

imbalances and ensure community engagement is genuinely participatory and empowering. The power-interest analysis of stakeholders was expanded to identify key actors instrumental in promoting different types of enablers. This information is illustrated in Figure 6.8.

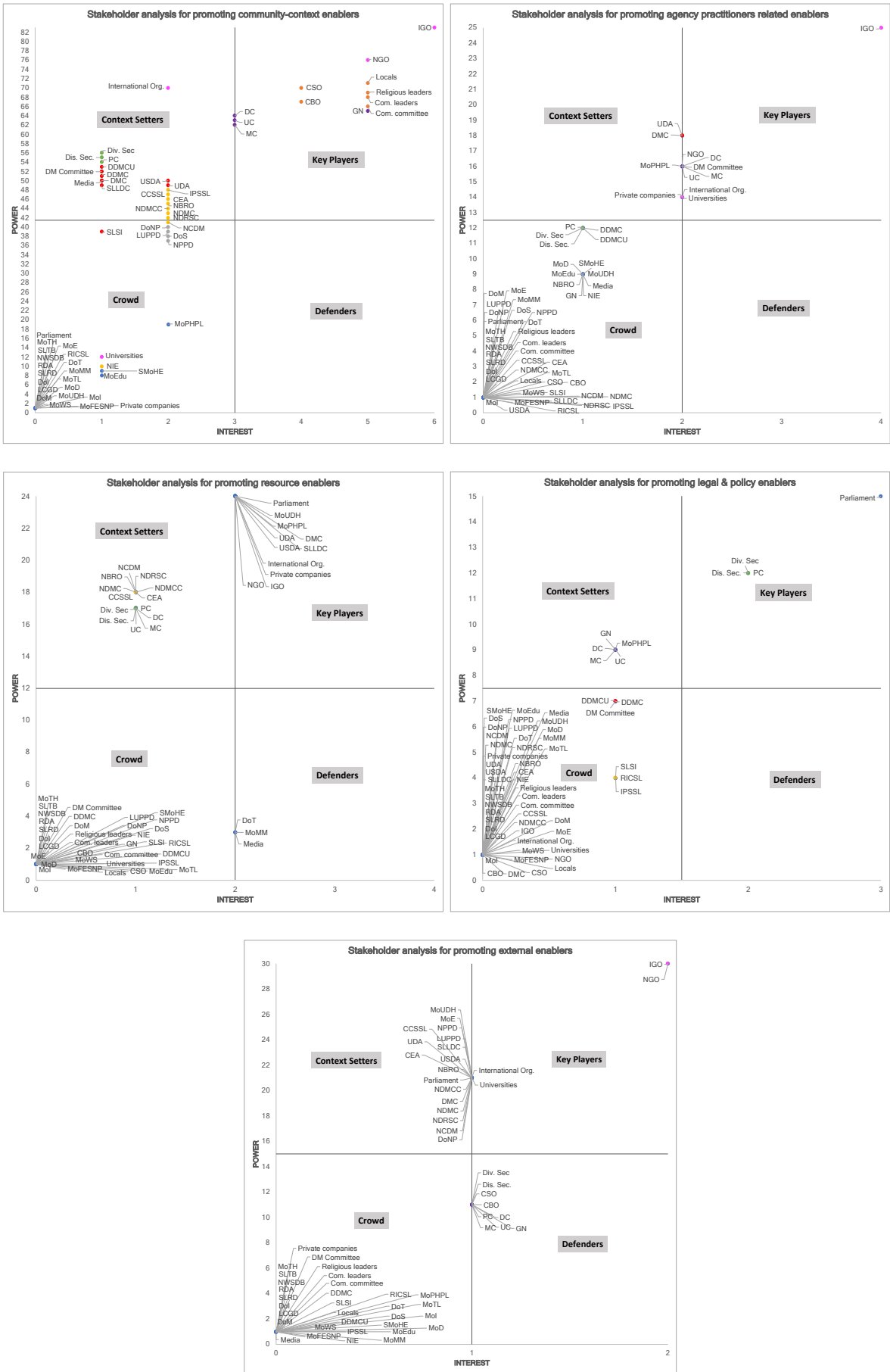


Figure 6. 8: Stakeholder analysis for promoting different categories of enablers

As observed from the above critical analysis, the crowd quadrant is highly populated with all types of enablers. On the other hand, defenders are identified only for resource and external enablers. For resource enablers, three stakeholders (MoMM, DoT, Media) liable for the country's media and telecommunication have been identified as defenders as they should implement decisions made by the key players. Provincial government bodies, local authorities, CBOs, and CSOs are the defenders of external enablers such as international collaboration and NGOs.

6.5 Best Practices and Recommended Contributions for Key Stakeholders

While the SNA and SA findings emphasise the co-attended factors, possible stakeholder collaborations, and key players, this section presents the justifications for the linking entries made in stakeholder-factor matrices. Accordingly, this section presents the analysis of experts' and community representatives' opinions on how different actors can contribute to addressing the identified obstacles and facilitating factors. The identified contributions were classified into different contexts based on their origin for effective implementation. The proposed best practices and contributions cover the factors caused by/due to communities, institutions, agency practitioners, relational affairs, resources, legal, policy and political concerns, and others (external). The results are presented in Table 6.11, with key stakeholders identified from the SA for each setting. By implementing the proposed strategies, the key players can work together towards creating an inclusive and participatory decision-making culture for achieving RSUD.

Table 6. 11: The recommended stakeholder contributions and best practices for fostering community engagement in RSUPD

Context	Description	Solutions/Best practices	Key players
Community-context	Communities themselves are reluctant to engage due to incapacities associated with them. These incapacities mainly include psychological/internal factors; the level of knowledge, awareness, and skills; negative thoughts; consultation fatigue; physical and/or mental impairment.	<ul style="list-style-type: none"> ▪ Raise community awareness and build local capacities through training programs, workshops, and information sessions about RSUP and the importance of community participation ▪ Attend participatory initiatives ▪ Establish community committees to work closely with local authorities ▪ Engage with community leaders and involve them in decision-making processes ▪ Community champions foster partnerships and collaboration with other stakeholders, including local governments, NGOs, and private sector organisations ▪ Strengthen the capacity of CBOs through training and technical assistance ▪ Recognise the contributions of community members and acknowledge their input to promote engagement culture by fostering a sense of ownership and investment in the decision-making process ▪ Introduce community feedback mechanisms to ensure that locals' needs and expectations are met in urban policymaking, planning and development ▪ Establish community forums ▪ Introduce community engagement to secondary and tertiary education curriculums 	<ul style="list-style-type: none"> ▪ MoPHPL ▪ Local authorities ▪ Civil society ▪ NGOs ▪ IGOs
Institutional	The defective practices and top-down decision-making approach often led to a lack of participation and input from diverse stakeholders. The absence of an institutional framework to facilitate inclusive decision-making further exacerbates this issue. This ultimately results in policies and decisions that may not effectively address the needs and concerns of all stakeholders.	<ul style="list-style-type: none"> ▪ Define the goals and objectives of the community selection and entry process ▪ Identify selection criteria that are aligned with the goals and objectives of the community development and engagement initiative ▪ Develop a scoring system to rank potential communities based on the selection criteria ▪ Establish an inter-agency committee comprising relevant government agencies, NGOs, and other stakeholders to coordinate DRR and UP initiatives to ensure that different perspectives and needs are taken into account in the policymaking process ▪ Develop industry standards and guidelines that prioritise community engagement and ensure that all industry practitioners are aware of their responsibilities in this regard ▪ Monitor and evaluate progress to ensure that the community engagement initiative is achieving its goals and objectives ▪ Incorporate local knowledge and expertise into the planning process ▪ Allocate resources to conduct scheduled employee training on participatory decision-making 	<ul style="list-style-type: none"> ▪ Parliament ▪ MoUDH ▪ MoD ▪ SLSI ▪ UDA ▪ DMC ▪ IGOs
Agency practitioners related	Organisational boundaries and little experience working across scales make practitioners physiologically and practically backwards in	<ul style="list-style-type: none"> ▪ Conduct training and capacity-building programs for policymakers and government officials on community engagement, including how to effectively engage with communities, how to address community concerns, and how to develop meaningful partnerships ▪ Create opportunities for industry practitioners to engage in dialogue with community members to understand their perspectives and concerns better 	<ul style="list-style-type: none"> ▪ SMOHE ▪ UDA ▪ USDA ▪ SLLDC ▪ DMC ▪ DDMC

	accepting community representatives within decision-making in government procedures.	<ul style="list-style-type: none"> Use data and evidence to support planning decisions and ensure that stakeholders have access to accurate information Incorporate stakeholder feedback into the planning process to ensure that planning decisions reflect the interests and priorities of all stakeholders 	<ul style="list-style-type: none"> DM Committee DDMCU NWSDB SLTB Academics
Relational	Negative experiences from previous participatory decision-making events make both communities and decision-makers less interested in community engagement. This factor represents untrustworthy relationships among different types of stakeholders, between communities, and communities with decision-makers and urban planners.	<ul style="list-style-type: none"> Develop a shared vision for the community that reflects the interests and priorities of all stakeholders Make planning processes and information accessible to the public through user-friendly online platforms, plain language, and inclusive design Identify CBOs that are active in the community and engage with them early on in the planning process and ensure they have a meaningful role in the planning process Use village-level Disaster Management Committees Involve traditional and religious leaders Involving women's groups in community-based RSUPD to promote gender equality Establish an independent oversight body to monitor decision-making processes and ensure that conflicts of interest are identified and addressed Establishing clear accountability measures to build trust and ensure that agencies are held accountable for their actions Recognise and value the contributions of CBOs to the planning process Recognise and celebrate successful community engagement initiatives to demonstrate the value of a participatory approach 	<ul style="list-style-type: none"> UDA USDA SLLDC DMC DDMC DM Committee DDMCU NWSDB SLTB Local authorities CBO NGOs IGOs International organisations Academics
Resource	A lack of financial investment as well as limited resources (such as experienced personnel, information, communication, and technology) constrain the successful implementation of community engagement.	<ul style="list-style-type: none"> Utilise existing resources, such as public facilities and community spaces, to hold meetings and events Seek funding from external sources such as NGOs, foundations, and other international organisations Build partnerships with local businesses and organisations to collaborate on community engagement initiatives Promote volunteerism to reduce costs associated with hiring external professionals or contractors Advocate (e.g., petitions, lobbying, and engaging with local government officials) for increased funding at the local, regional, and national levels Utilise technology, such as online platforms, social media, or interactive maps, to provide community members with opportunities to provide feedback and engage in the planning process Use mobile technology, such as text messaging or mobile apps, to communicate with community members and share information about RSUPD Provide virtual training and capacity-building sessions to community members Use Geographic Information Systems (GIS) to map and analyse risk data and to communicate this information to community members in an accessible and visual way 	<ul style="list-style-type: none"> Parliament MoPHPL MoUDH UDA USDA SLLDC DMC International organisations Private sector NGOs IGOs

		<ul style="list-style-type: none"> ▪ Develop online resources, such as videos, fact sheets, and interactive tools, to share information about RSUPD topics with community members 	
Legal, political, & policy	The existing engagement process appears to be complicated with ill-defined aims and objectives, legal enforcement and policy breakdowns to promote community participation.	<ul style="list-style-type: none"> ▪ Increase awareness among policymakers ▪ Utilise participatory approaches in the policymaking process ▪ Advocate for policy change to promote inclusive decision-making for DRR and UP at the local, regional, and national levels ▪ Develop a comprehensive legal framework that outlines the rights and responsibilities of different stakeholders in the community engagement process ▪ Develop guidelines and procedures that provide a straightforward process for public participation, stakeholder engagement, and consultation ▪ Develop a code of conduct that outlines the ethical responsibilities of planners and elected officials ▪ Community members can use the RTI policy to request information from public institutions about RSUD plans, policies, and decisions ▪ Strengthen the role of local government 	<ul style="list-style-type: none"> ▪ Parliament ▪ MoUDH ▪ MoD ▪ MoTL ▪ MoE ▪ MoI ▪ MoFESNP ▪ MoPHPL ▪ MoTH ▪ MoWS ▪ IPSSL ▪ SLSI ▪ Provincial government
External	Factors impeding and fostering community engagement that are external to the primary stakeholders. The study revealed only the external enablers: NGOs and international collaboration	<ul style="list-style-type: none"> ▪ Support research and data collection to better understand the impact of disasters and urbanisation on different communities and populations ▪ Use research findings to inform RSUPD practice by providing evidence-based guidance on practical approaches and strategies ▪ Participating in international conferences and workshops to learn about best practices, innovative approaches, and experiences from other countries and to build networks and relationships with stakeholders from different countries ▪ Participate in exchange programs ▪ Promoting South-South cooperation can facilitate the transfer of knowledge and expertise between countries facing similar challenges and can promote innovation and learning ▪ Collaborate with NGOs and IGOs to provide access to funding, technical expertise, and resources 	<ul style="list-style-type: none"> ▪ NGOs ▪ IGOs ▪ International organisations ▪ Academics

6.6 Discussion

After analysing the obstacles and factors that enable progress, the study recommends a multi-stakeholder approach to overcome the barriers and utilise the facilitating factors effectively. As highlighted by Pelling et al. (2018) and Kirshen et al. (2018), a multi-stakeholder approach can offer the potential for a transition from risk to risk-informed UD when organised civil society collaborates with government development authorities and other actors. The study emphasised the role of each group of actors towards informing effective and inclusive decision-making for RSUPD in Sri Lanka, as summarised in Table 6.12.

Table 6. 12: Synthesis of the role of different stakeholders in enabling community engagement in the decision-making of RSUPD in Sri Lanka

Stakeholder group	Role in facilitating community engagement in RSUP	Factors to contribute	
		Barriers	Enablers
National government (Government & Ministries, State Departments Statutory Boards State Agencies)	<ul style="list-style-type: none"> make and enforce laws and policies related to RSUPD at the national level legalise inclusive approaches in UPD and DRR budget allocation provide technical assistance to support local authorities and civil society organisations in implementing risk-informed approaches 	B1, B3-B19	E1 E6 E11 E12 E17 E18
Provincial Councils (PCs)	<ul style="list-style-type: none"> work closely with the national governing bodies, including the MoUDH and the MoD, to develop RSUPD-related policies and strategies at the provincial level ensure that they are aligned with national policies and strategies provide technical and financial support to local authorities to promote community engagement and implement policies and strategies at the grassroots levels social development and work to ensure that vulnerable groups are included in policies and strategies related to social development 	B1 B5 B7 B9	E1 E7 E12 E15 E17 E19
District and Divisional secretariates	<ul style="list-style-type: none"> work closely with each other and LAs to ensure that RSUPD policies and strategies are aligned with national policies and strategies implement policies and strategies at the local level provide technical and financial support to promote community engagement provide regular training for field workers to engage with communities effectively 	B1 B5 B7 B9	E1 E7 E12 E15 E17 E19
Local Authorities	<ul style="list-style-type: none"> implement UD projects at the local levels have the mandate to promote community participation and engagement in the planning and implementation of UD projects and policies 	B1 B2 B5 B7 B9 B17	E1 E3 E4 E5 E6 E7

	<ul style="list-style-type: none"> work to ensure that the concerns and needs of local communities are taken into account in decision-making processes related to UD collaborate with CSOs and CBOs to promote community engagement and to implement policies and strategies related to RSUPD monitor and evaluate the impact of these projects to ensure that they are achieving their intended outcomes 	B18	E10 E12 E15 E19
CSOs, CBOs, Community committees and leaders/ champions	<ul style="list-style-type: none"> act as intermediaries between local communities and government bodies and facilitate dialogue and collaboration between the two represent views and concerns of local communities and help to ensure that these views are taken into account in decision-making processes related to RSUPD build capacity within local communities by providing information and training on RSUPD and related issues empower communities to engage more effectively in decision-making processes related to RSUPD assist in the planning and implementation of RSUPD projects provide monitoring and evaluation support to ensure that the projects are implemented in a way that is responsive to the needs and concerns of local communities 	B1 B2 B9 B17 B18	E1 E3 E4 E5 E6 E19
Residents	<ul style="list-style-type: none"> participating in awareness-raising campaigns, community meetings and consultations providing local knowledge and expertise contributing to data collection and mapping exercises participating in volunteer initiatives community monitoring 	B2	E1 E3 E4 E5 E6
Local and international NGOs, IGOs, Private organisations, Other international organisations	<ul style="list-style-type: none"> provide financial support to government bodies, CBOs, and CSOs to implement RSUPD initiatives provide expertise, knowledge, and tools to support the development and implementation of RSUPD policies and strategies capacity-building initiatives to enhance the skills and knowledge of government bodies, CBOs, and CSOs in areas such as community engagement, participatory planning, and project management. advocate for policy change at the national and local levels that promote RSUPD facilitate partnerships and collaboration among government bodies, CBOs, CSOs, and other stakeholders to promote joint action on RSUPD initiatives 	B1 B2 B3 B4 B5 B9 B11 B12 B14 B17 B18 B19	E1-E12 E18 E19
Academics	<ul style="list-style-type: none"> research to provide valuable insights into the challenges and opportunities related to RSUPD to inform policy and practice in this area teach and train to build capacities and promote best practices in RSUPD facilitate partnership and collaboration advocacy and awareness-raising technical assistance 	B1 B3 B12 B14	E2 E8 E9 E18
Media	<ul style="list-style-type: none"> raise public awareness allow for the voices of residents to be heard influence on advocate for policy change and promote RSUPD initiatives monitor the implementation of RSUPD policies and initiatives, and hold government bodies and other stakeholders accountable for their actions 	B1 B14	E6 E10 E13 E14

As summarised in the table, each group has their role and responsibilities in promoting community engagement in the context of RSUPD. Though the national to local government contributions are differently interpreted by courtiers based on their administrative and governance systems, the literature confirms their power and resource in dealing with legal and political matters. The study reiterates the CBOs, NGOs, and IGOs' roles highlighted by Rafique & Khoo (2018), de Lancer Julnes and Johnson (2011), and Yang & Pandey (2011). Thus, it is unlikely that new roles and responsibilities are recognised for their generic contributions in this regard compared to literature.

Instead, the study provides a thorough account of how different stakeholders can deal with each factor identified in Chapter 5. For instance, the SNA concludes that the UDA and DMC have the power and resources to address most of the barriers. While IGOs and NGOs are found to be the actors that utilise and enhance the existing enablers. Conversely, a majority of the stakeholders have shown capacities and interest in addressing communities' lack of knowledge, skills and competencies and integrating communities' lived experiences into development planning. Likewise, the SNA provides a comprehensive analysis of how different actors can build partnerships and collaborations to promote community engagement in RSUPD. By analysing the network of relationships among stakeholders, SNA reveals that UDA, IGOs, NGOs, and DMC are well-connected and influential within the network; thus, they are at the forefront of facilitating community engagement in the decision-making of RSUPD in Sri Lanka. The analysis indicates that 82% of the stakeholders are core to addressing barriers and promoting enablers of inclusive RSUPD in Sri Lanka. To illustrate, in Sri Lanka, partnerships should build, particularly among the state agencies related to UPD (i.e., UDA, USDA, SLLDC) and DM (i.e., DMC, DDMCs, DM Committees, DDMCUs) as they evidenced high power similarity over 50% of the barriers. More factors can be dealt with when state agencies collaborate with related NGOs and IGOs. This informs an information flow among these core stakeholders who could contribute to the formation of shared values, attitudes and interests towards inclusive RSUPD.

While the SNA reveals stakeholders' shared power, resources, and interest towards dealing with the core factors, SA provides insights to key actors in different areas. As observed from figures 6.6 and 6.8, key players are not the same for all types of barriers and enablers, which implies that different stakeholders should involve in promoting community engagement from diverse aspects. Table 6.13 below summarises the key players in different fields as resulted from the SA.

Table 6. 13: Analysis of key players for overcoming barriers and promoting enablers from different contexts

Stakeholder groups	Barriers					Enablers				
	Community-context	Institutional & policy	Practitioners related	Legal & political	Relational	Community-context	Relational	Resource	Legal & policy	External
Government & Ministries	x	xxx	x	xxx				x	x	
State Departments										
Statutory Boards										
State Agencies		xxx	xxx		xxx		x	x		
Provincial Government									xxx	
Local Authorities	xxx				x	xxx	xxx			
Civil Society	xxx				x	xxx				
Other		x	x		x	xx	xxx	xxx		xxx

Note: x - less influence, xx - moderate influence, xxx - high influence

Based on the comparative analysis of key players in barriers and enablers, it appears that local authorities, civil society groups, and external stakeholders such as IGOs and NGOs are better equipped to handle factors that limit local participation in UP and enhance their ability to influence the decisions made by practitioners. On the other hand, the parliament, government ministries, state agencies, and external actors such as academics and IGOs are better suited to promote community-inclusive decision-making from institutional, policymaking, and agency practitioners' facets. They also can facilitate necessary resources (e.g. finance, experts, technology etc.) to support community engagement. Furthermore, national government representatives (e.g., parliament and the ministries) and provincial government bodies can collaborate to implement new and sharpen existing legislative formats to make community engagement a law in mainstreaming DRR into UP. In addition, state agencies, local authorities, civil society actors, and external parties can involve promoting transparency, open communication, and accountability in decision-making processes in order to build trust between locals and practitioners.

As evidenced by the country's most up-to-date visions publicised for UPD¹⁸ and DM¹⁹, a comprehensive stakeholder mapping for inclusive RSUPD is yet to be included. So, the SNA with SA outcomes provides valuable contextualised insights for developing a multi-stakeholder approach that enables community engagement in the context of

¹⁸ The Sri Lankan government has developed a long-term vision for the country called "Vision 2025," which outlines key strategic objectives and targets for sustainable development across various sectors, including UD.

¹⁹ National Disaster Management Plan 2022-2030

The Ministry of Disaster Management in Sri Lanka, in cooperation with the Japan International Cooperation Agency (JICA), has developed a roadmap for DRR called "Safe and Resilient Sri Lanka."

RSUPD. Thus, including stakeholders and their contributions to the intended holistic approach is crucial for several reasons. Firstly, identifying the power and resource similarities among stakeholders is essential because it can help to identify potential alliances and collaborations between stakeholders leading to more effective and efficient strategies for promoting community engagement. Furthermore, realising co-attended factors ensures the development of more targeted strategies that address different stakeholder groups' specific needs and concerns. Moreover, identifying the contributions of different stakeholders determine where resources and efforts should be focused. This will lead to more effective and sustainable DRR strategies and ultimately help to create safer and more resilient communities.

6.7 Summary and Link

The chapter reports the outcomes of an SNA and stakeholder analysis conducted on 62 stakeholders and 38 barriers and enablers. The SNA revealed 51 core stakeholders, including government bodies at the central, provincial, and local levels, community stakeholders, and external groups such as NGOs, private organisations, international organisations, media, universities, and IGOs. The study identified three key factors: communities' lack of knowledge, skills, and competencies in engagement, high levels of community literacy, and community monitoring and feedback. The findings from the SNA were used to conduct the stakeholder analysis, which identified seven state agencies specialising in UPD and DRM as the key players in overcoming the barriers to community-inclusive UD. Conversely, NGOs and IGOs were found to have high potential in encouraging existing enabling factors. Therefore, while the central government is accountable for minimising negative factors, external groups can empower locals to participate in the decision-making process of RSUPD. Finally, the chapter introduces best practices and suggestions for key players from different contexts.

The chapter establishes the links between the first four themes by identifying stakeholder contributions and industry best practices to overcoming the barriers and promoting enablers. The next step is to investigate a tool for selecting participatory methods that lead agencies can use to engage communities effectively.

CHAPTER SEVEN

PARTICIPATORY METHODS AND SELECTION CRITERIA

7.1 Introduction

As concluded in Chapter 6, it is the responsibility of the lead agency to select the participatory methods appropriate for engaging communities in the decision-making of RSUPD. This chapter presents the analysis of experts' and community participants' perspectives, practices and experiences of engagement methods and, thereby, proposes a tool for selecting participatory methods justifiably. The chapter begins with an extensive list of methods, with subsequent sections explaining their classification into six main selection criteria. A tool is created, including all the identified engagement methods specifying their appropriate applications. Figure 7.1 depicts the scope covered in this chapter.

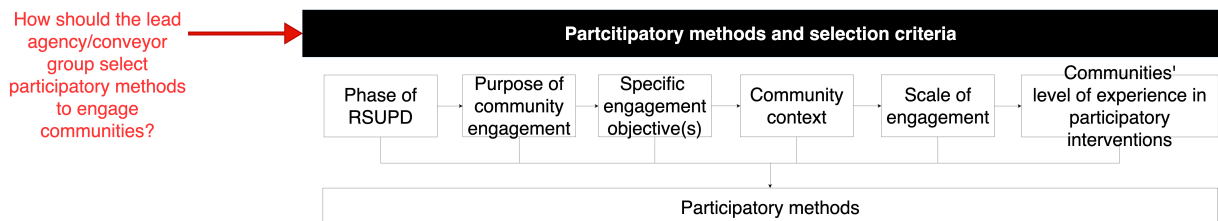


Figure 7. 1: Scope covered in Chapter Seven

7.2 Analysis of Participatory Methods

Participatory methods are techniques and approaches that involve community members in the decision-making processes of any discipline, in community-based DRR, CCA, or UPD, in this case. These methods are designed to promote the active involvement of community members during the planning process and to encourage their contributions to the development and monitoring. The inductive coding revealed 40 participatory methods that are being applied and could potentially be applied to facilitate community entry and engagement in RSUPD. Study participants explained not only the nature of these methods but also their application in different modes, such

as physical, virtual, and hybrid. Table 7.1 presents the classification of the identified participatory methods alongside their code statistics.

Table 7. 1: Code statistics of the identified participatory methods

Mode	Participatory Methods	Documents		Segments		
		No.	%	No.	%	
Physical	1. Displays/Exhibits	17	71.4	34	5.3	
	2. Field/Site visits	14	57.1	34	5.3	
	3. Public meetings	17	71.4	34	5.3	
	4. Printed material/Leaflets	17	71.4	31	4.8	
	5. Pocket/Stakeholder meetings	3	14.3	7	1.1	
	6. Door-to-door information/Door knocking	3	14.3	3	0.5	
	7. Community monitoring	3	14.3	3	0.5	
	8. Community committee/Panel/Study circles	3	14.3	3	0.5	
	9. Cash for work/Labour	3	14.3	3	0.5	
	10. Groups to maintain & reshape lands/ 11. Place attachment	3	14.3	3	0.5	
	12. Local sourcing of materials	3	14.3	3	0.5	
	13. Open space event/Co-design	3	14.3	3	0.5	
	14. Paper-based tools/Card storming	3	14.3	3	0.5	
	15. Participatory Rural Appraisal (PRA)	3	14.3	3	0.5	
	Remote/Digital	16. Advertising/Media coverage	10	42.9	21	3.2
17. Citizen science/Crowdsourcing		3	14.3	3	0.5	
18. Gamification		7	28.6	10	1.6	
19. Social media		14	57.1	34	5.3	
20. Websites		17	71.4	27	4.2	
Hybrid	21. Citizen jury	1	14.3	1	0.2	
	22. Community indicator project (CIP)	3	14.3	3	0.5	
	23. Community mapping/ 24. Community resource mapping/ 25. Asset-based community development (ABCD)	10	42.9	27	4.2	
	26. Community-based system dynamics (CBSD)/ 27. Group model building (GMB)	10	42.9	14	2.1	
	28. Expert panels	14	57.1	31	4.8	
	29. Focus group discussion (FGD)	10	42.9	27	4.2	
	30. Interviews	24	100	65	10.1	
	31. Key informant interviews (KII)	3	14.3	7	1.1	
	32. Knowledge co-creation	3	14.3	7	1.1	
	33. Letter	3	14.3	3	0.5	
	34. Participatory budgeting (PB)	3	14.3	7	1.1	
	35. Participatory geographic information system (PGIS)	7	28.6	7	1.1	
	36. Posters/Infographics	7	28.6	10	1.6	
	37. Presentation	10	42.9	14	2.1	
	38. Seasonal calendars	3	14.3	7	1.1	
	39. Seminars/Community education programme/Webinars	3	14.3	3	0.5	
	40. Survey	17	71.4	34	5.3	
	41. Voting/Deliberative polling	14	57.1	17	2.7	
	42. Workshop	17	71.4	51	8.0	
	43. Working group	17	71.4	24	3.7	
	44. Community visioning	10	42.9	17	2.7	
	ANALYSED DOCUMENTS		24	100.0	-	-
	TOTAL SEGMENTS		-	-	646	100.0

As observed from Table 7.1, most of the methods (12) are coded in over 50% of the documents. The study further identified 14 physical engagement methods, five digital

participation methods, and 21 hybrid methods. Physical engagement methods involve “face-to-face interactions” (P7) and activities taking place in a physical setting. These methods often involve “direct participation and engagement” (P9) from community members. Of all the physical engagement methods, public meetings, printed material, exhibitions, and working groups are highly cited, indicating their frequent application.

Digital or remote participatory methods such as websites and social media involve technology or online platforms to engage with participants and gather their input or feedback. Remote methods can be instrumental in “reaching a wider audience” (P10) and “involving individuals who may not be able to attend physical meetings or workshops” (P7). They can also facilitate “real-time feedback” (P11) and provide a more “inclusive and transparent process” (P2).

Hybrid engagement refers to methods that can be carried out through “a combination of physical and digital means” (P10) or “can be conducted either in person or remotely” (P11). As opined by the experts, hybrid methods offer a flexible approach to engagement, allowing for greater accessibility and inclusivity for a broader range of participants. Notably, all participants mentioned interviews as a common method for engaging communities.

Figure 7.2 presents the subcode statistics for the identified methods.

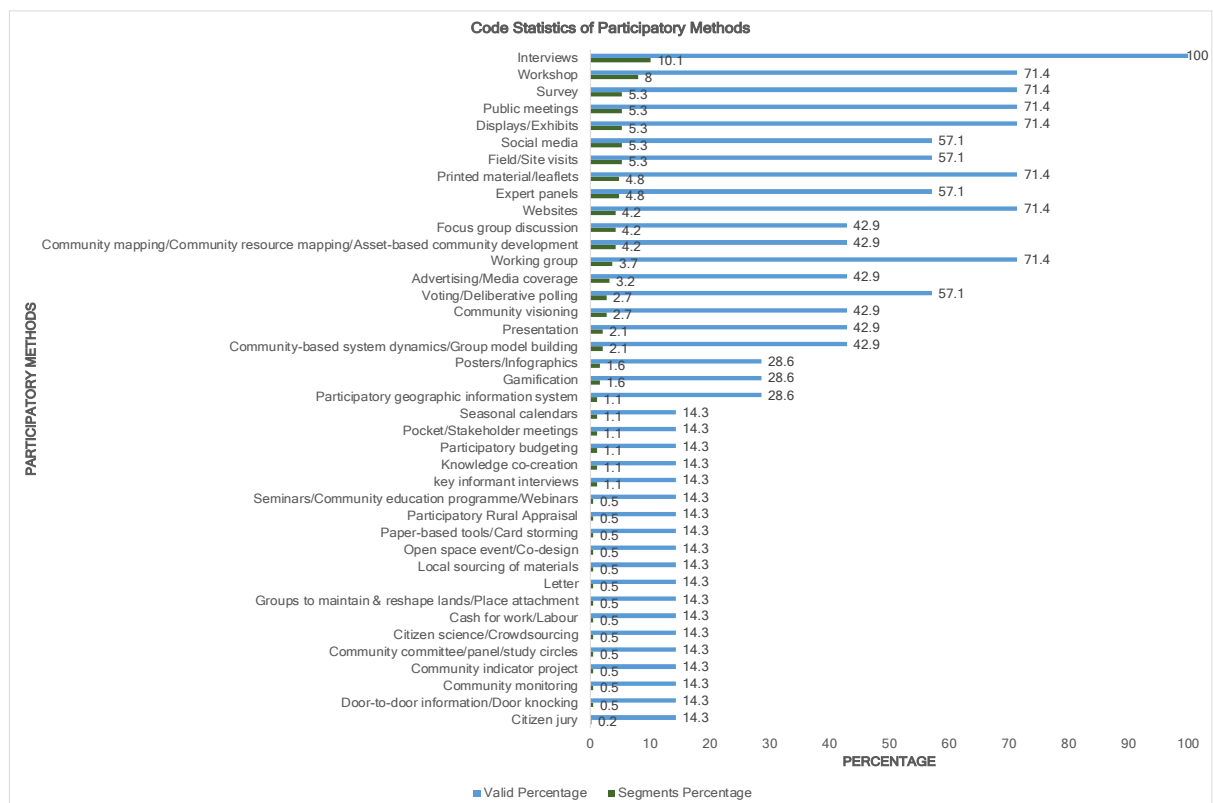


Figure 7. 2: Subcode statistics of the participatory methods

As observed above, interviews, workshops, surveys, and public meetings were mentioned in a relatively large percentage of the analysed documents and were considered the most relevant. On the other hand, some methods, such as citizen juries, were mentioned in only a few segments. Additionally, the figure highlights the importance of technology and media in participatory processes, as methods such as social media, websites, and media coverage were mentioned in a significant percentage. Although the above statistics are not a true representation of the frequency of application of methods in the context of inclusive planning, it can be assumed that only a few of the most cited methods are common in practice. Overall, the experts commented that not all the methods are equally applicable in all situations; therefore, the participants' views on engagement methods were further analysed to establish the selection criteria.

7.3 A Model for Selecting Participatory Methods

Experts suggest that different methods may be appropriate depending on the context, goals, and stakeholders involved. Furthermore, it is essential to analyse context-specific participatory methods for engaging communities in RSUPD since different communities have unique needs, characteristics, and preferences that influence their participation in the planning and development process. What works in one community may not be effective in another. Thus, it is crucial to identify methods that are suitable and applicable to the local context to ensure effective community engagement. Based on the participants' explanations, a model for selecting participatory methods was proposed, as depicted in Figure 7.3. The figure illustrates the experts' opinions on six key selection criteria to be concerned with when selecting participatory methods to engage communities in RSUPD effectively.

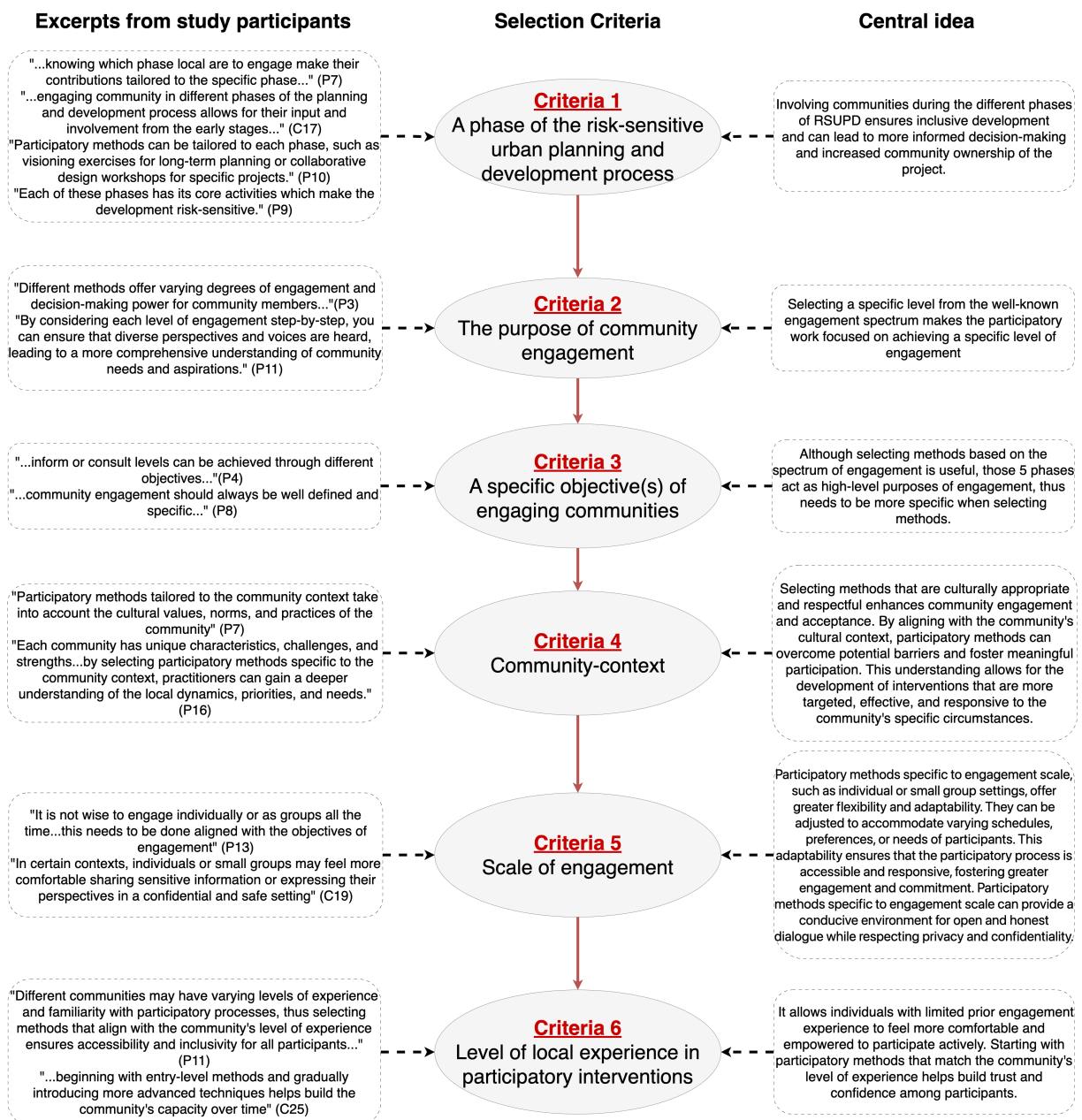


Figure 7. 3: Criteria for selecting participatory methods

The subsequent sections explain the classification of the above-identified 40 methods into these selection criteria.

7.3.1 Phases of risk-sensitive urban planning & development

The experts commented on six phases of an RSUPD process, whereby locals can engage at different scales. Each of these phases has its core activities which make the development risk-sensitive.

7.3.1.1 Urban policymaking

Within the domain of UPD, the creation of policy and legislation pertaining to a piece of land is called 'urban policy'. Urban policymaking refers to the process of "creating and implementing policies that affect urban areas, including cities and metropolitan regions" (P9). This can include policies relating to land use, transportation, housing, environment, and social issues such as poverty and inequality. It is mainly deployed on intra-urban territories called "priority urban areas for urban policy" (P9): a city that requires particular attention and intervention to address economic and social development disparities. This approach replaces previous zoning systems, such as sensitive urban zones and urban social cohesion contracts, during land-use planning to include governmental regulations, zoning codes, and statutes (P8, P9).

Urban policymaking involves a multidisciplinary and collaborative approach that recognises the unique needs and opportunities of urban areas (P5, P7, P9). P7 and P10 stressed the point that successful urban policymaking depends on how effectively the urban planner consults with the greater community as well as with other stakeholders. However, all the industry participants held a negative standpoint on participatory urban policymaking due to its impracticable nature. They did not believe that communities need to participate in policymaking nor have an equal level of decision-making rights because it is challenging to incorporate diversified community interests into one urban policy. Generally, in the Sri Lankan context, policymaking is mainly undertaken by central government bodies and does not even go to the provincial government.

However, as opined by P10,

"the involvement of people who will be affected or benefited by policies is important at some point in the process, as there will always be three categories of people: those who benefit, those who are negatively impacted, and those who have a neutral impact."

Thus, they further suggest that it would be good if, at least, the adversely affected group, as well as the people who will gain benefits, can be consulted not in the whole process but at an appropriate stage. In this way, the agency practitioners could reduce creating adverse social problems such as community petitions and protests. Additionally, P3 opined that they (NBRO) are focusing on testing agency policies with the community by getting their feedback. Still, policymakers should also seek community feedback after converting a particular policy into a set of strategies and actions (P3). P1 made the point clear by stating, "...one can select the influential parties

from the community who can positively contribute to the policy decision-making...depending on the type of development and based on their knowledge....”

Based on the aforementioned viewpoint, the analysis found 12 participatory methods applicable to urban policymaking, as shown in Table 7.2. Out of the 12 methods, only four methods, namely expert panels, focus group discussion (FGDs), surveys, and pocket meetings (though only limited in some instances), are currently in practice, while the remaining methods are put forward pointing out their suitability for future urban policymaking scenarios.

Table 7. 2: Participatory methods for urban policymaking

Recommended from practice	Potential suggestions
<ol style="list-style-type: none"> 1. Expert panels 2. FGDS 3. Pocket/Stakeholder meetings 4. Survey 	<ol style="list-style-type: none"> 1. Citizen jury 2. Citizen science/Crowdsourcing 3. CIP 4. Community visioning 5. Knowledge co-creation 6. Social media 7. Websites 8. Working group

As opined by many, practitioners may seek community knowledge (i.e., to extract context-specific information) for certain urban policymaking. P3 recommended local expert panels, saying, “we hire some technical officers in that particular area, and we get their ideas as well.” They further opined that FGDs are used when seeking extensive community feedback for framed policies, whereas public surveys are in place when sparse feedback is required. P7 stated that they used stakeholder/pocket meetings to develop local-level policies (e.g., Housing policies), although this approach is not commonly used.

In addition, citizen juries (P5, P7) and citizen science (P1, P4) are suggested as alternatives to expert panels and surveys, respectively. Working groups were given as one of the emerging practices in inclusive policymaking (P1, P3, P7, P10). P7 called this: ‘Policy Working Groups (PWGs)’: thematic spaces utilised to facilitate the convergence of typical positions and the policy priorities of social movements with the participation of Indigenous groups, CBOs, and CSOs. Similarly, the applicability of knowledge co-creation in policy design and review processes is more likely to generate functional outcomes compared to a more traditional top-down approach (P3). P11 further emphasised knowledge co-creation as an essential strategy for informing the policy response. One of the most suggested methods is community visioning. Community visioning in urban policymaking allows practitioners to develop a shared

vision of the future of a given urban setting by asking a group of local participants to appraise where they are now and where they can realistically expect to be in the future with potential UD (P3, P10). P1 is of the view that CIPs could be useful as it offers the opportunity to discuss what is essential, systematically review whether things have been getting better or worse, and establish priorities for a policy response. In addition, social media platforms and websites are recommended to publicise policy drafts and to attract the youth's apathetic majority, particularly in local policy development processes.

7.3.1.2 Pre-planning

Pre-planning involves identifying the need for a project and conducting initial research to determine its feasibility and potential impact. The main goal is to learn everything possible about the clients, in this case, about communities, their needs and space requirements. The key tasks may involve background research about site/location and existing conditions/risks, zoning and land-use planning, investigating project feasibility/alternatives, and programming. As almost all the participants agreed, it will be difficult for communities to influence policies, whereas the pre-planning stage is when the community can brief their requirements to the authorities.

In this regard, the participants commented on 28 participatory methods: 11 are currently in practice during the pre-planning stage, while others are suggestions (Table 7.3).

Table 7. 3: Participatory methods for pre-planning

Recommended from practice	Potential suggestions
<ol style="list-style-type: none"> 1. Expert panels 2. Field/Site visits 3. FGDs 4. Interviews 5. KII 6. Paper-based tools/Card storming 7. Printed material/leaflets 8. Public meetings 9. Seasonal calendars 10. Survey 11. Workshop 	<ol style="list-style-type: none"> 1. Advertising/Media coverage 2. Citizen jury 3. Community mapping/Community resource mapping/ ABCD 4. Community visioning 5. Displays/Exhibits 6. Door-to-door information/Door knocking 7. CBSD/GMB 8. Knowledge co-creation 9. Letter 10. PB 11. PGIS 12. Voting/Deliberative polling 13. Posters/Infographics 14. Presentation 15. Social media 16. Websites 17. Working group

Many opined that pre-planning starts with risk assessment as a kind of information gathering. For this purpose, the commonly used tools are FGDs, public meetings, and

surveys. Many were of the view that, firstly, the community need to be aware of the project so that they can find out the benefits and they will decide on their investment options. Thus, the community that will be affected or gain benefits should be informed in advance. One of the best practices for this purpose is to hold public meetings. Elaborating upon this, P3 stated, “in public meetings, the community can get any concerns clarified... we can have public centres or public community gathering for some information checking as well because there are some Emergency Events’ Databases (EM-DAT) managed by the DMC.” Furthermore, P5 suggested that implementors can have several rounds of FGDs focusing on project requirements. For example, P5 stated, “one can have 8 to 12 FGDs having different community groups including senior citizens, youth, women... just like a cross-section of the society.” Moreover, P2 has experienced that, as opposed to media announcements, a questionnaire survey provides a space for the community to raise their voice. Both P3 and P9 emphasised this by illustrating one of their recent surveys conducted in landslide-prone areas; they were enabled to identify around 100,000 buildings at risk around the country.

Besides the aforementioned widely applied methods, the use of expert panels, workshops, citizen jury, door knocking, interviews, key informant interviews (KII), community mapping, participatory geographic information system (PGIS), site visits, paper-based tools, seasonal calendars, voting/deliberative polling, printed material/leaflets, posters/infographics, letters, and social media is limited in practice. P3 stressed that “mostly, we are doing field visits and field investigations along with scientific testing to collect some kind of soil information.” P7 mentioned that they usually conduct KIIs with religious leaders, community leaders and members of CBOs to extract essential and valid community viewpoints. In addition, community mapping is also applied, on a limited scale, when there is a requirement to gather information about a particular area involving those who have a good understanding of the proposed development area. P3 described one of his experiences in community mapping thus:

“We gathered key people and asked them to identify the most important places in their locality...from that, we marked several landmarks...step by step, we developed some structure/design for their area, and then we marked landslide-prone areas and unstable slopes...there was some interaction between the community as well as with our technical officers. Locals said that a particular area is a high risk based on their experience, then we visited those areas and did some field testing to confirm whether those areas are actually risky or not.”

P7 extended this by stating that community mapping is suitable for rural, less educated communities. In cases utilising resource mapping, locals are asked to write their burning issues on some papers, and subsequently, they were asked to cluster those issues to identify common issues.

Suggesting other potential methods applicable for the pre-planning stage, many participants believed that working groups could be an alternative to workshops. Such a process would be pretty useful and effective for collecting community opinions in a detailed manner in terms of identifying their requirements. P1 opined that group model building (GMB) could be used as a further advancement to working groups for identifying community requirements and potential solutions to achieve those with community participation. Door knocking would be useful in informing and negotiating with locals individually. For example, door-to-door information is essential in specific circumstances, such as when people will be adversely affected by or need to relocate due to a proposed development. Another method suggested was knowledge co-creation (P2). P7 stressed that co-creation allows the generation of different perspectives from different groups of communities or stakeholders, thus, collecting balanced and well-curated ideas. Additionally, the participants also recommended a few other methods. For awareness purposes, methods such as advertising/media coverage, websites, and displays/exhibits were suggested, whereas community visioning and participatory budgeting (PB) were recommended when there is a need to give co-planning rights to a selected community.

As the pre-planning stage focuses on identifying and prioritising community needs and local risks, data triangulation was pointed out as a best practice; thus, collecting data from multiple sources was recommended. Going beyond merely sending out information to communities, four experts (P2, P3, P4, and P7) opined that locals should be provided with an opportunity to have their say, and thus, they must be consulted. Arguing this, P2 commented that communities should get involved in certain circumstances, particularly to potentially influence implementors' decisions on prospective developments if the project is going to affect them either positively or negatively.

7.3.1.3 Planning and briefing

The planning and briefing stage is the beginning of an efficient urban design. Starting with the exploration of design concepts, this is the time to test options and get a general idea of the look and feel of the proposed development. This phase involves the

development of a comprehensive plan for the project, which may include risk assessments, environmental impact assessments, land use studies, transportation studies, and other planning activities.

As highlighted by P7, planning is where implementors should look into preparing participatory disaster preparedness and response plans for any existing or foreseen disaster risks. This is because "in most cases, if not all, the government or the external partners arrive 48 or 72 hours after the disaster occurred. Thus, the communities are the first to respond" (P7). Thus, if locals are not engaged in the planning process, they will not be in a position to respond to a plan that somebody else has developed. P5 emphasised this, saying, "...that is why in most of the situations in Sri Lanka, the community response is completely different to the set plan...because the people are not aware...thus, the plan may not work."

Having established the significance of engaging communities during the planning and briefing stage, Table 7.4 summarises 16 participatory planning methods derived from experts' opinions. Of these, six methods are currently in practice, while the rest (11) are suggested for participatory planning.

Table 7. 4: Participatory methods for planning & briefing

Recommended from practice	Potential suggestions
<ol style="list-style-type: none"> 1. Community mapping/Community resource mapping/ ABCD 2. Displays/Exhibits 3. Field/Site visits 4. FGDs 5. Printed material/leaflets 6. Seasonal calendars 	<ol style="list-style-type: none"> 1. Expert panels 2. Gamification 3. Interviews 4. Open space event/Co-design 5. PGIS 6. Public meetings 7. Social media 8. Survey 9. Websites 10. Workshop

Many participants believed that FGDs were the widely applied participatory method in the planning stage, followed by site visits. FGDs allow for a briefing concerning the planning, obtaining feedback, and then refining the plan in a focused manner with diversified community groups (P2). A few other methods that are used to engage communities in the planning stage are seasonal calendars, displays/exhibits, and community mapping. Printed material is also used, particularly for briefing. The completion of seasonal calendar charts by communities helps agencies to identify the hazards and risks in terms of when they occur (P7, P9). A display of model houses is also popular in housing developments as it allows locals to voice their suggestions and objections to influence possible changes in the planned development (P7). P5 revealed

an exciting fact regarding using printed material in the planning stage: “when designing housing schemes in Sri Lanka, the norm is to have at least 20% of the scheme incorporating different design styles...here, printed materials are used to give colour codes and design styles because visuals speak more than words.” Additionally, a few other methods such as expert panels, interviews, surveys, workshops and PGIS are used, but not very often.

In addition, five methods were recommended for future inclusive planning scenarios. They are open space events, gamification, public meetings, social media, and websites. Open space events are popular in developed countries and are integral to successful UP in any community (P5). P3 stated they are experimenting with deploying gaming tools as a crowdsourcing strategy to collect community views on initial plans, particularly to attract the youth in inclusive planning. Accordingly, gamification strategies designed for inclusive UP can be identified as a digitised approach to physical open space events.

7.3.1.4 Design

The design stage, also known as the professional/technical design stage, of a UD project involves converting conceptual design drawings into a precise set of construction documents containing all the information necessary to communicate the design to contractors to build the project. Key activities during this stage involve making significant advancements for the further refinement of the design, cost planning and value engineering, specifying all the elements & components to be installed, and preparing dimensioned drawings and connection details.

A common expert view on community engagement during the design stage is that it is less evident, not only in the Sri Lankan context but globally as well. Most experts believe it is too difficult to engage communities in this phase because the professional design is too technical. Similarly, P2 expressed that implementors can overlook local participation in this stage as all local concerns may have been considered if they have already been involved at the briefing stage. On the contrary, P5 stressed that community engagement is crucial for all stages of UD if the project focuses on developing risk-sensitive urban settings. P5 recalled one of his experiences:

“...in a project with a private company, there was some kind of GIS mapping, but those specialists thought locals cannot understand GIS...no, they can. People know what GIS, open street maps and all are, and after that, when we went there and did the community mapping, they explained to us that wherever we had already

designed for a drain, that was not the place - that was a retention area because they have more experience than our officials. That experience is much better than my education and professional experience.”

Additionally, experts revealed eight participatory methods, as listed in Table 7.5. However, only displays (model houses) are currently being used in the design phase.

Table 7. 5: Participatory methods for design

Recommended from practice	Potential suggestions
1. Displays/Exhibits	1. Citizen jury 2. Expert panels 3. FGDs 4. Presentation 5. Public meetings 6. Social media 7. Workshop

Displaying model houses was commonly cited in this phase in order to present the final design to locals (P2, P3, P5, P7). Uncovering a positive side to engaging communities in technical design, P5 opined, “though professionals have everything like technical feasibility, financial feasibility, and environmental feasibility, still the community can add something using their experience...I highly recommend that it is better to just go and ask them to revisit and raise any concern.” Supporting this statement, participants suggested a few other possible applications of participatory methods during design. Many participants recommended expert panels, citizen juries, and FGDs for small-scale local participation to seek community feedback for technical proposals. Adding a new perspective, P5 elaborated that though local participation takes place during the urban policymaking to the planning stages, that does not ensure that communities’ suggestions and objections are incorporated into final plans. Thus, P5 suggested it should be mandatory to present final plans to communities, at least to those involved throughout the planning process, to seek their feedback. For this, conducting presentations and public meetings (P7, P10, P11) are recommended. Elaborating on this, P5 stated:

“we may present our way of doing things, this is how our monitoring system is... sometimes locals ask us why don't you think about community monitoring?...community monitoring is immensely powerful, isn't it?”

In addition, depending on the context, social media could also be a good tool for raising community awareness of finalised plans (P7, P12).

7.3.1.5 Implementation/Development

The implementation phase incorporates the typical construction of the proposed development along with necessary quality control measures. Participants seem to be neutral about engaging locals during construction or project implementation. P1 was of the view that community engagement at the construction stage is important so that the community will also get ownership of what is being constructed. Mainly, when it comes to owner-driven projects, locals are willing to collaborate to get the work done on their houses (P1, P2, P5). When the owners are constructing their own houses, there can also be certain monetary benefits.

Accordingly, the experts revealed two participatory methods that they have been applying to engage communities during the construction, and they also suggested another three methods to consider in future development (Table 7. 6).

Table 7. 6: Participatory methods for project implementation

Recommended from practice	Potential suggestions
1. Cash for work/Labour 2. Local sourcing of materials	1. Community monitoring 2. Field/Site visits 3. Public meetings

As many participants opined, the community should be given an opportunity to engage, at least in terms of employment, in the construction stage (P2, P5, P7). This is known as cash for labour: it is not only an engagement method but also an income generation source for less educated labour communities. This is happening in Sri Lanka, mostly in rural development projects but is less evidenced in urban settings (P2). For example, P2 opined, “when working with mega construction contractors, they are bringing their labourers from Colombo because local labourers do not have the capacity to work on large-scale projects.” In such cases, the experts recommended training local labourers. Employing local labour is highlighted in post-disaster resettlement as the communities that have been affected may have lost both their livelihoods and residencies following a disaster event (P7). For example, those capable of constructing houses have been allowed to do so.

Furthermore, local sourcing of materials is used in some cases, such as in neighbourhoods well-known for construction material businesses (P7, P10). It could be argued that employing these two methods (namely, cash for labour and local sourcing of materials) is more akin to conducting business than engaging in decision-making. However, when communities have a contractual agreement in place for development, “it ensures that projects are executed according to the terms agreed upon by the

agencies and the locals" (P10). This significantly reduces the likelihood of agencies altering their plans during the construction phase. Hence, both of these approaches are good trends for communities to get involved in building their own houses/neighbourhood while getting paid by national authorities for construction work.

In addition, experts were of the view that community monitoring and public meetings can be implemented during the construction stage. Community monitoring, as one of the highly cited methods, was suggested to include a group of locals in the construction monitoring and evaluation team. From P5's point of view:

"if it is an urban council-sponsored project, it can include a couple of practitioners representing the respective agency, while for externally funded projects, a couple of people from the donor agency...along with a group of community people who would provide the basic pieces of information relating to indicators that you may want to assess the project progress."

P5 further expanded on the importance of community monitoring by reflecting on one of her recent experiences.

"At a housing development project, the contractors have done some kind of fraudulent mixture of the cement to get some kind of profit...the community reported to us saying that they are using of cheap labour and material...because of community information, later we were able to inquire on this and take the necessary legal and construction measures."

P10 further elaborated on implementing the community monitoring of construction as a mechanism for social and environmental safeguarding. Thus, this is to identify potential social or environmental impacts of any ongoing construction via community reporting. The experts further suggested this can be reported through appropriate grievance mechanisms such as public meetings: either to bring forward social and environmental safeguards to review the overall progress or maybe to discuss any other issues related to the ongoing construction.

Moreover, periodic field visits are advised to confirm to communities that their efforts in co-design have not been in vain but are implemented accordingly. This may help authorities to reduce potential community protests at new developments.

7.3.1.6 Post-implementation/development

The post-development stage commences after handing over the constructed property/space to users and when they start to occupy the facility. This phase is important as building commissioning, owner occupancy, and operations and maintenance take place, which is known as 'facilities management'. Post-development

is the final stage in which the research participants see some merits of community engagement during the process of RSUPD. In addition to the typical facilities' management scope, monitoring and periodic assessments are essential not only to evaluate the performance of the built facilities but also to see their impact on communities (P7). P2 further opined that communities should be involved after construction if there is a need to change the functionality of (i.e., refurbishment) or to make any improvement (i.e., renovation) to the original facility that may impact its users or neighbourhoods.

Pointing out the importance of local engagement during post-development, the participants revealed 10 methods, as shown in Table 7.7. Five of them are in current practice, while five are suggested methods.

Table 7. 7: Participatory methods for post-development

Recommended from practice	Potential suggestions
1. Survey	1. CIP
2. Community committee/panel/study circles	2. Community monitoring
3. Seasonal calendars	3. FGD
4. Groups to maintain & reshape lands (Place attachment)	4. Gamification
5. Advertising/media coverage	5. Cash for work/labour

The most highlighted practice is to assess the performance of the constructed facility/space and how that has impacted improving the quality of life of local communities through surveys. Questionnaire surveys are ideal for this as they are designed to collect structured opinions from larger groups (P14-P16). On the contrary, community committees are utilised when there is a need to collect extensive feedback from specific community groups or those involved throughout the planning and development process (P11, P13). In addition, seasonal calendars are helpful for evaluating seasonal impacts that can arise from new developments. For example, seasonal calendars help locals to identify positive seasonal adaptations resulting from new developments built to address/minimise previous disaster risks (P7, P9). In addition to the above-mentioned conventional methods, P3 revealed an interesting participatory approach that they are adapting to maintain the performance of the development. In his terms, “we form community groups and train them to maintain and reshape the lands...there they have to remove grasses, maintain the drainage systems etc.” Although not directly opined by the participants, in literature, this technique is called ‘place attachment’. Apart from these direct engagement methods, advertisements and media coverage are also needed for multiple purposes, including informing neighbourhoods about the new development, raising communities’

awareness of the potential impacts of a forthcoming development, and attracting more people to work as property caretakers (P3, P7, P8, P12-P14).

The participants further suggested a few other participatory methods that could be implemented for better engagement. They are community monitoring, CIPs, FGDs, and gamification. As explained above regarding the merits of applying community monitoring at the development phase, P5 and P7 opined that participatory monitoring and evaluation are ideal for post-development. As per their opinion, in ideal cases, if the community is undertaking the implementation, the monitoring and evaluation, by default, must also be with the community. Thus, the community should be the ones who basically look at the performance or the use or the conditions of developments. P7 further stressed the fact that, sometimes, there might be possibilities of grievances or disagreements, which might be the case when external parties undertake evaluations without engaging communities. P4 commented on CIPs as one of the well-known project management and evaluation (PM&E) tools. P1 recommended using CIPs in particular circumstances, such as when community indicators have already been used during urban policymaking. Similarly, gamification was suggested if some gaming tools have already been introduced to communities and used during the planning and briefing stage (P3). Furthermore, FGDs are recommended where local feedback is required from different groups of people from a given neighbourhood (P11-P17).

7.3.2 Engagement purpose from the spectrum of community engagement

The classification of participatory methods into the IAP2's spectrum of community engagement has already been discussed in Section 2.7.1 as per the extensive literature review. This section presents data analysis pertaining to the participants' narratives on how they are currently applying and recommending the aforementioned 40 participatory methods within the five phases of the spectrum of community engagement. As the second method selection criteria, this can be considered a high-level purpose of engagement.

7.3.2.1 Inform

All the participants believed that making communities aware of or informed about any proposed development activity in their locality should be fundamental before consulting or involving them at any stage of the development. Special attention should be given

to the people who will be affected or will benefit; they should be informed well in advance. Although information dissemination or community awareness does not facilitate direct community engagement, the inform phase opens up an avenue for communities to voice their opinions. Overall, the participatory methods applied for community awareness are the most cited compared to other phases in the community engagement spectrum. This indicates that the inform phase is the most widespread form of engaging communities in Sri Lanka. The participants gave opinions on 14 methods that can be used to disseminate information through different media.

Advertising or media coverage, letters, and posters are used as initial and remote ways of communicating about proposed developments (P1-P10). Furthermore, door knocking along with the distribution of leaflets is ideal for circumstances where it is mandatory to be individually aware of those who are going to be positively or negatively affected by the forthcoming development (P2, P9, P3). Moreover, social media platforms (e.g., Facebook) and websites maintained by agencies are currently used to disseminate development-related news. These digital modes of information seem to be popular among urban and youth communities (P7, P10, P2). P2 stated they prefer social media because printed material is quite expensive, and nowadays, people do not look at it, and they find it environmentally not sustainable. P1 also criticised: “some of the policies are just publicised through social media and websites, but we are not getting actual community involvement, we are just publicising, and if the community reads, that is it and if not, no worry at all.” Beyond the initial stages of information dissemination, pocket meetings, along with presentations and public meetings, are in place to acquire focused community awareness (P5). Webinars have been used as an experimental method to inform urban communities, especially during the Covid-19 pandemic (P3). In addition, site visits (P3, P4, P5, P7) and models (P1, P2, P7) are useful when dealing with small community groups concerned about a development; this is ideal in cases such as post-disaster resettlements and community regeneration programmes. Gamification, as proposed by P3, can also be implemented as an information source where community engagement is expected throughout the development process.

7.3.2.2 Consult

Community consultation is aligned with the information phase. Participants saw consultation as the initial move towards engaging communities. Therefore, locals have to be consulted. Nonetheless, if the consultation is just to obtain feedback, that is not going to be of much benefit to a community as they need to be given a chance to get

involved and maybe make changes to the policies/plans at that level (P2). Consultation can be used in instances such as identifying groups interested in engagement and prioritising beneficiaries. The participants gave opinions on 14 participatory methods that are ideal for community consultation.

Interviews are commonly mentioned as a consultation method followed by surveys and FGDs, particularly for identifying community requirements. P5 stressed the point that those who conduct consultations should be very keen on developing consultation instruments (such as interview guidelines and questionnaire surveys) in a way so as to collect as much information as possible. Surveys are good for assessing what kind of transformation has resulted in communities due to a project (P1). P4 added that an organisation “...can conduct surveys in terms of baseline, mid-term and at the post-implementation.” P7 highlighted that “FGDs are useful in consulting with different types of community groups depending on the project...I especially suggest having 8 to 12 FGDs...with the youth, with women, then with senior citizens, just like a cross-section of society.”

Site visits, KII, and door-to-door consultations also occur in special circumstances, such as when residents need to relocate or have any other direct impacts from prospective developments. Furthermore, community panels and pocket meetings are commonly seen in village consultations. Moreover, GMB exercises can be utilised, but only to a limited extent, when identifying and analysing community needs is a serious concern (P1). Citizen science and social media platforms are mostly in practice when the consultation aims to collect opinions from a larger group of communities. P7 highlighted using simple paper-based tools with uneducated slum communities in countries like Sri Lanka. A few participants also opined webinars and gamification as two upcoming virtual consultation approaches that could be used to consult communities during special circumstances such as the Covid-19 pandemic.

7.3.2.3 Involve

A common view of the participants was that communities should not only be consulted but should also be allowed to become involved. P2 elaborated that not being allowed to be involved is one of the main complaints they frequently receive from locals when conducting participatory research. P6 further elaborated on this fact stating, “in many frameworks, it is suggested that bottom-up approach like giving co-decision-making rights to the locals in UD or DRR is worthwhile.” In this study, the participants elaborated on the difference between the involve and consult phases. They saw involve

as being a step beyond the consult level, where there is an avenue for two-way communication between locals and practitioners. Eleven (11) participatory methods were put forward to support community involvement based on the participants' experiences and recommendations.

The most cited involve approaches are FGDs and cash for work, followed by community committees. FGDs, as mentioned at the consult level, are appropriate when the intention is to involve different community groups. Cash for labour is particularly used when involving local labourers during the implementation/construction phase. Regarding community committees, many participants opined that they involve locals from existing village committees. P4 specifically mentioned that “there are ongoing practices of community-based disaster management groups, we say VDMCC (village level disaster management committees), which are there but in most cases are inactive. So, we try to connect with such existing village committees.” P7, in a similar comment, stated: “in villages, they have some development committees, religious committees, youth committees etc.” P7 further elaborated on the fact that practitioners should reach community committees by utilising an institutional framework: “when involving locals, we should have a proper institutional framework... a proper institutional framework would be whether we are linking communities with a local authority or the divisional secretariat or involving them as a group with other committees within that locality.” A particular fact was revealed by P7, namely that within the local authorities set up in Sri Lanka, there are standing committees that consist of groups of locals and are formed for different subject matters such as agriculture and city planning alike. Unfortunately, despite the severity of disaster impacts in Sri Lanka, no standing committees are formed that focus on DRR or CCA, which could have been useful for involving communities in RSUP if they existed. Inversely, a disadvantage of using existing community committees was highlighted by P1 and C17. Which was when the existing committees were invited, at some point, they noticed that only committee presidents and secretaries were involved with agency practitioners. This could be basically due to local trust in the committee leaders, but it does not ensure whether they represent the voices of an entire community.

The participants further identified knowledge co-creation, crowdsourcing, and gamification as potential participatory methods for effective community involvement. As P10 opined, co-creation is a useful approach for idea formation as it involves people from different economic, social, educational and religious backgrounds and provides a platform to bring forward balanced and well-curated ideas. Gamification, as discussed

in Section 7.3.1.3, has a good potential to involve locals in inclusive planning and can be implemented remotely where distant engagement is required.

7.3.2.4 Collaborate

Most practitioners believe that locals should be engaged beyond the consultation level and, at least, be included at the involve level. However, it is recommended to include communities at the collaboration level if they have some appropriate experts/expertise (P2). P1 was of the opinion that community collaboration exists, especially in owner-driven projects (e.g., housing scheme developments); such collaboration could be due to monetary benefits that members of the community can achieve by getting their houses designed and constructed by themselves as per individual requirements. Collaboration is not much evident in public-led UD projects, and there is a need to mainstream locals into the planning process (P5). Additionally, P4 revealed that his organisation (an NGO) does not have either allocated finance or time to collaborate with communities in donor-driven projects.

The participants further stated that community collaboration could achieve a better outcome for a community's benefit while achieving the implementors' intended development goals. Community collaboration can be achieved by involving NGOs, as external stakeholders, in the UP process because they are the ones who closely work with local communities (P2, P5, P7, P8). Nonetheless, P5 highlighted that the governance system in Sri Lanka is not encouraging community collaboration; therefore, it is crucial to consider where the entry point (of community collaboration) is in advance. Having a balanced view, the participants elaborated on 14 methods to promote community collaboration in RSUPD.

The commonly expressed collaboration method was FGDs, followed by community committees. FGDs not only enable consulting with and involving locals but also provide a link with community experts; thus, they can provide an avenue for collaboration (P1-P3, P5, P7). Similarly, community committees can be administered to collaborate with people in large groups (P1, P3-P5). In Sri Lanka, there are pre-formed community committees for different purposes (e.g., for local community development, youth unions etc.) that can be reached without forming new committees (P5). In a slightly more advanced approach, working groups facilitate collaboration by bringing specialist skills and expertise to a project, especially during urban policymaking, planning, and designing (P1, P2, P5). In a similar vein, workshops are also evidenced, especially in residential development (P2, P3, P5). P3 further suggested contacting village officers

first when selecting local participants for development workshops as they know people who have had experience with such workshops and can inform effective collaboration.

Moreover, community/resource mapping is useful for community development (P3, P5, P7). System dynamics was also put forward by P1: "...together with the community and the involvement of the experts until you reach a particular requirement and need analysis, we will be able to materialise through the GMB." In addition, several other methods were commented on as suitable for community collaboration. These included expert panels (P3, 37), citizen juries, PGIS (P5, P7), citizen science/crowdsourcing (P4), open space events (P5), knowledge co-creation (P3, P7), PB (P1), and community visioning (P3, P7).

7.3.2.5 Empower

The practitioners indicated that there is no culture of co-decision-making in DRR or UD in Sri Lanka. However, from the NGOs' viewpoint, P4 stressed that community empowerment is required in UD, but he also doubted whether they, as NGOs, are in a position to empower communities towards influencing development decisions made by agency practitioners. Nevertheless, in village development projects, NGOs act as facilitators, empowering villagers to develop themselves. P4 further elaborated on this by saying:

"...when we do not propose a clear strategy, we allow decisions to come from the people themselves...so we empower people to help them understand existing processes and practices and thereby help them to realise what sort of policy changes are required that could benefit them, particularly in Micro, Small, and Medium Enterprises (MSME)."

In a similar vein, P5 stated that collaboration creates opportunities for co-decision-making. However, there seems to be a significant gap between the initial stage of informing and the final stage of empowering. Thus, it is necessary to establish a collaborative system to bridge this gap. Overall, the participants put forward eight methods that can be employed to disseminate decision-making rights to local communities. Notably, most of these methods are not currently in practice, but they are possible to implement.

The most commonly cited method was community/resource mapping which has been widely applied (P3, P5, P7). As put forward by P7, resource mapping is a good way of giving communities some power to influence government decisions when community resources are being considered for new developments. Most of the time, NGOs and

local authorities conduct community polls to prioritise local requirements unbiasedly (P1, P6, P7). Expert panels, as the experts recommended for collaboration, can extend to include the participation of community leaders or champions in development decision-making (P3, P7). PB is a form of citizen participation that urban councils in Sri Lanka have been practising since the 1920s to engage citizens in deciding how public money is spent (P1, P7, P6). In PB, local people are often given a role in scrutinising and monitoring the process following the allocation of budgets (P5).

A few other methods, such as citizen jury, community visioning, open space events, and CIPs, were recommended for possible future community empowerment. Citizen jury was given as an alternative to expert panels (P5). P7 elaborated that community visioning is more appropriate for community-based decision-making at higher-order levels, such as regional or national urban policy or plan development. In addition, open space events provide communities with a deliberative platform to design their local built environment, and the project implementors can inform their designs from locals' creative designs (P5). CIPs, on the other hand, can be used to influence a change in communities by allowing them to decide which policies need to be formed, altered or revoked (P1).

7.3.3 Specific objective(s) of engaging communities in RSUPD

Many research participants frequently comment upon ill-defined objectives for community engagement as a barrier to community engagement. The objective of engaging communities may be determined by several factors, including UD objectives, national development goals, urban governance²⁰, and community context. As opined by P2: "There might be some fundamental problem with defining and understanding what the real objective of community engagement is." In support of filling this gap, the data analysis revealed 12 reliable reasons for engaging communities in RSUPD. These 12 focused codes were populated with participants' opinions to map participatory methods that could be employed to achieve each specific objective of community engagement. These objectives could be considered as low-level purposes of high-level purposes defined in Section 7.3.2.

²⁰ Urban governance is primarily concerned with the processes through which government is organised and delivered in towns and cities and the relationships between state agencies and civil society—a term that is used to include citizens, communities, private-sector actors, and voluntary organisations.

7.3.3.1 Dissemination of project information (Public awareness)

As revealed in Section 5.2, communities' lack of awareness of UD proposed in their locality is an often-evidenced barrier to inclusive RSUPD in Sri Lanka. Though active participation cannot be achieved through information dissemination, public awareness serves as a primary objective of community engagement. Also, "project information dissemination is the opening to effectively encourage communities to participate" (P13). For example, in the marine drive development project, the residents who had to relocate were informed well in advance, and their approval was sought for relocation (P2). Thus, it is quite important to disseminate project information at all stages of a development to locals who will experience direct positive or negative impacts from the proposed development.

Eleven (11) community awareness methods were identified in this regard. Written conventional information dissemination methods in practice are newspaper announcements, letters, posters/banners, and leaflets. Newspaper articles are commonly utilised in government-led development projects, and additionally, posters/banners are usually positioned nearby to proposed development sites (Figure 7.4).



Figure 7. 4: Banners from Negombo lagoon development and Piliyandala market development projects

Letters are sent to individuals/residents who could experience a direct impact from a proposed development: this could be a positive impact (e.g., road expansion, new market complex) or a negative impact, including relocation, noise due to late-night construction, or road closure (P9, P13, P14). Leaflets, such as the one shown in Figure 7.5, can be commonly seen in community awareness workshops, specifically in local risk awareness programmes.

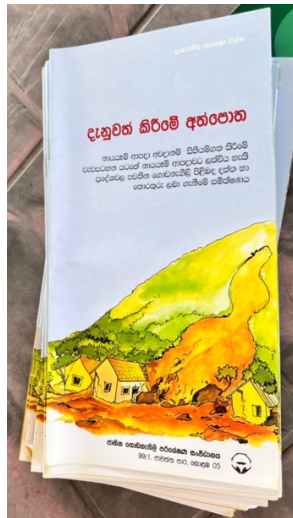


Figure 7. 5: Leaflet on landslide risks and response strategies
(Source: Field visit photographs)

Regarding verbal public awareness methods, door-to-door information, on-site presentations, public meetings, seminars or community education programmes can be utilised. Door knocking can be a much more reliable and effective alternative to sending letters (P2). Public meetings are often conducted to make people aware of local hazards (P3, P7). NBRO regularly conducts community awareness programmes in landslide-prone areas, specifically in districts such as Kalutara, Rathnapura and Badulla, to educate local communities regarding landslide hazards and their role and responsibility in mitigating and minimising those (P3, P9). Figure 7.6 depicts a community awareness session conducted for landslide risk.



Figure 7. 6: Community awareness session on landslide risks at Rathmale
(Source: Field visit photographs)

In addition, news coverage by telecommunication media and digital media platforms such as social media and websites is evidenced in project information dissemination. For instance, UDA maintains an official website (<https://www.uda.gov.lk/index.html>) and a few social media platforms such as Twitter, Facebook, YouTube, and LinkedIn.

Additionally, displays/exhibits such as city planning models and model constructions can be used. For instance, P7 stated that:

“During a post-Tsunami housing scheme development, I asked the contractor to put up a model house and asked all the community to come and have a look - one small child looked at me and asked... how are we going to close that window? I asked why? He said, do you know all our men are going fishing in the evening and only women and children are staying at home, so we are not tall enough to close this window.”

As a result, the architects were instructed to redesign the houses with windows at lower heights; thus, exceedingly small things can be captured through model buildings.

7.3.3.2 Identifying community needs and development requirements

Engaging communities in the planning and development process ensures that their needs and priorities are taken into account. For example, by involving residents in the design of public spaces and infrastructure, planners and developers can create spaces that are tailored to the needs of the community and can promote social cohesion and community well-being. In this regard, 12 methods were identified, most of which are in current practice.

In cases where detailed individual input is required (i.e., when approaching community leaders/champions), door-knocking, interviews, and KII are ideal (P2, P5, P7, P11, P12). Methods such as community committees, FGDs, pocket/stakeholder meetings, and citizen juries can be conducted to learn the development requirements of a community (P1-P3, P5-P8, P10, P11). However, these methods can also result in arguments among locals and with implementors. Community mapping is another frequently utilised participatory method that practitioners use to ascertain local communities' development needs from a group exercise (P3). Contrarily, surveys and crowdsourcing techniques can be used for a larger group of locals or the general public when the case is to identify development requirements slightly or to prioritise already identified development suggestions (P3, P7, P10). In an advanced approach, community-based system dynamics (CBSD) or GMB, which are less utilised, can be employed as alternatives to conventional community mapping (P1-P3). Similarly, gamification can be a useful approach in identifying community needs if the intention is to engage with the same community group from inception to the post-development of a proposed project (P3).

7.3.3.3 Local risk identification, prioritisation, and assessment

As opined by industry experts, identifying local development needs differs from identifying, prioritising and assessing local risks through local participation, thus serving a different purpose to inclusive RSUPD. This is known as participatory risk assessment in DRR.

In Sri Lanka, different methods are employed to identify geophysical disaster risks such as landslides and extreme weather events such as floods, droughts, and storms. FGDs can be conducted with small groups whereby seasonal calendars are useful in dealing with less educated communities (i.e., slum communities in urban areas such as Colombo and Kelaniya). As opined by P7, seasonal calendars “helps us to identify the seasonality of hazards and then we might go into a bit more complex tools such as profiling etc...” P7 further stated that they use even more complex tools, such as participatory GIS. In comparison, community mapping is a commonly applied method in locating local risks (P3, P8, P11). For example, Figure 7.7 depicts a community mapping exercise conducted by the NBRO to identify landslide risks.



Figure 7. 7: A community mapping exercise conducted by the NBRO to identify landslide risks at Rathmale, Kalutara district (Source: Field visit photographs)

Regarding risk prioritisation, paper-based tools (e.g., card storming) are being used with novice, less educated communities where questionnaire surveys (using Likert scales) and crowdsourcing tools are ideal when dealing with a large group of

individuals (P1, P3, P6, P7, P10, P11). The participants further commented on the risk assessment workshops and community committees they conduct with community groups where regular pocket meetings and citizen juries take place with local experts (P5, P7).

7.3.3.4 Background information collection

Background information collection includes two key elements: gathering issues that locals have experienced earlier and exploring the field. The local issues may have been brought about by different aspects, such as the impacts of recent disasters and social and financial vulnerabilities that locals have faced. Methods such as door-knocking, interviews, FGDs, community committees, surveys and crowdsourcing are being employed to understand community issues (P1-P17), whereas field visits guided by community members are taking place to explore the field before proposing development interventions (P2-P7, P10, P12). Gamification, as an innovative approach, can also be used to explore a community's field in a more digitalised approach, which would be useful for consistent community engagement (P3).

7.3.3.5 Obtain community feedback/complaint mechanism

Community feedback is crucial in participatory UPD, and, at the same time, seeking community feedback may facilitate a complaint mechanism. Community feedback on government-led development plans may generate different perspectives: mostly negative or complaints with a few positive comments (P10, P11). This is mainly due to not engaging communities during the planning stages of proposed developments and government representatives attempting to take locals' acceptance for plans developed by them. The experts gave their views on a few methods which are currently in practice for seeking community feedback and complaints.

When there is a need to seek individual feedback, especially with community leaders, influencers, or champions, interviews and KII are put in place (P7). In contrast, FGDs, community committees, and pocket meetings are ideal for small local gatherings (P1-P3, P5-P11). Community monitoring and field visits are suitable for generating community feedback and complaints during project implementation (P3). Questionnaire surveys are commonly used if feedback/acceptance is required from the entire community living in a particular area (P1-P3, P6, P7, P10, P11). In some particular circumstances, such as post-disaster resettlements, as stated by P5, model buildings are commonly used to seek community feedback and their agreement on proposed resettlement properties. However, this has not been the case in all disaster-

induced resettlements in Sri Lanka. For example, the community participants in the Meethotamulla resettlement project, due to the collapse of a garbage dump, stated that they had no clue as to how their new residencies would develop and look like until they were forcefully relocated into the resettlement flats (C21-C24). In addition, citizen science/crowdsourcing approaches implemented through social media or websites are rarely utilised (P7, P9).

7.3.3.6 Developing inclusive designs/solutions/project proposals

Acknowledging local communities' tacit knowledge and life-long experiences in dealing with local disasters in UP is vital as they may have their own strategies for facing and overcoming local disasters and hazards. The highly cited current practice in developing inclusive designs in Sri Lanka is by conducting citizen juries, expert panels, community committees, pocket meetings, working groups and workshops (P3, P6, P7, P10). For example, P3 stated:

"In a project, we had only side walls and completed a disaster mitigation exercise, but after conducting a few expert panel discussions and community workshops, we had to liberate some land and construct some kind of commercial strips, so that is how the community influenced this project...in this area, they have a trade community society. So, they are very well organised in this particular thing, and most of our problems were solved by themselves, not us."

In addition, six other inclusive design methods were also recommended that are not currently acted upon in local practice but could be applied for developing inclusive designs/project proposals. These include community visioning, knowledge co-creation, CBSD/GMB, gamification, open space events, and PB. Amongst these, the first three approaches are ideal for developing community-based urban plans (P7). In contrast, open space events and gamification provide community members with a physical or a virtual environment, respectively, to build alternative urban designs (P3). In addition, PB is a structured deliberative process where non-elected citizens are entrusted to decide how to allocate part of the local authority's budget to implement whatever citizens decide (P1).

7.3.3.7 Bringing deliberation and public participation into urban policy decisions

Participatory policymaking is another less demanded objective of community engagement. Participatory policymaking directly engages neighbourhood residents in the process of land use planning. Residents provide local knowledge and information

to complement the technical ability of experts and officials. Policies are collectively developed to meet the needs of the community.

In terms of influencing participative decision-making in urban policymaking, five methods were recommended. However, all the participants agreed that communities are not currently engaged in urban policymaking in Sri Lanka. Community visioning is highly recommended in inclusive policymaking. P10 explained, “though there is no set formula, successful community visioning in urban policymaking may follow several steps such as defining a community, forming a steering committee, studying the potential development scenarios with selected locals and, finally, writing and adopting a community vision statement.” GMB is also suggested as a tool that can be applied to elicit a response to a problem, policy analysis, or the design of a new programme or service in RSUPD (P1, P3). A few other less advanced methods suggested were knowledge co-creation, citizen jury, and expert panels. Co-creation of knowledge in urban policy design and review processes is more likely to generate usable outcomes compared to a more traditional top-down approach (P7, P10).

7.3.3.8 Participatory monitoring and evaluation

With a growing emphasis on participatory approaches towards UPD, the experts believed that monitoring and evaluation (M&E) should also be participatory. Conventionally, “M&E has involved outside experts coming in to measure performance against pre-set indicators, using standardised procedures and tools” (P7). In contrast, participatory monitoring and evaluation (PM&E) involves primary stakeholders as active participants and offers new ways of assessing and learning from more inclusive changes that reflect the perspectives and aspirations of those most directly affected (P4, P10). P10 further opined that a participatory approach to M&E usually uses a number of techniques and tools selected and combined to suit the objectives of the M&E work and the resources available.

Community monitoring is a process whereby community members observe and assess a project’s progress and provide feedback to decision-makers. As revealed from the data analysis, many of the techniques associated with Participatory Rural Appraisal (PRA), including seasonal calendars, have been used in the context of monitoring or evaluation (P3, P5-P9). PRA may involve visual methods such as community mapping, problem ranking, wealth ranking, and seasonal and daily time charts. Furthermore, conversational interviews, FGDs, and expert panels may be conducted to explore changes and impacts (E11). In addition, PM&E often entails developing other

techniques designed to be used by community members and other local-level stakeholders as part of an M&E activity, namely, surveys and crowdsourcing (P10).

7.3.3.9 Identifying community resources

Identifying community resources²¹ was recognised as another vital purpose of community engagement in RSUPD. Community mapping (sometimes called asset mapping, community resource mapping, and asset-based community development (ABCD)) has been identified as a positive, realistic and inclusive approach to identifying community resources with regard to neighbourhood development (P3, P5, P11). Asset mapping is the general process of identifying and providing information about a community's assets or the status, condition, behaviour, knowledge, or skills that a person, group, or entity possesses, which serves as a support, resource, or source of strength to oneself and others in the community (P11). P11 view participatory asset mapping as a process where community members collectively create asset maps by identifying and providing information about their own community's assets on a map. As stated by P5, "ABCD challenges the traditional deficit-based approach that tries to solve UD problems by focusing on the needs and deficiencies of individuals, neighbourhoods, towns, etc." Similarly, card storming can be used with less educated communities (P7).

PB offers a practical mechanism to mobilise community assets and to promote community empowerment, shifting power from the state to individuals and communities (P1, P4). It promotes collaborative working and enables devolved decision-making for more equitable public spending to fulfil the development needs of a given territory. In addition, although workshops are not specifically for participatory asset mapping, they can be conducted to identify community resources (P7).

7.3.3.10 Legal compliance

Community engagement can take place due to law enforcement (P10). Unfortunately, the central government in Sri Lanka sees a lack of community participation and engagement opportunities for disadvantaged groups as a cross-cutting challenge for inclusive DRR and UPD without establishing any legislative enactments to promote participatory development. However, P9 revealed the good news that there is a plan to make future UD in Sri Lanka inclusive and equitable through a proposed "Roadmap

²¹ Community resources/assets include citizen associations (i.e., informal and formal institutions found within a community, such as social groups, recreation programmes, temples, and clubs), local institutions (e.g., non-profit organisations, businesses, social service agencies, hospitals/clinics, libraries, schools, colleges, or universities), and natural resources, such as forests, rivers, and wildlife.

towards 2050²².” One of the goals in achieving Vision 2050 for sustainable construction in Sri Lanka is to strengthen community engagement and gender and social inclusion provisions within the existing National Policy for Construction and Construction Industry Act in consultation with relevant government agencies and civil society groups and to build capacity in construction related state agencies and Local Government Agencies (LGAs) to expand community engagement.

Establishing a dedicated Strategic Planning Division in all LGAs, alongside community engagement, is the action proposed to achieve legally enforced community engagement in UPD. In addition, assessing climate threats to the built environment in Sri Lanka, developing an action plan for built-environment disaster resilience through a multi-stakeholder initiative with community consultation (especially women and under-represented groups), and updating UD and construction regulations to integrate built environment resilience by the Construction Industry Development Authority (CIDA) and UDA, have also been proposed to enforce community engagement at the national level for making resilient built-environments.

Nevertheless, the local administration entities in Sri Lanka have been making reasonable efforts to enforce community engagement legally in local development. For example, local administration officers are taking community-inclusive proposal development as a severe concern in local development (P7, P14), and most of the experts agreed that community engagement must be a statutory requirement at the heart of UP reforms. According to them, the planning system must give communities confidence that their views and plans will be taken into account and be legally binding. Revealing the current strategies they have been implementing to adhere to the legal requirements of engaging communities in either DRR or UPD, the participants put forward a list of five methods.

As many stated, announcements in public newspapers or the media are mandatory in almost all UDA-led development projects. These announcements should be made in all three languages (i.e., Sinhala, Tamil and English) as per the guidelines and should also be advertised on institutional notice boards for a minimum of 14 consecutive days (P5, P7). However,

“The problem is nobody reads newspapers nowadays. So, the community may not know that such things are being done. But by default, there is a period for a community to give their opinion on

²² A strategy entitled "Sri Lanka Sustainable Housing and Construction Roadmap 2020 - 2050" was published by the Ministry of Urban Development and Housing.

grievances for such policies... after that only, the things can be approved, but I do not know up to what level they are being followed in our country.” (P7)

Many proposed social media as a solution to this (P2, P5, P7, P10, P12). However, it would not be an ideal method to fulfil a legal requirement as social media is not equally accessible to the entire population in Sri Lanka. The authorities have also sent letters to individual houses when there is a legal requirement to inform communities regarding a proposed development. Such letters should also communicate a proper way(s) and a time period in which locals can get back to the authorities with their feedback. A similar but time-consuming approach to sending letters is door-knocking (P2). In contrast to sending letters, door-knocking facilitates building a dialogue with relevant locals. In addition, pocket meetings and voting also take place in certain circumstances (P1, P7).

In addition to the aforementioned ongoing practices, PB was suggested as a potential method to be implemented when the country’s law enforces community-engaged RSUPD. As stated by P7, this is a practice in most developed countries as it assures locals that public money spending would be as per their preferences as a community.

7.3.3.11 Community capacity building and community development

Community capacity building (CCB) and community development serve another purpose for inclusive RSUPD. Building community resilience against local hazards is a key concern in engaging communities in local DRR. Equally, participatory UP has been evidenced utilised? to empower local communities through “increasing skills, confidence, and understanding of people involved in community activities” (P2) and by developing the participatory leadership capacity of at least a core group of people (P11). The study participants shared their experience in local capacity development by stating that they had employed the following six participatory methods in RSUPD projects.

Citizen jury is identified as a method of developing participatory leadership through inclusive projects (P1, P5, P7). Another less-known but effective method proposed by E1 for CCB is the community indicator project (CIP). CIPs are an excellent tool to connect different forms of knowledge with different forms of action for enhanced community development practice. Developing and implementing CIPs can be a relatively low-cost but effective method to assist with strategic planning, monitoring and evaluation of community dynamics. Practitioners also use community visioning to involve communities in identifying future goals and working collectively to address

community development needs (P10). Community visioning encourages diverse citizens' participation in developing a shared community plan for the future while advancing the capacity of community organisations and partnerships and expanding the community leadership base. In addition, ABCD is a well-known participatory approach to community development (P3, P5, P11). This asset-based approach seeks to identify and capitalise on the tangible and intangible assets available to a community rather than on what it lacks, shifting from the need-based approach. Therefore, this approach enables residents to mobilise and manage assets, to transfer financial, organisational and political assistance from external sources to needy communities, and encourages consensus on shared interests and vision through exploring avenues for conflict resolution within communities. The two other methods commented upon were cash for work and local sourcing of materials. Both of these methods support their livelihood communities' livelihoods while engaging in their local development activities (P7, P10).

7.3.3.12 Generating support for action (development activities)

Generating support for action indicates informing locals about an upcoming RSUPD project in their neighbourhood and requesting their support for numerous activities (P7, P9-P11). Newspaper and media coverage are ideal for informing local communities (P1, P2). ABCD and PB are effective approaches in identifying and allocating community and public resources for useful urban land use planning (P1, P3, P5, P11). Although not utilised in Sri Lanka, open space events can implement co-design urban settings with local participation during the urban design phases (P10). The two other participatory methods commented upon generating community support, particularly during construction activities, are cash for labour and local sourcing of construction materials (P7, P10). As discussed above, these two methods are win-win approaches for both parties: local people and project implementors.

7.3.4 Community context

A community context is a setting where a group operates under considerably common characteristics. Understanding the character of a given community is vital in selecting participatory methods for inclusive local development. As opined by the experts, the context of a given community can be decided by undertaking proper research on the history of the community (i.e., their experience of participatory development, actions already taken by communities to address a focused issue), on the relationship between the community and the agency practitioners, on the level of awareness and knowledge,

and on the readiness to engage (P3, P4, P7, P10, P11, P13). Building on this point, the data analysis revealed six community contexts based on their political, social and economic characteristics. B7 confirmed that locals from different neighbourhoods fall into at least one of these types, and understanding this is quite important in selecting appropriate engagement methods.

7.3.4.1 Hard-to-reach communities

Individuals or groups with low socio-economic status, who are members of ethnic minorities, or who have a low level of literacy are often tagged as "hard to reach." Additionally, P3 believed that distance communities²³ are also hard to reach. Thus, not all participatory methods are applicable to hard-to-reach communities, and the participants put forward their opinions on 11 methods.

Letters sent to individual houses and door-to-door information can effectively inform the apathetic majority about proposed development projects, inclusive development approaches etc. (P2, P3). Community committees or study circles can also use to consult with such communities. For example, an expert from Jaffna shared her experience of how they were involved in local development. "Usually, we used to get to know if a new project is going to come, they sent us letters and then formed some community committees after providing further information through door knocking" (P2). Cash-for-work is an excellent method to engage poor communities (P10). Displays/exhibits, such as model buildings or posters, is also useful when dealing with less educated communities, as visuals disseminate a clear picture of a proposed development compared to written and verbal forms of information dissemination (P7). Furthermore, questionnaire surveys can be administered with available communities, while citizen science/crowdsourcing is ideal for reaching distanced communities (P3). Additionally, remote methods such as gamification, and media coverage, including social media and websites, are ideal for reaching geographically distant communities, particularly when considering their technological ability (P3).

7.3.4.2 Low-trust communities

A low-trust community is defined as those with a "lack of trust or confidence in institutions, authorities, or other individuals" (P10). This can arise due to past experiences of deception or betrayal, perceived conflicts of interest, or a lack of

²³ The term "distance communities" generally refers to communities or groups of people who are physically separated from each other by a significant geographical distance. These communities may be located in different regions, countries, or continents, making direct face-to-face interaction challenging or impossible.

transparency or accountability. Engaging less attached communities, as well as locals who have low confidence in agency practitioners, is, therefore, challenging. Thus, implementors are required to employ methods which facilitate relationship and trust building. In this regard, 14 methods were identified that practitioners employ with low-trust communities in RSUPD.

Seven of them are physical engagement methods, namely door-knocking, site visits, open space events, public meetings, cash for work, local sourcing of materials, and community monitoring. Door-to-door visits and site visits can help build trust by providing a personal touch and showing that planners are interested in hearing from all community members (P2, P7, P11) and are interested in understanding the community's unique challenges and needs (P12). When conducting open-space events, agencies should ensure that these events are held in accessible locations and are inclusive of all community members (P5, P7). In public meetings, facilitation should be provided to ensure that all voices are heard and respected (P1). Notably, P7 emphasised that planners should ensure that they respect cultural norms and customs while using these methods. Implementing cash-for-work programmes, sourcing materials locally, and involving the community in monitoring can reduce the prevalence of fraudulent practices by practitioners who use public funds for personal gain. These measures create greater transparency and accountability in the use of public resources, thereby reducing opportunities for corrupt practices and helping to rebuild trust within a community (P7, P10). Other methods, such as citizen juries, community committees, CIP, pocket meetings, KII, and interviews, can be utilised to provide an unbiased and independent forum for community members to share their opinions and ideas (P1-P3, P7-P11). PB and voting, on the other hand, are suitable for establishing trust in how public funds are utilised in development projects (P1).

7.3.4.3 Low interest

Low interest may result from low trust, a lack of understanding or awareness, competing priorities, or a perceived lack of relevance or significance (P1, P3). In this regard, 14 methods were put forward to address less interest caused by different reasons. Methods such as cash-for-work and local sourcing of materials are good in terms of trust issues as well as for those who cannot spend their time volunteering due to poverty (P7, P10). Local participants from Rathmale highlighted this fact, which C4 verbalised, “though we would like to participate, we cannot sacrifice our time because most of us are daily wage labourers.” Furthermore, door-knocking, CIP, and site visits are ideal for bringing on board the apathetic majority (P3, P5, P6, P7). Additionally,

gamification and social media can help attract the youth (P1-P3, P5, P7, P10, P12). On the other hand, surveys can be administered to locals with busy schedules (E11). Other methods such as displays, paper-based tools, printed material/leaflets, posters/infographics, presentations, and community education programmes can be implemented with less educated communities who may have less awareness of participatory methods as well as of RSUPD (P3, P7, P10-P17).

7.3.4.4 Tight interferences (high interest)

In a community context, tight interferences refer to the degree to which individuals and groups within a community are closely connected and interdependent. This can manifest in various ways, such as through shared values, norms, beliefs, or social networks (P4, P11, P13). In a community with tight interferences, individuals tend to have strong relationships with one another and may feel a sense of responsibility and obligation to support and care for their fellow community members. This can lead to a greater sense of social cohesion and a willingness to work together to address shared challenges or to pursue common goals. Therefore, experts confirmed that there are no limitations to applying participatory methods in communities with tight interferences. Nevertheless, P10 and P11 observed that certain methods, such as individual letters, door-knocking, and CIPs, are unnecessary as such community members are already socially connected. P7 shared a similar opinion, stating that techniques recommended for less educated communities are not required for highly interested and interconnected communities since they already possess a culture of engagement and a thorough understanding of participatory practices.

7.3.4.5 Highly political

Highly political neighbourhoods are complex. Some neighbourhoods are highly political when locals are intertwined with political power dynamics, interests, and agendas (P7). In such a context, participatory plans and developments may be influenced or even controlled by political actors or institutions, such as government officials, political parties, interest groups, or lobbyists (P5, P9). This can lead to a highly polarised and contested environment where various groups compete for power and influence. Engagement with such political partisanship is challenging but possible with methods that can “respect the identities of different parties” (P13) and “avoid any appearance of bias towards one party” (P9). In this regard, 18 methods were suggested. Methods such as citizen juries, FGDs, GMB, pocket meetings, site visits, community monitoring, and PB were recommended to be conducted with representatives from different

political interests (P1, P3, P7), while interviews, Klls, citizen science, and surveys can be implemented to seek individual opinions where convening assemblies of local people may cause conflicts to arise. Voting is a powerful method for politicised communities when making and prioritising decisions (P1, P7). Additionally, methods such as letters, posters/infographics, presentations, printed material/leaflets, social media and websites are ideal for indirect engagement (P8, P13).

7.3.4.6 High emotion or outrage

Where individuals or groups experience intense feelings of anger, frustration, or indignation in response to a particular issue or event, this emotional state often “leads to a heightened level of engagement and activism among community members” (P7) as they “seek to address the perceived problem and bring about change” (P13). However, this could create a risky engagement environment. This is mostly evidenced within slum, fishery, and tea estate communities in Sri Lanka (P7) which have relatively fewer educated people (P2, P7). With those opinions, the participants recommended 23 participatory methods.

P7 and P10 recommended cash-for-work and local sourcing of materials, but P3 saw these as bribes. These localities have community committees such as fishery unions, youth clubs, and women's clubs that can also be utilised for RSUPD purposes. FGDs, GMB, pocket meetings, and seminars can be conducted with these groups of locals. Furthermore, interviews, Klls, and site visits can be conducted with union leaders and neighbourhood champions. In addition, place attachment, voting, and seasonal calendars can be implemented to build trust and attachment to agencies. Additionally, displays, door-knocking, paper-based tools, posters/infographics, presentations, printed material/leaflets, and public meetings can be used to educate unaware communities, while surveys can be utilised to collect opinions from a larger number of locals. Social media and websites are also good for informing and consulting with outraged communities if they have access to digital telecommunication.

7.3.5 Scale of engagement

The engagement scale refers to the number of people involved in the participatory process. It can range from engaging with individuals to large groups or the public generally. The engagement scale should be considered when selecting participatory methods because different methods are better suited to different group sizes. The scale of engagement can also affect the level of resources and time required to conduct the engagement process, so it is essential to carefully consider the trade-offs and benefits

of different approaches (P10, P13). Based on the above discussions, the 40 identified methods were classified into the four scales explained below, and the respective methods for each scale are denoted in Table 7.9.

7.3.5.1 Individual

Engaging with individuals typically involves one-to-one interactions and is useful when dealing with sensitive locals (P7). Fourteen (14) methods were found to be suitable for engaging individuals. These methods “can help build trust and establish a more personal relationship with the community members” (P7), but they can be “time-consuming and resource-intensive” (P8). Also, collecting individual opinions in RSUPD may pose challenges since individuals may prioritise their personal needs over the collective good of the community, potentially leading to conflicts of interest (P1-P3).

7.3.5.2 Small group

Small group engagement involves working with a group of people, typically ranging from 3 to 20 individuals (P7, P10, P11, P13). This approach can “allow for more in-depth discussions” (P7) and a “greater focus on shared experiences and concerns” (P13). Small group engagement is useful for “exploring complex issues” (P10) and “promoting collaboration among participants” (P11). In this regard, 34 methods were confirmed.

7.3.5.3 Large group

A large group typically involves 20 to 100 participants or more (P7, P10, P13). Thus, it is “challenging to create a collaborative environment” (P10) with a large engagement scale, but it can be useful for populating ideas and gathering input from a broader range of perspectives (P2, P7, P13). Accordingly, 14 methods were identified. However, it is challenging to ensure that all voices are heard and concerned with these methods.

7.3.5.4 Public

In general, public engagement is most effective when it is undertaken early in the planning or decision-making process when there is still an opportunity to incorporate feedback and input from the community (P7, P10). Public engagement involves engaging with the “broader community” (P7) or the “general public” (P10). In this category, only 10 methods were expressed. As opined by the experts, these methods are useful for reaching a large audience; however, ensuring that all voices are heard and that the engagement process is inclusive can be difficult.

7.3.6 Level of community experience in inclusive development

Community engagement in RSUPD is highly sensitive, and the effectiveness of the decisions derived through participatory planning is immensely influenced by the participants' knowledge, understanding, skills and compatibility, and experience in different aspects (P1-P17). These include UPD, DRR, CCA, and community engagement. Therefore, experts demand a tailored approach that considers the respective knowledge and skill levels of different community groups. In this regard, the identified 40 participatory methods were classified into three levels of community experiences based on the expert and community perspectives discussed above and are presented in Table 7.9.

7.3.6.1 Entry level

Entry-level community members typically have limited knowledge and experience of UP, DRR, and CCA. They may have little or no experience in participating in community engagement activities. Entry-level groups may include marginalised groups such as women, the elderly, and people with disabilities (P1-P17). Simple, easy-to-understand language, visuals, and activities that are accessible to everyone are ideal for entry-level communities (P10, P11, P13-P17). Accordingly, 26 methods were found that matched these characteristics.

7.3.6.2 Intermediate level

Intermediate-level community members have adequate knowledge and experience in the key aspects of RSUPD. Locals who have taken part in “at least one or two community engagement activities” (P11) and are “comfortable with technical language and concepts” (P10) can assume to be communities with intermediate knowledge and skills, for example, local community leaders, neighbourhood associations, and CBOs (P1-P17). Thirty-five (35) methods that may include more technical language, concepts, and activities that involve more in-depth discussions and analysis were identified for this level.

7.3.6.3 Advanced level

Community members with extensive knowledge and experience of participatory methods as well as of RSUPD initiatives may be considered in this category. For example, CBOs and CSOs dedicated to local DRR, community development and capacity building, or locals attached to careers in relevant fields (e.g., government servants and academicians) can be considered to fall into this category (P1-P17). Furthermore, several experts (P3, P7, P8, P15-P17) commented that individuals or

groups living with local hazards and/or being affected by local disasters over the years might have advanced knowledge as they may have their own response and recovery strategies. However, it could be challenging to implement methods that require technical knowledge with such local groups. Considering everything, the experts suggested that all 40 participatory methods could be ideal for progressive groups.

7.4 A Tool for Selecting Participatory Methods for Engaging Communities in the Decision-Making of RSUPD

Utilising the above analysis of the study participants' opinions on selecting participatory methods to engage communities in the decision-making of RSUPD, a tool was developed which enables users (lead agency(ies)) to choose reasonable and appropriate engagement methods. The tool indicates a set of methods applicable for each selection criterion and their sub-criteria, as summarised in Table 7.8.

Table 7. 8: Number of methods identified for each selection criteria

Criteria	Variables	Methods confirmed by the study participants	
		No.	%
Phases of risk-sensitive urban planning & development	1. Urban policymaking	12	30%
	2. Pre-planning	28	70%
	3. Planning & briefing	16	40%
	4. Design	8	20%
	5. Implementation/Development	5	13%
	6. Post-implementation/Development	10	25%
Purpose of engagement	1. Inform	14	35%
	2. Consult	14	35%
	3. Involve	11	28%
	4. Collaborate	14	35%
	5. Empower	8	20%
Specific objective(s) of engaging communities	1. Dissemination of project information (public awareness)	11	28%
	2. Identifying community needs and development requirements	14	35%
	3. Local risk identification, prioritisation, and assessment	11	28%
	4. Background information collection	9	23%
	5. Obtain community feedback/complaint mechanism	12	30%
	6. Developing inclusive designs/solutions/project proposals	12	30%
	7. Bring deliberation and public participation into urban policy decisions	5	13%
	8. Participatory monitoring and evaluation	8	20%
	9. Identifying community resources	3	8%
	10. Legal compliance	6	15%
	11. Community capacity building and community development	6	15%
	12. Generate support for action (development activities)	6	15%
Community context	1. Hard-to-reach communities	11	28%
	2. Low-trust communities	14	35%
	3. Low interest	14	35%
	4. Tight interferences (high interest)	33	83%

	5. Highly political	18	45%
	6. High emotion or outrage	23	58%
Scale of engagement	1. Individual	14	35%
	2. Small group	34	85%
	3. Large group	14	35%
	4. Public	10	25%
Level of local experience	1. Entry-level	26	65%
	2. Intermediate level	35	88%
	3. Advanced level	40	100%

As observed above, from the six phases of RSUPD, pre-planning was found to have more methods (70%) suggested compared to other phases, with the implementation phase having the fewest methods (13%). In the spectrum of community engagement, three purposes: inform, consult, and collaborate, have resulted in 14 (35%) methods, but only 8 (20%) methods have been identified for co-decision-making. Of the 12 specific community engagement objectives, identifying community needs and development requirements can be conducted with 14 methods with fewer methods (3) suitable for identifying community resources. It is discernible that all methods can be adopted for highly interested communities, but only 33 methods seem ideal, assuming that these communities are educated. Contrarily, only 11 methods were identified to engage with hard-to-reach communities. In RSUPD, small group engagement is highly recommended rather than public engagement, which results in 34 and 10 methods, respectively. Apparently, all methods are applicable to advanced communities, whereas only 26 methods will accommodate entry-level groups. Overall, identifying community resources has resulted in fewer methods. Finding methods for mapping resources with communities compatible with other selection criteria could be challenging.

Overall, the methods' selection matrix offers 515 choices to select engagement methods based on six key criteria and 36 sub-criteria. The final tool developed from the analysis is presented in Table 7.9.

24	Community-based system dynamics (CBSD)/Group model building (GMB)	X		X X X		X		X X			X X X	X		X X
25	Expert panels	X X X X		X X X			X X X				X	X		X
26	Focus group discussion (FGD)	X X X X	X	X X X		X X X X					X X X X	X X		X X X X
27	Interviews	X X		X		X X X					X X X X	X X		X X X X
28	Key informant interviews (KII)	X		X		X					X X X X	X X		X X X X
29	Knowledge co-creation	X X		X X			X X				X X	X X		X X X X
30	Letter	X	X		X					X		X X X X	X	X X X X
31	Participatory budgeting (PB)	X		X X			X X		X X	X	X X	X X	X	X X X X
32	Participatory geographic information system (PGIS)	X X		X		X					X	X X		X X X X
33	Posters/Infographics	X		X		X					X X X	X X X	X	X X X X
34	Presentation	X X		X		X					X X X	X X		X X X X
35	Seasonal calendars	X X	X	X		X		X			X X	X X	X	X X X X
36	Seminars/Community education programme/Webinars			X X		X					X X X	X X		X X X X
37	Survey	X X X	X	X		X X X X				X		X X X X	X X	X X X X
38	Voting/Deliberative polling	X			X						X	X X X	X	X X X X
39	Working group	X X		X			X				X	X		X X X X
40	Workshop	X X X		X		X	X		X		X	X		X X X X

*A digital version of this tool with filtering options can be found at this link

<https://docs.google.com/spreadsheets/d/1BXVE91j9Ma7ldP1gcKS4c3TckCh5jC0Y/edit#gid=22232129>

The proposed tool has been thoughtfully designed to be user-friendly and highly advantageous for a diverse audience. Developed using Microsoft Excel, a widely familiar application among many practitioners, the tool incorporates clear criteria and filtering functions. A key feature of the tool is its requirement for users to select at least one sub-criterion from each main criterion. This approach aids in identifying methods that align with all six key considerations, enhancing the effectiveness of the tool's recommendations. This ensures that users can effortlessly navigate the tool, even without prior experience, and make well-informed decisions when selecting engagement methods for community-inclusive urban planning and DRR initiatives.

The tool caters to a wide spectrum of users, including industry and community practitioners. Field workers engaged in community outreach can leverage the tool to choose methods that best suit their project's specific requirements. Especially, CBOs, CSOs, and NGOs can rely on this tool to streamline the selection of engagement methods for their community-focused projects. It simplifies the process of choosing the most suitable methods, promoting effective engagement with community members. Furthermore, institutions responsible for budget allocations will find the tool invaluable. It assists in identifying the participatory methods necessary for various project aspects, facilitating efficient resource allocation based on the tool's highlighted engagement needs. Moreover, policy makers can utilise the tool to shape their policy guidelines and procedures for community-inclusive urban planning and DRR initiatives, ensuring alignment with effective engagement methods.

7.5 Discussion

Despite the breadth of literature on engagement methods and their applicability, the study identified that only several methods, such as interviews, workshops, surveys, public meetings, displays, printed materials, and public meetings, are commonly applied in Sri Lanka. This may occur because agency practitioners tend to use the same methods with which they are familiar, either due to their experience or the local community's preference. However, several methods that are locally practised were identified. For instance, cash for labour and local sourcing of materials were highlighted quite a few times. They are not only engagement methods but also income-generation sources for less educated labour communities. It could be argued that these approaches move more towards a business model rather than genuinely engaging with the community. This could potentially create a harmful environment where community

members feel pressured to remain silent while implementors prioritise their own needs. One positive aspect is that when locals make contractual agreements with implementors, it ensures that the development meets standards and reduces the likelihood of profiting from government funds.

Although community engagement methods have been used over the years and evaluated in different settings, it is important to assess their appropriateness for specific circumstances. Thus, unlike previous studies, this study provides a comprehensive analysis of the participatory methods' selection of criteria rather than merely analysing their efficacy in diverse phases of community involvement (i.e., inform to empower (IAP2, 2018)). The study suggests a model for selecting methods justifiably by considering six key elements in inclusive RSUPD. Firstly, it is essential to select engagement methods based on the different phases of RSUPD (i.e., pre-planning, planning, design, implementation, and monitoring) because each phase has unique characteristics and requirements; therefore, different methods may be more effective in achieving the desired outcomes.

Secondly, as suggested by previous classifications by IAP2 (2018) and the Tamarack Institute (2017), selecting engagement methods based on the spectrum of community engagement ensures that the level of participation from the community is focused on the goals of the RSUPD project. Thirdly, it is crucial to consider the specific objective of engagement because different methods are effective in achieving different objectives. For instance, methods designed for identifying local risks would not be practical for inclusive policymaking and vice-versa. Thus, when coming from the second to the third criterion, it narrows down the selection of methods from a high-level purpose to a low-level specific purpose.

Community context should be considered as the fourth criterion. Communities differ in their socio-economy, culture, education, values, beliefs and norms, and these factors shape their perceptions, priorities and preferences regarding development projects, including RSUPD. Therefore, participatory methods need to be tailored to fit a community's specific context to ensure that the community's voice is heard and that their needs are met.

Furthermore, the scale of the engagement is crucial, the fifth criterion. To illustrate, individual engagement methods are more suitable for addressing specific concerns and building trust with individual community members, while small group engagement is more effective in fostering dialogue and collaboration among community members.

Large group engagement can be used to gather input and feedback from a wider audience, while public engagement methods can be used to inform and engage a broader community.

Lastly, all methods will not equally apply to communities with different experience levels in participatory interventions. For instance, if a community is not used to participating in decision-making processes, a highly complex engagement method may discourage their participation and lead to frustration and disengagement. Furthermore, selecting engagement methods based on a community's level of experience can help build their capacity for future engagement. For example, if a community is new to participatory interventions, starting with simple engagement methods can help build up their confidence and experience, making them more likely to engage in more complex interventions in the future.

Therefore, selecting the appropriate engagement methods based on the above justifications can help ensure that community members have a meaningful and impactful role in an RSUPD project, leading to more effective and sustainable outcomes. Nevertheless, not all the sub-criteria are addressed by all the methods. As the analysis revealed, more engagement methods are applicable during the pre-planning stage, with fewer methods suitable during the implementation stage. Allowing for more community input during the pre-planning phase, rather than during implementation, when plans are already in motion, maybe the reason for increased opportunities to influence project decisions. This has also been evidenced by Kirshen et al. (2018). Furthermore, considering practicalities, many methods can be employed to inform, consult and collaborate with small groups of those with high interest and advanced experience in participatory interventions. Contrarily, only a few methods have been applied locally to empower or for co-decision-making. Also, it is challenging to engage hard-to-reach groups, the entire public, and those with less experience in engagement since fewer methods are applicable to those circumstances. Additionally, most engagement methods are suitable for identifying community needs and development requirements, with fewer methods ideal for community resource mapping.

An intriguing finding of this analysis is that it reveals the compatibility between sub-criteria. To illustrate, not all high-level engagement purposes can be achieved during each phase of RSUPD. The study shows that communities entering into collaborations or co-decision-making are not effective once the project is implemented on the ground

because all decisions have been made at that point. Similarly, there is no point in identifying community resources or doing participatory policymaking during the post-implementation phase. Furthermore, involving, collaborating or empowering locals through public awareness is impractical. Moreover, inclusive policymaking is not compatible with hard-to-reach groups and low-interest groups. Making policy decisions through individual engagement or relying solely on those with entry-level participation experience is neither correct nor practical for the entire public. These noteworthy facts are illustrated in Table 7.10. with green denoting the sub-criteria compatible with each other and red with no compatibilities.

The fifth theme that emerged from the GT analytic procedure: participatory methods and selection criteria along with the Excel tool that was developed (as shown in Table 7.9; this tool is available from <https://docs.google.com/spreadsheets/d/1BXVE91j9Ma7ldP1gcKS4c3TckCh5jC0Y/edit#gid=22232129> and the filtering function can use to generate a list of participatory methods compatible with the selected criteria) can contribute to the intended holistic approach in several ways. Firstly, the community's participation in RSUPD decision-making can be more meaningful, effective, and inclusive by having a systematic and justifiable method for selecting engagement methods. This can lead to increased ownership and support from the community towards a development project which is crucial for sustainable and long-term impact. Furthermore, the tool can help to create a more comprehensive and coordinated approach to community engagement in RSUPD. By considering the different factors influencing the selection of engagement methods, the tool can ensure that engagement methods are implemented strategically and intentionally. This can increase the likelihood of achieving the desired outcomes of the engagement and, thus, contribute to the project's overall success.

7.6 Summary and Link

The chapter presents a tool for determining participatory methods to engage communities in the decision-making of RSUPD. The inductive coding identified 40 participatory methods classified into six key criteria and 36 sub-criteria based on their applicability. Although the interviews were highly cited and practised, the use of social media, followed by surveys, has been found to be suitable for many occasions (21 sub-criteria out of 36), whereas PRA is fit for fewer occasions. Contrarily, despite the citizen jury method being less referred to by the experts, it is as applicable as the interviews with 15 and 16 matching situations, respectively. The development of this tool provides practitioners with a justifiable mechanism to resonate with their selection of engagement methods while addressing one of the key barriers identified, namely the absence of a device for selecting engagement methods. Ultimately, the chapter answered the exploratory question of “How should a lead agency/conveyor group select participatory methods to engage communities?” Subsequently, the question arises of how leading parties can evaluate the community change intended by applying the selected engagement methods; this is analysed and presented in the next chapter.

CHAPTER EIGHT

A STRATEGY AND INDICATORS FOR ASSESSING COMMUNITY TRANSFORMATION

8.1 Introduction

Chapter 8 focuses on the sixth theme revealed from the inductive coding, namely community transformation. The chapter presents the results of the GT data analysis pertaining to the research participants' standpoints on affecting a change in local communities by promoting their participation in RSUPD. The discussion expands to establishing indicators to measure community transformation that is intended to be achieved through inclusive development. By establishing a framework for evaluating community transformation, this chapter provides a basis for developing effective strategies to promote community participation in decision-making processes related to RSUPD. The scope covered in this chapter is depicted in Figure 8.1.

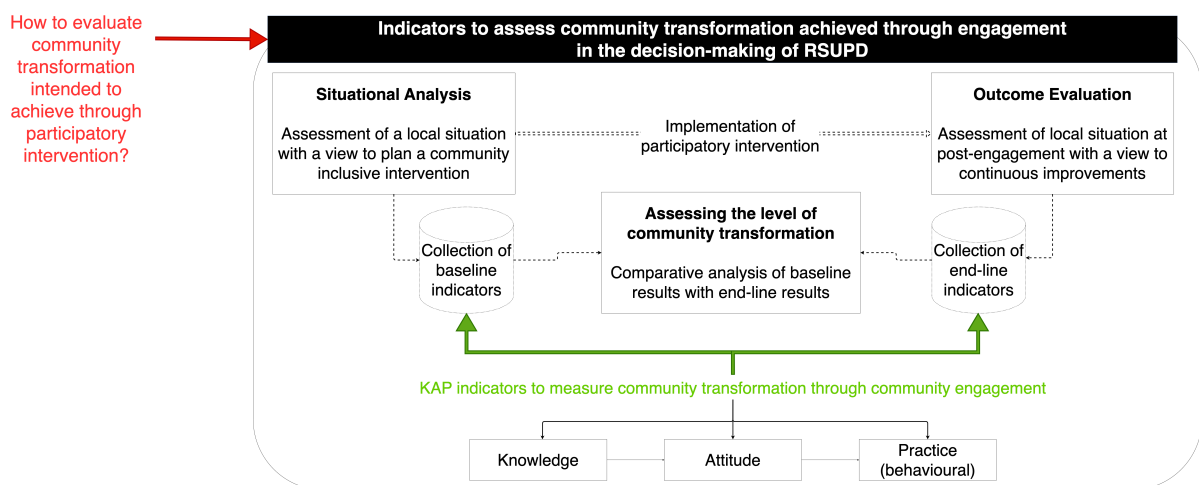


Figure 8. 1: Scope covered in Chapter Eight

8.2 Transforming Communities through Engagement in the Decision-making of Risk-Sensitive Urban Planning and Development

Unpacking the study participants' understanding and perception of affecting a change in a given community by engaging them in an RSUPD project is found to be complex and distinct. It is worth noting that this phenomenon (i.e., transforming communities

through engagement) is novel to the general public. During the FGDs, it was observed that community participants involved in the study struggled to expand the discussion on the probes of community transformation. Accordingly, the discussion on transforming communities through inclusive RSUPD was predominantly conducted with industry experts.

All experts accept that engagement is a central concept and foundational principle of community transformation. P7 elaborated on this, mentioning that “a key feature of community transformation is action at the grassroots level, where the affected people themselves should take the leading role, with external experts and organisations playing a minimal facilitating role”. Recalling from an experience of an inclusive housing development project in the UK, P2 commented that both the top-down and bottom-up approaches should be considered to facilitate community transformation. In her words,

“...in terms of facilitating a community's transformation through engagement in local development projects, it is mandatory to extract lived experience of the people affected by the disaster to find out what features need to be included. So, employing a purely top-down approach does not usually consider the lived experience...similarly, employing a pure bottom-up approach is also not always advisable because they do not have a framework and funding to support community change...thus both approaches should consider...” (P2).

Nonetheless, all experts agreed that current development projects in Sri Lanka have yet to focus on transforming communities through engagement. P6 further opined that though the transformation of communities has been evidenced at some points, the practitioners still need to come across a proper mechanism to evaluate the level of community change they have achieved through participatory work. This fact is also ascertained during the data analysis because only a few experts seem to have sound knowledge and understanding about transforming communities through effective engagement. Thus, the absence of a strategy for meaningful evaluation of community change and project success was identified as one of the challenges in successful community transformation.

The experts opined that there should have a list of indicators to measure the level of community change from pre- to post-engagement. Elaborating on this point, P4 revealed a “Monitoring, Evaluation, Accountability and Learning (MEAL) framework” that they used to evaluate community change after participatory community development programmes. P4 opined that,

“... 80% of our community capacity building or development programmes are aligned with a MEAL framework, there we have

predetermined outcomes and indicators to measure the achievement of those set outcomes...we collect particular information related to those indicators to ensure whether we have met the indicator.”

P4 further opined that they are conducting such MEAL evaluations annually or bi-annually to review the progress of their inclusive CCB or community empowerment programmes. However, their MEAL framework is neither developed for inclusive UPD nor CBDRR evaluation.

Another framework for evaluating community transformation is the KAP survey instrument (P10). KAP is a well-known framework to evaluate the change in a community's knowledge (K), attitude (A), and practice (P) (also known as behaviour) in any community-inclusive intervention. As P10 stated, ADPC has been using KAP survey instruments to evaluate community change over a period of engagement in participatory DRR in Thailand. According to his experience, mobilising communities' knowledge, attitude, and behaviour by engaging in RSUPD projects in their locality not only occurs a positive change in those locals but supports building forward better instead of building back better. For example,

“...in some Asian countries like Indonesia, Japan, and Malaysia, people do not wait for the government to come and give them a fund or support after a disaster, but they start to build back in a better manner by foreseeing future risks and addressing them.” (P10)

Unfortunately, this situation contrasts with that in Sri Lanka; "the communities in Sri Lanka mostly depend on the government, they expect the government to do everything, and if the government is not doing anything, then they will not engage" (P2). The experts explained that not having a meaningful process of engagement to transform communities and, thus, to unite themselves properly is the reason for this poor practice.

Having explained the importance of and gaps in transforming communities towards and through meaningful engagement in the RSUPD in Sri Lanka, the discussion was further expanded with the experts on realising a framework and possible indicators for assessing community transformation by engagement in a given participatory RSUPD project.

8.3 A Strategy for Monitoring & Evaluating Community Transformation Achieved Through Engagement

Monitoring & evaluation (M&E) is an integral part of a community-based intervention implementation and management, helping ensure that the project/intervention is on

track and achieving its intended outcomes. Many participants reiterated this idea by saying that "not only in community-based DRR or UP but M&E of any participatory initiative allow project managers to demonstrate to funding agencies, participants and local stakeholders whether the project funds were spent effectively towards achieving the project goals as expected" (P7).

During the interviews, a strategy for M&E of community transformation was proposed that could adopt for community-inclusive RSUPD projects. P10 proposed conducting a "situational analysis" as the first step towards implementing an M&E framework for measuring transformative community engagement in RSUPD. A situational analysis aims at monitoring, evaluating, and understanding the community situation before implementing the participatory intervention, thus the pre-engagement situation (P10). Contributing to this proposal, P4 stated, "situational analysis should conduct before planning engagement activities"; per se, it will "help implementors to adapt their engagement plans accordingly" (P9). In the context of community-inclusive RSUPD, "a situation analysis describes the type and magnitude of DRR and CCA issues and identifies possible causes of the disaster and climate risk problems observed" (P2). The experts further explained that the findings of a situational analysis would help in planning a participatory development intervention aimed at alleviating any disaster and climate risk, satisfying local development needs, as well as cultivating community unity (P2-P4, P9, P13). Notably, P8, as a national-level agency practitioner, accepted the idea of conducting a situational analysis to assess the local situation when planning a project or intervention, which he considers a "decent policy implication" in mainstreaming community engagement in RSUPD.

Following a situational analysis, an "outcome-impact evaluation" was proposed as the next step of the M&E framework. Outcome-impact evaluation is an assessment conducted at the end of a project (P2, P10) which provides information about the impacts of the intervention (P10, P9, P2, P5). This helps implementors monitor and understand a given community's status after engaging in participatory activities (P7). Outcome-impact evaluation involves "identifying and measuring the changes that occur as a result of project implementation" (P10), thus the intended community transformation.

Finally, it is proposed to compare the results of the situational and outcome-impact evaluation (P5, P7, P9, P10, P13). This refers to evaluating the effect of a program implemented to "produce change" (P3). For this study, evaluating the level of

community change that a community is intended to achieve by participating in inclusive RSUPD is termed 'community transformation evaluation'. Supporting their suggestion of evaluating community transformation by comparing the results of the situational and outcome-impact analysis, the experts proposed utilising a standard set of indicators during both activities. Accordingly, the experts agreed on using well-developed KAP indicators, as discussed in Section 8.4. The proposed strategy for evaluating community transformation using the KAP indicators has been illustrated in the conceptual design (Figure 4.4) and is also depicted in Figure 8.1.

From a different perspective, P10 stressed that outcome-impact evaluation "only focuses on how the program impacted the participants despite the project being implemented effectively." P9 also highlighted this, "outcome-impact evaluation differs from process evaluation...which refers to the evaluation of the process or course of the program while it is being conducted for producing a change." Process evaluation that "helps to figure out how the structure and supporting programs develop with time" (P7) and "focuses on the services and resources utilised during the planning and implementing the intervention" (P10) is essential when revising implementation plans. P2 added, "when the desired change is not achieved, it is important to revise the community engagement strategy, where the results of a process evaluation may be important". Nevertheless, the experts reiterate that outcome-impact evaluation is vital in assessing the level of community change (transformative community engagement), which is the focus of this study.

8.4 Key Indicators for Evaluating Transformative Community Engagement in Risk-Sensitive Urban Planning and Development

Indicators are the metrics for M&E. In the context of inclusive RSUPD, key assessment areas may comprise (1) UPD; (2) DRR; (3) CCA; (4) community engagement (Pelling & Borie, 2021; Shand, 2018; Thomalla et al., 2018). Generally, in community-engaged projects, it is assumed that communities will go through a change in knowledge first, leading to a shift in their attitude and then behaviour (P7, P10). Therefore, as evidenced in Table 8.1, the experts recommend evaluating the expected community change from participatory RSUPD, focusing on the key assessment areas using KAP indicators.

Table 8. 1: Evidence of experts' suggestions for using KAP indicators

Suggested Criteria	Excerpt (Source)	Source	
		No	%
Knowledge	<p>"...I think what you could propose is a set of indicators around knowledge so that you could measure the knowledge transformation...with this development, one can measure whether the knowledge of the community members has increased - knowledge could be related to risk reduction, utilisation of urban services, or any other purpose depending on the investment..." (P10)</p> <p>"...that is why I said the indicators have to be strong enough to capture community knowledge on their local context, risks, developments..." (P7)</p> <p>"...it is important to see how community knowledge has developed through participation" (P4)</p>	15	88
Attitude	<p>"When you ask them to come and engage to improve their resilience, nobody bothers. Because the issue at the time is their attitude and they do not have the knowledge, sometimes no trust...so attitude is a good indicator" (P2)</p> <p>"...first the knowledge part might be increased. And then the attitude part also, let us say, after the project, people completely changed to believe that this is a good thing. And if I incorporate building disaster resilience building codes, my urban infrastructure, my amenities, or my housing will be much safer for the next disaster. So, their attitude has been changed..." (P10)</p>	11	64
Practice	<p>"...people could have increased their knowledge, they could have changed their attitude, but what if their practices have not been changed? Then at the end of the day, the impact is zero. So, I think having very clearly defined indicators to see how the practices of the community or other stakeholders have been changed with regard to a participatory project or particular investment is essential..." (P10)</p> <p>"...But unless they practice the knowledge they received, unless they apply it, the impact is zero...thus, a set of indicators around practice is needed..." (P9)</p>	17	100

As evidenced above, all experts proposed to have a set of practice indicators. The knowledge and attitude indicators were recommended by 88% and 64% of experts, respectively. P10, who highly recommended using KAP indicators, further commented that no set of indicators is greater than the others as it is a logical process of transforming communities - first by developing their knowledge, then changing attitude, and lastly improving practice, which is the expected impact. It is suggested to assess the community's status using the same set of indicators during both the situational and impact analysis, as that makes the comparison of pre-and post-engagement status viable.

8.4.1 Knowledge indicators

Knowledge is often elaborated as a primary concern for evaluating the transformation of a community that they can develop through participation in an inclusive RSUPD project. As opined by P2, knowledge is "a measure to elicit what is known". According

to P5, the knowledge possessed by a community refers to “their understanding of any given topic.” In this case, the knowledge represents a community’s understanding of their locality, local development, local risks, processes, and stakeholders involved in RSUPD (P7, P9, P10). The experts further expanded their discussion on each category of knowledge to establish possible indicators to evaluate community knowledge. Accordingly, 40 knowledge indicators were identified, as summarised in Table 8.2.

Table 8. 2: Knowledge indicators proposed to evaluate community understanding of inclusive RSUPD

Category	Coded knowledge indicators
Local context (knowing my place)	<ol style="list-style-type: none"> 1. Demographics 2. Geography 3. History and culture 4. Economy 5. Infrastructure and resources 6. Politics and governance 7. Social networks 8. Local issues
Local development (knowing local development needs)	<ol style="list-style-type: none"> 1. Ongoing and forthcoming local development projects 2. Local development needs 3. Safe building practices
DRR & CCA (knowing risks)	<ol style="list-style-type: none"> 1. Local hazards and risks from climate-induced disasters 2. Recent local disasters (Incidence and frequency of natural hazards) 3. Groups vulnerable to hazards 4. Number of people affected and how 5. Barriers and challenges to local DRR 6. Information sources (recognition of early warning signs for disasters and emergencies)
Processes (knowing how to do)	<ol style="list-style-type: none"> 1. Government strategy for national development (Vision 2025) 2. Government strategy for provincial/divisional/district development 3. Government strategy for village/area/local development 4. Agency process in local DRR and CCA 5. Identifying extreme weather events and natural disaster 6. Assessing and prioritising local disaster risks 7. Community measures taken to prevent/minimise local disaster risks (Community-level preparedness and management) 8. Response strategies for local disaster risks 9. Recovery measures from local natural disaster and climate risk 10. Climate-resilient practices and technologies 11. Measures taken by external bodies to address local disaster risks
Relevant stakeholders (knowing whom to reach)	<ol style="list-style-type: none"> 1. Agencies involved in local development 2. Agencies involved in local DRR and CCA 3. Community leaders/champions 4. Local CBOs 5. NGOs active in the locality
Community engagement (how do I engage)	<ol style="list-style-type: none"> 1. What is community engagement? 2. Levels of community participation 3. Participatory methods 4. Importance and benefits of community engagement 5. Participatory DRR/CCA 6. Participatory UPD 7. Limitations/challenges to community engagement

Communities knowing about their local context is critical to identifying community needs and developing effective participatory interventions. As observed from the data

analysis, eight knowledge indicators were identified to evaluate communities' understanding of their vicinity. Firstly, knowing the demographic makeup: age, gender, ethnicity, and socioeconomic status of the local population of a neighbourhood allows the community to understand their strengths, weaknesses, and the potential impact of development decisions effectually (P2, P14-P17). It further helps to identify the current and potential level of cooperation and collaboration among locals and find ways to improve it, if necessary (P14). Furthermore, when locals are aware of their area's physical and environmental characteristics, such as topography, climate, and natural resources, they can inform interventions related to disaster preparedness, environmental protection, and economic development (P3, P6, P8). P3 further added that knowing the history and cultural traditions can help them identify community assets and promote cultural preservation during RSUPD. Moreover, the local economy is a vital characteristic because it allows communities to provide information on interventions related to economic development, particularly to create jobs to support deprived residents. (P2, P4, P7). Likewise, knowing the state of local infrastructure, including transportation, housing, and public services, helps locals to enter into UPD agreements with agencies to improve their quality of life and promote community development (P7, P9). P9 further commented that communities' knowledge of local political and governance structures and social networks further helps both parties (i.e., communities and agencies) to create more inclusive local development approaches with minimum disputes. By understanding these critical local context variables, communities can better identify their needs and engage with practitioners to assist in developing targeted interventions that promote community development and well-being.

Next, communities should be aware of local development needs (P4, P7, P9-P17) and ongoing as well as forthcoming local development projects (P12, P13). Knowledge of safe building practices, such as appropriate building materials, building codes and regulations, and hazard-resistant designs, is also a part of development-related knowledge (P12). P7 spoke of these three indicators by mentioning that the extent to which community members understand, acknowledge, and prioritise their own community's specific development needs and the resources available to address those needs helps to ensure that resources are used effectively and efficiently to address the most pressing needs and priorities of the community.

It is equally vital for residents to be aware of local risks. Six indicators were identified in evaluating community awareness of local risks. The knowledge of local hazards

(such as heavy rainfall, storm surges, overflowing lakes and rivers, and steep slopes), recent local disasters, and their occurrence and impact are the stimuli to community engagement in RSUPD (P2, P3, P5-P11, P13-P17). When locals know who was affected by previous disaster events and who is living with hazards, it motivates locals to take preventive measures to secure their neighbourhood from foreseeable risks (P3). Those aware of context-specific barriers and challenges to participatory development are integral in the process as they may have their own strategies to make participation viable (P10). Communities understanding of information sources such as early warning is also a key knowledge indicator (P3, P5).

Affecting a positive transformation is opportune with groups who understand how to make the change, which means the processes. In terms of UPD, the local understanding of the government strategy for national, provincial, and local level development provides valid knowledge points (P7). The government of Sri Lanka has outlined its development strategy in its Vision 2025 document, released in 2017. The factor understanding the government's national development strategy refers to the level of knowledge that a community has about the "government's overall plan for national development, including the goals and objectives, programs, projects, and policies that are intended to improve the economic, social, and environmental conditions of the country" (P7). This can be noted as an indicator that many individuals, especially those in rural areas, may be unaware. Thus, a community should at least be aware of the government's plans and programs for addressing development needs and priorities at the local level, including those related to infrastructure, social services, and community development (P13). As P13 stated, provincial and district-level development agendas are available online for those interested. Not all local area development plans have been published but are available in their respective local authorities, and the locals have the right to request such information (P7). However, as discovered during the field visits, there were two instances where local authority offices did not have area development plans available for community information.

Local awareness of local DRR and CCA is integral in participatory RSUPD. However, P9 claimed that, currently, they do not have any local DRR plans in place but collaborating with JICA to develop plans for several selected high-risk areas. Thus, he mentioned that communities in disaster-prone areas should at least understand agency procedures and programmes on DRR and CCA at the national level. Beyond that, they need to realise community strategies for DRM, including local strategies for identifying, assessing, prioritising, and responding to local disaster risks (P7, P10). P7 opined that

communities also have their own strategies for recovering from devastating effects. Additionally, P4 commented that socially active citizens might also be aware of measures taken to reduce/mitigate risks in their locality by external parties such as NGOs, IGOs, and international organisations.

Communities should be not only aware of the processes but also of individuals and agencies involved in local disaster and climate risk management and UPD. Ideally, they should at least know the contact details of relevant local officials, CBOs, NGO and IGO officials active in their vicinity, and most importantly, community leaders who represent them in government-led projects (P2, P14-P17).

To engage, locals should have at least heard about community-based/led developments and different levels of community participation (P2, P4, P13). Then, communities can see the differences between receiving and giving information, commenting on projects, involving in urban plans/designs, and entering into collaborations and co-decision-making with agency practitioners (P7). P7 further added that it is more desirable if members in a community have experience in engagement methods with their fellow locals as well as with the decision-makers/implementors. Then it is apparent that communities may have some experience in what comes in return from engagement and, at the same time, issues and limitations.

A degree of communities' knowledge assessed through these indicators during pre- and post-engagement will help to evaluate the development of community knowledge and locate areas where information and education efforts should be exerted and where it would be useful to develop and prioritise community awareness and training programmes.

8.4.2 Attitude indicators

Community attitude is the second type of indicator. Attitudes can be “a person's tendency towards positively or negatively influencing the behaviour or practice of an individual” (P10). In a way, attitudes “act as an intermediary but a hidden force between knowledge and behaviour” (P7). Thus, attitudes are “stimuli to behaviour” (P10). A common perspective was that attitudes are highly correlated with a person's knowledge; thus, “awareness is a good approach in changing a community's negative attitude towards participatory development” (P13). In a slightly different perspective, P8 explained that attitudes influence future behaviour “no matter the individual's

knowledge” and help explain why an individual adopts one practice and no other alternatives (P9). Thus, attitudes are also known as “cognitive beliefs” (P8).

Attitudes are proposed to measure under eight categories using the 37 attitude indicators, as explained in Table 8.3, to judge whether communities are positively or negatively inclined towards inclusive RSUPD.

Table 8. 3: Attitude indicators proposed to evaluate community beliefs of inclusive RSUPD

Category	Coded attitude indicators
Perceived benefits	<ol style="list-style-type: none"> 1. Improvement in the overall resilience of UPD efforts 2. Enhance communities' ability to address disaster risks and climate change impacts effectively 3. Better allocation of resources for DRR and CCA measures 4. Ensure equitable development for all residents 5. Enhance community unity in addressing climate change impact
Perceived importance	<ol style="list-style-type: none"> 1. Enhance overall well-being and safety of urban residents 2. Promote social equity and inclusivity in UPD initiatives
Perceived barriers	<ol style="list-style-type: none"> 1. Lack of awareness about the benefits of community engagement 2. Limited financial resources 3. Inadequate communication and collaboration between community members and decision-makers 4. Language or cultural barriers 5. Lack of meaningful opportunities for community participation and decision-making power
Self-confidence	<ol style="list-style-type: none"> 1. Ability to engage or confidence in engaging in local planning, development & adaptation 2. Ability to engage or confidence in engaging in local DRR and CCA 3. Ability to engage or confidence in engaging with neighbours and practitioners
Readiness to change (willingness)	<ol style="list-style-type: none"> 1. Adopt community-based risk-sensitive approaches 2. Actively contribute to agency-led development projects 3. Work for the common good of the neighbourhood
Preference (acceptability)	<p>An individual's acceptability for:</p> <ol style="list-style-type: none"> 1. the national UD strategy 2. the provincial/divisional/district level UD strategy 3. village/area/local development strategy 4. national DRR and CCA strategy 5. available community engagement strategies (if any) 6. community-based UPD, DRR and CCA practices 7. strategies taken by national to local level agencies to prevent/minimise local disaster risks 8. strategies taken by external parties to prevent/minimise local disaster risks 9. community strategies to prevent/minimise local disaster risks (community-level preparedness and management community leaders/champions and their activities)
Taboos	<ol style="list-style-type: none"> 1. Rules in a given community that prescribe community engagement (i.e., women engagement and empowerment, cast discrimination) 2. Rules in using certain lands, resistance to modernisation or changes in traditional practices, and concerns about displacement or loss of community identity

Satisfaction	<ol style="list-style-type: none"> 1. Satisfaction with resources available for local development 2. Satisfaction with resources available for local DRR and CCA 3. Satisfaction with resources available for community engagement 4. Satisfaction with available Information sources (early warning) 5. Satisfaction with community unity 6. Degree of collaboration between community members and stakeholders 7. Level of empowerment and ownership felt by community members
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It is suggested that community attitude should be evaluated mainly through three areas: local/urban planning and development, DRR and CCA, and community engagement, which can consider key aspects of inclusive RSUPD.

Firstly, assessing the community's perception of the benefits of UPD and DRR & CCA can reveal whether RSUPD meets the community's needs and aspirations. For example,

“if the community perceives that the RSUPD has brought economic benefits, improved infrastructure, or enhanced their quality of life, it indicates that the UPD approach adopted has been successful”...Conversely, “if the community perceives that the RSUPD has negatively impacted their daily life, it could indicate that the planning process was not inclusive or that the community's needs were not taken into account.” (P7)

Furthermore, understanding how a community views the advantages of community engagement offers valuable insights into the effectiveness of RSUPD's participatory approach (P4, P7). P7 reiterated that understanding whether the community perceived that their voices were heard and felt that their participation made a difference can help planners identify areas for improvement and ensure that engagement processes are more effective in the future. Similarly, assessing community's perception of whether inclusive development efforts can enhance overall well-being and safety of urban residents and can promote social equity and inclusivity in UPD initiatives can help identify which areas need more attention and investment (P1, P2, P7, P9, P10). According to P9, for example, “if the community recognises that development focused on landslide risk mitigation is more crucial than building a market complex, it suggests that more funding should be allocated to that area.”

Comprehending locals' say about barriers to critical areas of RSUPD provides insights into the challenges that the community faces in achieving inclusive development. It is as important as understanding the benefits and importance of engagement aspects. If a community believes that the RSUPD implementation process is bureaucratic or lacks transparency, it can hamper the community's participation and reduce their support for the process (P7). Similarly, if a community perceives that participation costs them, it may discourage their involvement in planning and development (P2). P7 added that

analysing community thinking of limitations to inclusive RSUPD assist implementors in identifying areas that require attention, such as improving infrastructure, raising awareness, and utilising innovative participatory approaches to overcome the barriers.

Furthermore, communities' ability to or confidence in engaging in RSUPD comes alongside their knowledge, experience, and capacities. Vulnerable groups, such as deprived people and politically marginalised groups, may think their thoughts would not be considered (P11). The elderly and differently-abled people may have accessibility issues. Women could also be neglected in profoundly cultural contexts due to cultural taboos. However, as agreed by all the participants and observed during the field visits, women are not ignored or restricted in participatory approaches in Sri Lanka. Besides, even if individuals are competent and possess a positive attitude towards participatory work, "communities would not be pleased to engage if they are not united with neighbours and do not trust practitioners" (P7). Thus, it is suggested that it would be wise to evaluate locals' self-confidence and trust in the processes and parties involved in participatory development (P1, P2, P7, P10). Cultural taboos (prohibits) on community-based RSUPD may also influence individuals' and groups' confidence. Some groups may have culturally set rules on gender roles, cast discrimination²⁴, using certain lands, resistance to modernisation or changes in traditional practices, and concerns about displacement or loss of community identity (P3, P7, P10, P11, P14).

Some communities are reluctant to change. Groups with no experience of engagement in RSUPD may become reluctant to adopt community-based approaches or to work for agency-led development projects (P7). P1-P4 added that some groups might prioritise individual needs over the community benefit. One of the aims of participatory work is to encourage community unity; thus, it is vital to understand their readiness to take on change when seeking engagement in participatory work.

Communities' acceptance of UPD, DRR and CCA as well as community engagement, also influences local attitudes. Their agreement towards the national to local development strategies, DRR and CCA strategies, participatory practices introduced for RSUPD, and strategies taken by national to local level agencies and external agencies to prevent/minimise local disaster risks influence locals' attitudes (P7, P9, P10, P19). Additionally, P2 mentioned that there might be instances where some individuals and groups do not agree with the communities' strategies to

²⁴ A social stratification system prevalent in some societies, particularly in South Asia (evidenced in Sri Lanka), where individuals are born into a specific caste that determines their social status, occupation, and privileges.

prevent/minimise local disaster risks and the people who lead those actions. P7 further opined that community acceptability is linked to their satisfaction with certain circumstances. Locals' attitudes about the resource availability for local development, local DRR and CCA, community engagement, and availability of information sources such as early warning systems are critical.

In conclusion, evaluating the community's attitude is as crucial as their knowledge in understanding the impact of inclusive RSUPD. However, it is essential to note that community perceptions are subjective and may not always align with objective indicators of project success. Therefore, it is crucial to use multiple indicators and evaluate the community's perception in conjunction with objective data to gain a comprehensive understanding of RSUPD's effectiveness.

8.4.3 Practice indicators

Community practice refers to the “ways in which the communities demonstrate their knowledge and attitude through their actions” (P10). This is also known as community behaviour. Indicators to measure a change in a community’s actions achieved through engagement are metrics used to evaluate the level of participation and involvement of community members. In this regard, 20 indicators were identified and classified into two categories, as presented in Table 8.4.

Table 8. 4: Practice indicators proposed to evaluate community actions of inclusive RSUPD

Category	Coded practice indicators
Quantity of community participation	<ol style="list-style-type: none"> 1. Number of awareness sessions participated 2. Number of community consultations attended 3. Number of sessions involved in decision-making or planning 4. Number of collaborative partnerships established between the community, local authorities, NGOs, and other stakeholders 5. Number of events participated for co-decision-making 6. Duration of participation 7. Retention in participation
Quality of engagement	<ol style="list-style-type: none"> 1. Percentage of community members aware of their roles and responsibilities in the planning and development process 2. Community suggestions to influence development decisions 3. Number of positive and negative feedback received from community members on the effectiveness of the engagement initiative 4. Level of community members' perceived influence on key decisions related to RSUPD

Implementation and action for RSUPD	<ol style="list-style-type: none"> 1. Percentage of community members actively participating in the implementation of risk reduction measures 2. Adoption of safe building practices 3. Adoption of climate-resilient practices and technologies 4. Adoption of community-led risk reduction and adaptation initiatives 5. Adoption of hazard-resistant livelihoods 6. Report safety concerns or hazards to relevant authorities 7. Use of early warning systems 8. Practice evacuation plans 9. Investment in DRR and CCA measures and strategies 10. Access and utilise relevant information and resources for DRR and response
Long term sustainability	<ol style="list-style-type: none"> 1. Level of community members' involvement in the monitoring and evaluation of RSUPD initiatives 2. Percentage of community members taking on leadership roles in ongoing sustainability efforts 3. Number of active community committees or CBOs established for to influence local RSUPD

Practice indicators can be categorised into measures of quantity and quality of community engagement, implementation and action for RSUPD, and long-term sustainability. It is vital to evaluate community engagement in different phases of participation, from inform to co-decision-making (empower). This can assess through the details of local attendance for awareness sessions, consultation, involvement, collaborations, and co-decision-making events. The per cent difference in community attendance at such events reveals the evolvement of their practice from generic awareness to co-decision-making (P1-P17). Furthermore, the duration and number of locals continuously engaged throughout the process and those left indicate the level of sustained engagement and commitment of the community towards RSUPD initiatives (P11).

In terms of the quality of engagement, four indicators were proposed. Here, increase in number of locals aware of their roles and responsibilities in the planning and development process indicates a positive change in community behaviour. Despite positive behaviours, the level of feedback by a community and their positive and negative comments reveals their motivation towards participatory development (P7, P10, P13). Locals' negative attitudes may also result in community protests (P7, P8). Additionally, community suggestions and their level of perceived influence on key decisions related to RSUPD is crucial in assessing community practice.

In addition, another 10 indicators were proposed to evaluate community actions towards adopting RSUPD practices. Adoption of safe building practices, such as using appropriate materials, a community's adherence to building codes and regulations, and the extent to which they have implemented hazard-resistant designs indicate best community practices (P3, P7, P12). The experts further opined that the number of households adopting climate-resilient practices and technologies such as rainwater

harvesting, use of renewable energy sources, installation of green roofs, and implementation of low-impact development techniques also reveal local best practices in CCA. Communities' awareness and attitudes may also reflect their adoption of hazard-resistant livelihoods. For example, P7 indicated that individuals or groups may adopt practices such as crop diversification, livestock management, or fishing practices that are less vulnerable to the impacts of hazards like floods, droughts, or storms. This can also involve promoting alternative income-generating activities that are less likely to be affected by hazards. Such safe and climate-resilient practices could initiate by both agencies and communities themselves. Thus, it is vital to understand the level of community-led initiatives which reveal their awareness, preparedness, and community unity.

Community members reporting safety concerns or hazards to relevant authorities is a community-led risk reduction initiative (P3, P5). This could include reporting structural vulnerabilities in buildings, unsafe working conditions, or any other hazards that may pose a threat to the safety and well-being of residents. By receiving these concerns from communities, the authorities can take action to address the issue and mitigate potential risks. P3 and P5 further stated that the use of early warning systems is a measure of community behavioural change as it shows the community's increased awareness of potential hazards and their willingness to take precautionary actions. Groups using early warning and reporting hazards and risks increase their access to relevant information resources, which is a good practice indicator. Moreover, locals practising "evacuation plans reveal their familiarity with the routes" (P10) and can demonstrate their knowledge of "procedures necessary to safely evacuate and their capacity to protect from disasters" (P13). Communities adopting the aforementioned best practices enhance their investments in safe and sustainable practices (P7).

Besides all above practice indicators, engagement efforts should be consistent, thus proposed three indicators to assess the long-term sustainability of inclusive development efforts. Assessing local involvement in M&E of risk-sensitive development initiatives, taking leadership roles in projects, and establishing and maintaining CBOs and local committees to enhance local resilience to disaster risks and climate change impacts is crucial in this regard.

8.5 Discussion

Consistent with the experts' viewpoint, Hille (2008) and Shand (2018) agreed that community engagement in UPD can effectively transform communities. The fact which is often overlooked is the potential for community change through engagement in mainstreaming DRR and CCA measures into UPD. For example, studies (Few et al., 2017; Leck et al., 2018; Shand, 2018; Thomalla et al., 2018) have shown that communities that are actively engaged in UP processes tend to be more resilient in the face of natural disasters and other types of shocks. Additionally, community engagement can help to promote social cohesion, build trust between communities and government agencies, and empower marginalised communities to have a greater voice in decision-making processes that affect their lives (Deshpande et al., 2019; Johnson & Anderson, 2012; UN, 2005).

While there is growing interest in the potential for community engagement to transform communities, this subject remains an understudied and less-discussed area. One of the primary challenges in effecting change through engagement is the impracticalities in evaluating the effectiveness of community engagement in RSUPD. It can be challenging to measure the impact of community engagement on long-term UD outcomes. The impact of community engagement may not be immediately apparent, and it may take years or even decades to see the full effects of community engagement efforts. Additionally, community engagement efforts may be complex and multifaceted, making it difficult to isolate the impact of specific engagement methods or activities on UD outcomes. This is a well-known gap in the current body of knowledge, consequently, in practice.

There are a few theories and models that demonstrate an approach to community coalition building, social transformation, and behavioural change (as discussed in Table 2.2 in studies of Osmond, 2008; Im, 2011; Luszczynska & Schwarzer, 2020; Pavlova & Silbereisen, 2015; Taylor et al., 2006; Ajulo et al., 2020; Esterhuizen, 2015; Bukari et al., 2017; Tremblay et al., 2017), however without any concern for evaluating the intended impact. Only the use of a 'KAP model', inspired by the ToC, has been recognised in the literature as a possible application that can be reproduced to evaluate community change in development decision-making (Kaliyaperumal, 2004; Khandker, Koolwal, & Samad, 2010; Lindgren & Kelley, 2019), which the experts also suggested.

Thus, the empirically developed knowledge, attitude, and practice (KAP) indicators with the suggested model for evaluating community transformation in inclusive RSUPD projects make a solid contribution to developing a holistic ToC. The KAP indicators can contribute to the holistic approach by providing a tangible way to measure the effectiveness of community engagement in RSUPD. By measuring changes in knowledge, attitudes, and practices of community members before and after an engagement, the model can provide evidence of the impact of community engagement on promoting positive changes in a community. The proposed 97 KAP indicators can be used to identify areas where community engagement has been successful and where there is still room for improvement. The data collected through the KAP indicators can be used to refine the holistic approach and adjust engagement strategies accordingly. Additionally, by showing the positive changes in knowledge, attitudes, and practices of community members, the model can demonstrate the value of investing in community engagement and encourage stakeholders to support and fund engagement initiatives.

The proposed model also offers the flexibility to prioritise and refine the recommended KAP indicators by considering the specific project scope/requirements. The users can also assign weights to the indicators to put forward a measurable evaluation mode on community transformation. However, it is noteworthy that no set of indicators can be wholly ignored as each category is equally essential and serves to measure the impact under different aspects, reflecting a logical process of community change. Another reflection is that the KAP indicators model alone may not be sufficient to fully evaluate the impact of community engagement on RSUPD. Other factors, such as changes in policy and institutional arrangements, resource mobilisation, and power dynamics among stakeholders, should also be considered during process evaluations.

8.6 Summary and Link

The chapter proposes an empirically developed and well-defined set of KAP indicators to evaluate community transformation resulting from engagement in RSUPD. These indicators can be modified for situational and outcome-impact analysis during pre- and post-engagement to determine how communities' knowledge, attitudes, and practices towards participatory initiatives evolve for creating safe, resilient, and risk-sensitive neighbourhoods. By establishing an evaluation framework for community transformation, this chapter addresses the linking question of how to evaluate intended

community transformation through participatory RSUPD intervention between the fifth and sixth themes.

With this chapter, the study concludes the in-depth grounded analysis of the six themes and the hypothetical links between them and their categories revealed by the study participants. Accordingly, the next chapter integrates the findings from chapters 4 to 8 to develop a holistic approach for fostering community engagement in the decision-making of RSUPD.

CHAPTER NINE

DEVELOPMENT AND VERIFICATION OF THE HOLISTIC APPROACH

9.1 Introduction

This chapter presents the holistic approach developed for fostering community engagement in the decision-making of RSUPD, which the study aimed to accomplish. Theory of change (ToC), a promising approach to developing theories aimed at creating a change in a community, was utilised as the basis for drafting the holistic approach emerged from the study. The findings derived while addressing the first four objectives (which are presented in Chapters 5, 6, 7, and 8) were combined to create the holistic approach. Section 9.3 explains the key elements of the proposed approach alongside their interrelationships and the flow of activities. Subsequently, the drafted approach was verified through member checking and the results of the verification exercise are presented and discussed in Section 9.4. A diagrammatic representation of the verified holistic approach is presented in Section 9.5 as the outcome of the study. Finally, the study outcomes along with the implications are discussed and interpreted in Section 9.6.

9.2 Basis for the Holistic Approach: Theory of Change (ToC)

ToC, instigated from the programme theory, is “a predictive assumption about the relationship between desired changes and the actions that may produce those changes” (Connolly & Seymour, 2015). The concept was created to address the challenge of evaluating complex social and public policy interventions, known as Comprehensive Community Initiatives (CCIs), which involve multiple levels and dimensions of impact (Aspen Institute, 1997, as cited in Sullivan & Stewart, 2006). A ToC should develop empirically underlying any social intervention which, in this case, was to foster community engagement in the decision-making of RSUPD. Thus, it is essentially a context-specific explanation of “how a group of stakeholders expects to reach a commonly understood long-term goal” (James, 2011) and is an “exciting and often liberating process of interaction that helps organisations see beyond their familiar frames and habits” (Anderson, 2006). Jackson (2013) emphasised that making a ToC

explicitly enables all parties to better understand, and strengthen, the processes of change and to maximise their results, as well as testing the extent to which results and processes actually align with the expected theory of the intervention. Furthermore, a more complete ToC articulates assumptions about the process through which change will occur and specifies how all of the required early and intermediate outcomes related to achieving the desired long-term change will be brought about and documented as they occur (Anderson, 2006).

Generally, a ToC consists of five key elements: inputs, activities, outputs, outcomes, and impacts (Anderson, 2006; Mayne, 2015). Some studies (Connolly & Seymour, 2015; James, 2011; Mayne, 2015; United Nations Development Group [UNDG], 2017) suggest that additional elements, such as goals/problem definition, context, and assumptions, may be added to a ToC results' chain. These key elements of a ToC are defined in Table 9.1.

Table 9. 1: Key elements of a ToC (Source: Adapted from Anderson; 2006; Connolly & Seymour, 2015; James, 2011; Mayne, 2015; UNDG, 2017)

Element	Definition
Goal & objectives	A broad and overarching statement that describes the long-term outcome or impact that the intervention is intended to achieve.
Context	The situation in which the project takes place, including stakeholders, power relations, other relevant projects, etc.
Input	The resources that are necessary to implement the intervention.
Activity	The specific actions that will be taken to implement the intervention.
Output	The immediate and direct results of the activities undertaken as part of the intervention.
Outcome	The expected changes that will result from the outputs of the intervention.
Impact	The broader and longer-term changes that are expected to result from the intervention.
Assumptions	The underlying beliefs, values, and judgments that guide the development of the ToC.

9.3 Narrative of the Holistic Approach Developed for Fostering Community Engagement in the Decision-Making of Risk-Sensitive Urban Planning and Development

For this study, the holistic approach was developed by embedding the themes resulting from the inductive coding (as discussed in Section 4.4) and the findings derived from the subsequent data analyses (i.e., TISM of barriers and enablers, two-mode SNA, SA, participatory methods' selection tool, and the model to assess transformative community engagement). The following sections provide a narrative of

the key elements of the proposed holistic approach for fostering community engagement in the decision-making of RSUPD.

9.3.1 Problem statement and goals

The problem statement represents the wider problem which is expected to be answered by developing this holistic approach. Thus, the problem statement for this holistic approach is the same as the problem statement established for this study in Section 1.2.1: “how can communities, including vulnerable groups and CBOs, be empowered and positively transformed to play an active role in mainstreaming DRR and CCA in support of RSUPD?”

The study proposed a holistic approach to address the above problem with the following goals to be achieved upon its implementation:

1. To empower communities to participate in the decision-making of RSUPD, by building their capacities, skills, and knowledge.
2. To increase community ownership and engagement in developing risk-sensitive urban plans and policies, by fostering collaboration and partnerships among communities, local authorities, and other stakeholders.
3. To reduce the vulnerability of communities to natural disasters and other risks, by incorporating community perspectives and knowledge into the development of risk-sensitive urban plans and policies.

Establishing the above problem statement alongside the aims that are planned to be accomplished through this holistic approach helps its users to understand the ideal application of the proposed approach. If this approach is to be applied to solving a different problem, it should be adapted as required.

9.3.2 Context

The proposed holistic approach is grounded in Sri Lanka. The characteristics of Sri Lanka are explicitly discussed in Section 3.10. One can decide on the applicability of the proposed approach to a different setting by analysing the economic, socio-cultural, political, vulnerabilities and engagement culture characteristics summarised in Table 9.2.

Table 9. 2: Characteristics of the context (Sri Lanka) for which the holistic approach was developed

Characteristic	Description
Demographic & Socio-Economic	A lower-income country with a Per Capita Gross Domestic Product - GDP (nominal) of USD 4,014, in 2022. Despite its modest size, the country has a diversified economy, with agriculture, tourism, and textiles and apparel being some of its main drivers. The services sector makes the largest contribution to the economy at 54.6% of the GDP. The Human Development Index (HDI) for Sri Lanka was 0.782 in 2022, placing it high in terms of human development. However, it also suffers from many chronic social and economic problems such as acute income disparities. It has a high Gini index value of 39.3 (2022). Sri Lanka also has a substantial number of IDPs and refugees - annual displacement was estimated to be around 135,000 in 2021. The country has a 4.1% of poverty rate.
Socio-cultural	Multi-ethnic and multi-religious groups. High level of education, with a 92% literacy rate (20 th global rank). Primary education is mandatory in 100% of the population having completed primary education with a large population completing secondary and tertiary education. Growing middle class with strong family ties. The emerging youth culture is influenced by global trends and technology leading to the emergence of new cultural practices and social norms, particularly in the areas of entertainment and leisure.
Political stability	After the end of the civil war in 2009, the country has worked to establish peace and stability and has made significant strides towards strengthening its democratic institutions. However, the country has also experienced some political upheavals including allegations of corruption, constitutional crises, and tensions between different ethnic and religious groups. Despite these challenges, the country has a vibrant and active civil society that works to promote democracy and human rights.
Vulnerabilities of urban communities	<ul style="list-style-type: none"> • About 18.9% of the 22 Mn population is an urban population with 50% of that proportion dwelling in slums • Environmental degradation including air and water pollution, and the loss of green spaces and ecosystems • The demand for housing and infrastructure has outstripped the ability of the government to provide an adequate supply, leading to overcrowding and a lack of basic services such as water and sanitation • Crime and violence including gang-related violence, theft, and drug trafficking • Challenges in access to health and social welfare services, particularly for marginalised and disadvantaged groups • The sea level rise and increased frequency of coastal storms are expected to lead to increased flooding and erosion in urban communities located along the coast • Prone to natural disasters and the adverse impacts of climate change
Engagement culture	Active community involvement in local decision-making is reflected in the number of CBOs, such as neighbourhood associations, women's groups, and youth clubs. The population has a strong sense of social capital, with high levels of trust and cooperation between community members. This is particularly evident in times of crises, such as natural disasters, when communities come together to support each other and respond to the needs of their neighbours. However, there are also challenges such as inequalities in power, access to engagement and lack of political representation, particularly with regard to marginalised and disadvantaged groups.

9.3.3 Inputs

Inputs explain the resources that are required to implement the proposed holistic approach. A community coalition is usually formed when a **lead entity** or a **convener organisation** (Table 4.3, Section 4.5) responds to an opportunity, threat, or mandate.

Generally, in UD in Sri Lanka, a government agency plays the role of a lead agency. The resources should be acquired and brought about by all the stakeholders but, generally, mainly by the lead agency. Resources include both tangible and intangible assets.

Community engagement is more likely when the convener agency provides essential tangible assets, including **finance** (Section 5.2, 5.3, 6.3.1, 6.3.2, 6.4.2, 6.5) and **material support** (Table 4.3, Section 4.5). Additional funding can be generated through partnerships with NGOs, IGOs and academic institutions that typically attract external research grants to support community-based interventions. The convener organisation usually provides full or part-time **staff** (Section 5.2) to manage the initiative. Notably, they should be skilled practitioners.

Intangible resources such as technical expertise, data, and networks and contacts play a vital role in community-based initiatives. The use of **expertise and technical/professional skills** (Section 5.3, Table 6.11) from third parties, including academics and community partners, is a critical success factor in inclusive development. Furthermore, all stakeholders should have **access to relevant data and information** (Section 5.2, Table 6.11, Section 7.3.1.2) on the risks and hazards in the planned development areas. Clear and transparent **communication channels** (Section 5.2, 5.3) between communities, local authorities, and other stakeholders should also be established. In addition, **access to infrastructure and services** (Section 7.3.4.2, 8.4.2), including transportation and utilities, facilitates active engagement. Moreover, **political commitment** (Section 6.5, 7.3.3.11) and support from local authorities and other stakeholders is a vital input for establishing inclusive approaches which, consequently, support the effective leadership and management structures of the lead agency. Above all else, **time** (Section 5.2) is crucial since community transformation requires a long-time span with patience in planning, implementation, transformation, and evaluation. To lead to meaningful actions by municipal representatives, it is suggested that they should plan for a long timescale for implementing the action plans (ideally no less than 12 months), to allow for the involvement of sufficiently senior participants from a mixture of backgrounds, and for the creation of a city task force that would provide feedback to inform the design of an inclusive RSUD programme.

Incentives and a recognition mechanism (Section 5.3, Table 6.11) is required to motivate active engagement. Recognition mechanisms refer to the ways in which the contributions and outcomes of community engagement in RSUPD are acknowledged

and valued by stakeholders, including governments, donor organisations, and communities themselves. The use of recognition mechanisms can help to enhance the legitimacy and effectiveness of community engagement processes and to increase the level of trust and cooperation between different stakeholders. The recognition mechanisms recommended by the experts include:

- Acknowledgement in official documents: the recognition of community contributions in official planning documents, such as master plans, zoning maps, and land use plans (P4, P7, P10).
- Public events and media coverage: community festivals, workshops, and other activities, and media coverage, such as press releases, interviews, and articles, to showcase the results of community engagement efforts (P3, P13).
- Awards and prizes: presentations of awards, certificates, and other recognition to community organisations, individuals, and other stakeholders for their contributions to community engagement processes (P3, P11).
- Monetary benefits such as incentives to deprived communities, tax benefits, and childcare benefits
- Incorporating community-driven solutions into policy: integrating community-generated ideas and recommendations into local policies, regulations and guidelines, and the development of specific programmes and projects to implement these solutions (P1, P2).

Finally, a robust **monitoring and evaluation strategy and indicators** (Section 4.5, Chapter 8) to assess the extent a community has been transformed through engagement in RSUPD initiatives is vital.

9.3.4 Activities

As revealed by this study, engaging communities in RSUPD involves 15 key activities. **Establishing goals and objectives** is essential before implementing the proposed holistic approach. In addition to the goals established in Section 9.3.1 for the proposed holistic approach, the lead agency should select at least one sub-criterion from each participatory methods selection criterion introduced in Section 7.3 in order to set realistic objectives. For example, one should select the RSUPD phase that communities are intended to engage in (Section 7.3.1), the purpose of the engagement (Section 7.3.2), the project-specific objective(s) of the engagement (Section 7.3.3), the community context (Section 7.3.4), the engagement scale (Section 7.3.5), and the level

of community experience (Section 7.3.6). This enables the implementor to set objectives and goals specific to the participatory project.

Community recruitment (Section 6.5) is the second key activity. Community members need to be informed about the upcoming RSUPD project, and their consent should be collected regarding the engagement. Community recruitment should be actioned following proper rapport building and interaction with locals in order to fairly select a cross-section of a given community. Inclusive development initiatives are more likely to be successful when the lead agency enlists community leaders/champions and CBOs to help develop credibility and trust within the community. Representation of the community should include vulnerable and marginalised groups who may face challenges such as poverty, lack of access to resources and services, limited political representation, and discrimination based on race, ethnicity, religion, gender, or other factors. In the context of RSUPD, vulnerable communities may be particularly vulnerable to the impacts of natural disasters, infrastructure development, or other forms of risk and hazard. Attention needs to be given to recruiting apathetic majority and youth as well.

Mainstreaming community engagement in RSUPD requires the meaningful participation of all the stakeholders throughout the process so that the plan becomes enriched with inputs from stakeholders who have a stake in building the resiliency of a city. The third activity, therefore, is to **network with relevant stakeholders and resource mobilisation** (Section 6.2. and 6.3 provides a detailed analysis of the stakeholders to be considered in Sri Lanka). Stakeholder participation in inclusive development should go beyond the lead agency and the affected community (or likely to be affected community) to involve relevant government authorities, semi-government organisations, private organisations, local and international NGOs, IGOs, international organisations, academics (i.e., related to UPD, DM, irrigation, environment, transportation, and utilities) and the media. The meaningful participation of stakeholders ensures that the plan is understood and owned by those with key roles to play in its eventual implementation and enforcement.

After identifying the project team, it is vital to **recognise the barriers and enablers to engaging communities** within the decision-making of the proposed project. The interpretive structural models developed and discussed in Chapter 5 will help the lead agency to identify the critical barriers and vital enablers for a specific project. By doing so, they can identify and prioritise the actions that need to be taken in order to

overcome or minimise the impacts of relevant barriers and strengthen the relevant enablers. Subsequently, the lead agency can **establish a continuum of cooperation and partnership activities among stakeholders** for meaningful collaboration to encourage community-inclusive decision-making. The key players for different settings with their possible contributions and best practices for promoting community engagement in the decision-making of RSUPD in Sri Lanka are comprehensively analysed and presented in Section 6.4 and 6.5. Furthermore, centralised power needs to be decentralised and fairly distributed among the project stakeholders, including communities, to achieve an effective community transformation in community-based/led projects.

The sixth activity is to **conduct a situational analysis** (Section 8.3). In participatory planning and development, a situational analysis may determine the commencing point of engagement initiatives that could vary from the inform level to full participation with decision-making powers. Thus, it is suggested to analyse the status of a community's knowledge, attitude, and practice before designing the inclusive development programme in order to align the plan to the context to avoid unforeseeable problems and risks. The KAP indicators to be used for a situational analysis in the context of RSUPD are developed and discussed in Chapter 8. A situational analysis using the proposed KAP indicators would help the lead agency to understand the areas where community awareness, attitudes and skills need to be enhanced. Thus, the results of a situational analysis can be used to **identify community awareness, training and capacity-building needs** (Section 5.2, 6.4.1, Table 6.11, 7.3.2.1, 7.3.3.1, 7.3.3.11, 8.4.1).

Once the awareness and training needs are recognised next comes the need for selecting the methods to build community capacities and engage selected local representatives in order to achieve the set participatory RSUPD objectives and goals. Facilitating a justifiable approach for **selecting engagement methods**, Chapter 7 presents a tool (available in Table 7.9 and a digital version of this tool with filtering options can be found at <https://docs.google.com/spreadsheets/d/1BXVE91j9Ma7ldP1gcKS4c3TckCh5jC0Y/edit#gid=22232129> with 40 methods classified into six key criteria and 36 sub-criteria specifically for RSUPD. It is hoped that this tool will be utilised for selecting engagement methods. After identifying the training needs and the methods required for engagement, the ninth activity is to **develop an inclusive community engagement action plan** (Section 7.3.3.10) to engage communities in the decision-making of

RSUPD. Engagement plans should mainly outline awareness and training programmes for both communities and field workers, participatory methods chosen for different stages/objectives of the RSUPD project, time plan, responsible parties for each activity, and resources.

Following the community engagement action plan proposed above, **building community capacities and skills** is the tenth activity to perform. Awareness-raising and capacity-building, as cross-cutting interventions, are necessary to facilitate informed and meaningful community participation. Building community awareness of engagement in RSUPD and the benefits that can be achieved through inclusive and participatory processes can help to increase community interest and involvement in the planning and development process. Furthermore, providing communities with training and education on RSUPD, including the relevant policies, regulations, and best practices, helps to build their ability to engage effectively. Moreover, building up the leadership and advocacy skills of community leaders will increase their ability to influence decision-makers and advocate for the needs of their communities. Awareness, training and capacity building on participatory methods are not only useful for communities but are also required for local authority practitioners, particularly for field workers (Section 5.2).

The next activity is **implementing the framed engagement plan** to achieve the expected outcomes. Engagement practices need to be initiated firstly with 'entry-level' programmes for those who have never been involved before (i.e., due to socioeconomic status, youth, or apathy), and 're-entry' programmes need to be created for those who have participated before but have dropped out (P7, P10, C20). Those with prior experience can be offered 'advanced level' programmes to make them trainers. In this transformative engagement approach, it is assumed that a given community transforms gradually through each phase of transformation: knowledge and capacity building, shift in attitudes, and behavioural change. Notably, an individual's or a community's perceived interest in engaging during RSUPD may be triggered by one or many change triggers. Thus, it is expected that there will be newcomers as well as leavers during the implementation process.

M&E is the final phase, and it is two-fold: process M&E and outcome-impact M&E. **Process M&E** (Section 8.3) focuses on the inputs and activities of the project, including how resources are used, how activities are conducted, and how outputs are produced. It helps to realise whether the activities are carried out as planned, and the budget is

utilised effectively. Contrarily, **outcome-impact M&E** (Section 8.3) focuses on tracking and assessing the outcomes and impacts of the project, including the extent to which the project objectives are achieved and the benefits are realised. Notably, it is advised that process M&E is conducted throughout the programme, while the outcome-impact analysis should be conducted towards the end and thereafter, at regular intervals after the project is completed. In inclusive RSUPD, outcome-impact M&E focuses on the changes a community has achieved as a result of community engagement and whether these changes are likely to continue over time. The same set of KAP indicators used during the situational analysis, as presented in Chapter 8, is proposed to use in the outcome-impact analysis. The results of the impact analysis will then reveal the community's knowledge, attitude, and practice status after participating in the inclusive and participatory RSUPD project.

A comparison of the situational analysis results with the outcome-impact analysis enables the realisation of the communities' level of transformation in terms of their knowledge, attitudes and practice from, and towards, participatory and inclusive RSUPD. This is called an **evaluation of the level of community transformation** (Section 8.3).

Reporting M&E results and modifications to the existing institutional framework is the final activity. Reporting M&E results to key stakeholders, including communities, is essential to increase transparency and accountability. Subsequently, modifications to the existing institutional framework and the community engagement action plan should be conducted to continuously improve the effectiveness of the engagement process. It is noteworthy to mention that efforts should be taken to sustain community engagement over time.

9.3.5 Outputs

The outputs are usually short-term results that can be easily measured. Possible outcomes from a community-engaged RSUPD project may include the following but could vary based on the project's objectives and goals.

- Institutional framework (Section 5.2, Table 6.11): By recognising the constraints and enabling factors in an intended participatory project and establishing a continuum of cooperation and partnership activities among stakeholders, an institutional framework can be developed for conducting participatory RSUPD. The institutional framework will define the aim and

objectives of the project, the roles assigned to each stakeholder, and their duties and responsibilities. This will result at the end of the fifth activity: establish a continuum of cooperation and partnership activities among stakeholders.

- Base-line results (Section 8.3): Results of the KAP survey at the end of the situational analysis. This indicates a community's state of knowledge, attitude, and practice of inclusive RSUPD before engagement.
- A community engagement action plan (Section 7.3.3.10): A document that outlines the strategies and activities that a community will undertake to achieve targeted risk-sensitive urban plans and developments. It serves as a roadmap for community-led initiatives.

Furthermore, the following outputs may result at the end of conducting capacity-building exercises and the implementation of the engagement plan.

- Community training and awareness (Section 5.2, 6.4.1, 8.4.1, 7.3.2.1, 7.3.3.1, 7.3.3.11, Table 6.11): Training programmes and awareness-raising campaigns aimed at increasing community members' knowledge of potential risks and how to mitigate them.
- Community-based risk maps (Section 7.3.3.3): Maps that show the potential risks in different areas of the city or community.
- Community-led risk reduction plans (Section 7.3.1.3): Plans that outline specific actions to reduce risks in the community or city, such as building floodwalls, seawalls or improving drainage systems.
- Community-led emergency response plans (Section 7.3.1.3): Plans that outline how emergency services will respond in the event of a disaster.
- Infrastructure upgrades (Section 6.3.1, 7.3.3.6, 7.3.3.12): Upgrades to existing infrastructure to make it more resilient to potential risks.
- Community-based policy and institutional reform (Section 7.3.3.7): Reform of policies and institutions to support RSUPD.
- Inclusive building codes and standards (Section 8.4.1): Development of new building codes and standards that ensure any new construction is built to withstand potential hazards such as floods or earthquakes.

Moreover, the following outputs will result towards the end of the proposed approach.

- End-line results (Section 8.3): Results of the KAP survey at the end of the impact analysis. This indicates a community's state of knowledge, attitude, and practice of inclusive RSUPD after engagement.
- KAP survey comparison results (Section 8.3): By comparing the end-line results with the baseline results, the level of a community's transformation achieved through participatory intervention may be revealed.

These outputs are designed to contribute to the desired outcomes and impacts of the project by reducing the vulnerability of communities to hazards and disasters, improving their resilience, and promoting sustainable development.

9.3.6 Outcomes

Outcomes are usually long-term and can be harder to measure than outputs. The outcomes of a community-engaged RSUPD project will depend on the specific goals and objectives of the project. However, some potential outcomes may include:

- Improved knowledge and understanding of disaster and climate change risk and vulnerability among local communities (Section 8.4.1)
- Enhanced awareness and adoption of risk-sensitive building practices in neighbourhoods, cities and regions, leading to broader impact and replication of successful strategies (Section 8.4.1)
- Increased community engagement and participation in UPD processes, leading to more inclusive and equitable decision-making (Section 8.4.3)
- Increased collaboration and coordination among stakeholders involved in UPD, leading to more effective and efficient risk reduction measures (Section 8.4.3)
- Improved urban infrastructure and services that are designed and built to reduce disaster risk and enhance resilience (Section 8.4.3)
- Enhanced capacity of local governments to develop and implement inclusive and equitable RSUPD policies, strategies, and regulations (Section 7.3.3.10)

These outcomes typically have a long-term impact and may endure over time while contributing to achieving the overarching goal of reducing disaster and climate change risks and building resilience in urban areas and communities.

9.3.7 Impacts

Impacts are the long-term and sustainable changes that a programme or project aims to achieve and can take years to realise. Change that is intended through engagement in the decision-making of RSUPD could be reflected in terms of:

- **Safe, resilient and inclusive cities:** Involving communities in the planning process can lead to identifying hazards and vulnerabilities in the built environment, which can inform the development of strategies to reduce risks and enhance resilience. It enables an increase in a community's awareness of risk and builds their capacity to respond to emergencies, such as through the development of early warning systems and evacuation plans, while ensuring that the needs and priorities of the marginalised and vulnerable groups are taken into account in the planning process, leading to more inclusive and equitable outcomes. This has been discussed throughout the study and contributes to achieving UN SDG 11 (Target 11.3 - Inclusive and sustainable urbanisation; Target 11.5 - Reduce adverse effects of natural disasters)
- **Inclusive and participatory culture** (Section 5.2, 6.5, 8.4.2): By involving a wide range of stakeholders in the planning process, trust can be built, open communication can be fostered, and a shared sense of ownership over the development process can be created. This can help to create a culture of engagement that extends beyond the specific project, encouraging ongoing collaboration and cooperation towards shared goals. This contributes to achieving UN SDG 10 (Target 10.3 - Ensure equal opportunities) and the Sendai framework's guiding principle g - Inclusive risk-informed decision-making for DRR.
- **Quality of life** (Table 4.2, Section 8.4.3): Promoting sustainable development practices helps to create a safer and more secure environment for residents and enhances resilience and social and economic opportunities, contributing to a community's overall well-being.

9.3.8 Assumptions

Assumptions are the beliefs and expectations that underpin how the proposed holistic approach will work. Assumptions can be based on past experiences, cultural norms, personal biases, or other factors, and they may not always be explicitly stated or fully conscious. Assumptions are often used to fill in gaps in knowledge or to make predictions about how a programme will work or what outcomes it will achieve. For the

proposed holistic approach for fostering community engagement in the decision-making of RSUPD, the possible assumptions include the following:

- The community participants will be fairly selected, including the marginalised and the apathetic majority, during the community recruitment (activity 2)
- The proposed tool for selecting participatory methods (embedded in the link <https://docs.google.com/spreadsheets/d/1BXVE91j9Ma7ldP1gcKS4c3TckCh5jC0Y/edit#gid=22232129>) will be used for selecting participatory methods (activity 8)
- Communities have valuable knowledge and perspectives that can inform the development of risk-sensitive urban plans and policies if they are engaged and empowered to participate (activity 9)
- Effective communication channels are in place to ensure that community members are informed about the planning and development process and can provide feedback in a timely manner (activity 11)
- The proposed KAP indicators will be used during both the situational analysis (activity 6) and outcome-impact analysis (activity 13).

However, assumptions are not always based on empirical evidence or may be influenced by unconscious biases, thus it is important to verify them to ensure that they are valid (UNDG, 2017). Accordingly, the above assumptions were verified through member checking, as presented in Table 9.3.

9.4 Verification of the Proposed Holistic Approach

To verify the proposed holistic approach, semi-structured interviews were conducted with six selected experts who were also involved in the primary data collection. The six experts were prioritised based on their extremely relevant and considerably high contribution recognised while completing the study deliverables. The selected experts include an academic (P1), four industry practitioners representing UPD (P7, P12) and DRR (P3, P10), and one expert in community development (P13). The elements of the proposed holistic approach and their relationships were presented to them to verify the reliability and to seek the changes required to improve the proposed approach. The results of the verification interviews are summarised in Table 9.3.

Table 9. 3: Experts' agreement on the key elements of the proposed holistic approach and suggested revisions

Key elements	Suggested revisions	Acceptance / Rejection
Goal & objectives	Agreed by all.	-
Context	Agreed by all.	-
Input	"Make use of legislative enactments and policy provisions as input" (P10)	Accepted
Activity	No existing activities rejected. However, P3 suggest including an activity of "checking the availability of relevant data such as community details and area boundaries".	Rejected due to out of study scope. This, however, has been discussed in the best practices and stakeholder contributions.
Output	Agreed by all.	-
Outcome	Agreed by all.	-
Impact	Agreed by all. However, the phrase 'engagement culture, as was originally phrased, was suggested to be replaced with 'inclusive and participatory culture'.	Accepted.
Assumptions	Agreed by all.	-

As presented above, the experts were satisfied with the proposed holistic approach and not many revisions were suggested.

As the second stage of the member checking exercise, an analytical verification was conducted under 10 criteria that are commonly utilised in qualitative research validation (Bhattacharjee, 2012; Cullen & Brennan, 2013; Pyett, 2003). In this exercise, a five-point Likert scale was introduced to the experts to indicate their agreement on each verification criterion. The scale was as follows: 1 - strongly disagree, 2 - somewhat disagree, 3 - neutral, 4 - moderately agree, and 5 - strongly agree. The second stage verification results are presented in Table 9.4.

Table 9. 4: Results of the holistic approach verification through member checking

Criteria	Description	Selected excerpts from the experts' interviews	Likert Scale					Mean	Mode
			1	2	3	4	5		
Clarity	Clear and easily understood by experts from different disciplines and backgrounds	<p>"The community context icon in the draft diagram should show some expansion adding some arrows to imply that the context oversees the entire approach" (P10)</p> <p>"...you have defined the impact pathways well, but arrows should be prominent" (P13)</p> <p>"External should be external support" (P13)</p> <p>"It should show as a recursive process" (P13)</p>			P3	P13 P7	P10 P1 P12	4.3	5
Completeness	Cover all the important aspects related to fostering community engagement in RSUPD	<p>"UDA Act's approach to community engagement should be further integrated" (P3)</p> <p>"Well done on the methods' selection tool" (P13)</p> <p>"Gives a holistic approach" (P1)</p>			P3		P10 P13 P1 P7 P12	4.7	5
Evidence-based	The study represents the views of industry experts and communities	"Since you had FGDs with communities, I can give 5" (P10)			P3	P7	P10 P13 P1 P12	4.5	5
Relevance	Relevant to the current state of RSUPD in Sri Lanka and addresses the key issues and challenges	"...need the integration of relevant data, but this could be out of the scope of your work" (P3)			P3		P10 P13 P1 P7 P12	4.7	5
Feasibility	Practical and feasible to implement in the context of RSUPD in Sri Lanka	<p>"I do not think it is very difficult to apply, but maybe I can give you 4 because there are external factors, including political influence, resource constraints and many others, that might dictate the application of this kind of a thing..." (P10)</p> <p>"Overall, when implementing this, the practicability could be challenging due to political influences" (P1)</p> <p>"If can introduce an index - then will be of interest to people who want to make a change" (P3)</p>			P3	P10 P13 P1 P7 P12		3.8	4
Innovation	Have innovative and creative elements that can enhance community engagement in RSUPD decision-making	<p>"Innovation is definitely in this KAP evaluation strategy...especially in an urban context, we might need to bring innovations around the engagement such as remote sensing, other IT-based tools, social media... traditional typical FGDs may not work in megacities like Colombo" (P10)</p> <p>"...digitalised engagement could have been considered more" (P3)</p>			P3	P10 P13 P7 P12	P1	4.0	4

		“Overall, I think the model that you are proposing is a kind of end-to-end process - it is a kind of feedback loop” (P1)							
Scalability	Scalable and adaptable to different contexts and settings beyond Sri Lanka	“It is quite possible” (P10) “Especially, it is possible in contexts with similar characteristics (P1) “...some elements such as the proposed methods selection tool and the KAP model can be adopted” (P12) “...as you are providing links to the findings, others can adapt the proposed holistic approach to include their barriers, enablers and stakeholders etc. to customise the holistic approach, which is very promising” (P13)			P3	P7	P10 P13 P1 P12	4.5	5
Participatory	Involve the active participation of experts from different disciplines and backgrounds in its development and validation process	“...has a very high participatory element” (P1) “Communities could also have been involved in validation” (P13)			P3	P13 P7 P12	P10 P1	4.2	4
Consistency	Internally consistent and free from any contradictions	“I did not find any biases in your assessment” (P10) “I am not in a position to comment on what constitutes in the key elements” (P1)			P1 P3	P13 P7	P10 P12	4.0	3,4,5
Measurability	Have clear indicators and measures to assess the effectiveness of its implementation	“...need to bring an index - quantitative face” (P3)			P3	P13 P7 P12	P10 P1	4.2	4

As evidenced in Table 9.4, the experts found the proposed holistic approach to be clear, comprehensive and relevant for fostering community engagement in RSUPD. They also agreed that this approach has been developed based on empirical evidence, considering both industry practitioners' and communities' inputs, subject to the scope that one can cover in a doctoral study. They also opined that some of the study deliverables (i.e., the methods selection tool and the KAP model) are scalable to different settings while other context-specific findings such as barriers, enablers, and stakeholders can be customised. However, the feasibility of implementing the proposed holistic approach was concerned by the experts stating the political influences and limited resources. Still, they acknowledged that these factors are unavoidable in a country like Sri Lanka. The experts further suggested that integrating more digital engagement platforms would enhance the innovativeness of the proposed approach. But they came to a consensus that incorporating hybrid and remote methods addresses this issue to some extent. Several rounds of data collection and analysis, incorporating both industry and community participants, conducted in the study was appreciated by the experts but they suggested including community validation to improve its participatory element. Additionally, the experts highlighted that the proposed KAP model brings novelty to the theory but suggested introducing a quantitative aspect to it in order to enhance its measurability. There was some controversy among the experts regarding the consistency criterion because they came from different fields.

Summarising the results of the member checking exercise, Figure 9.1 was developed to clarify the descriptive statistics for all 10 criteria.

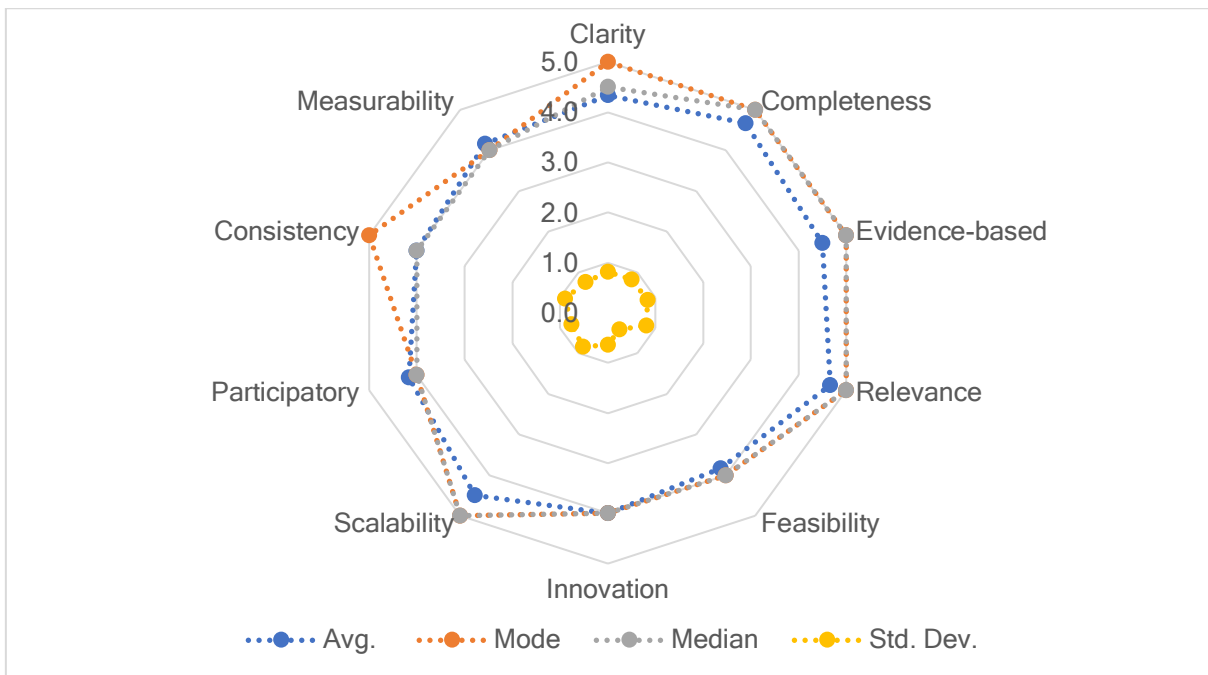


Figure 9. 1: Experts' average agreement on the holistic approach verification criteria

As shown in the spider diagram, the expert's highest mean acceptance was received for the completeness and relevance, followed by the evidence-based and scalability criteria of the proposed approach. The lowest average agreement of 3.8 was received for the flexibility of implementing the proposed approach. While the use of a Likert scale verification with only six experts may not provide sufficient statistical significance, it is expected that their feedback and rating reflect the impressions of professionals in the field regarding the proposed holistic approach for fostering community engagement in RSUPD decision-making.

9.5 Diagrammatic Representation and Statement of the Verified Holistic Approach

After doing modifications to the drafted holistic approach based on the experts' verification, the verified holistic approach for fostering community engagement in the decision-making of RSUPD is graphically presented in Figure 9.2. The verified approach comprised 12 inputs, 15 activities, 12 outputs, 6 outcomes, 3 impacts, and 5 assumptions. As depicted in the diagram, the holistic approach is divided into four phases, namely (1) Setting up, (2) Framing and developing the intervention, (3) Implementation/Community engagement, and (4) Post-engagement. The diagram has embedded within it several links to the detailed analysis findings of the study for several activities, such as recognising barriers and enablers, establishing a stakeholder

continuum and partnership activities, selecting participatory methods, and evaluating community transformation. A web file of the holistic approach with those links embedded in it can be found at <https://dydg6qncmtzvupikzq73wa.on.driv.tw/www.framework/>. Furthermore, a QR code for the proposed holistic approach has also been included in the diagram making the study outcomes accessible to interested parties.

A HOLISTIC APPROACH FOR FOSTERING COMMUNITY ENGAGEMENT IN THE DECISION-MAKING OF RISK-SENSITIVE URBAN PLANNING AND DEVELOPMENT

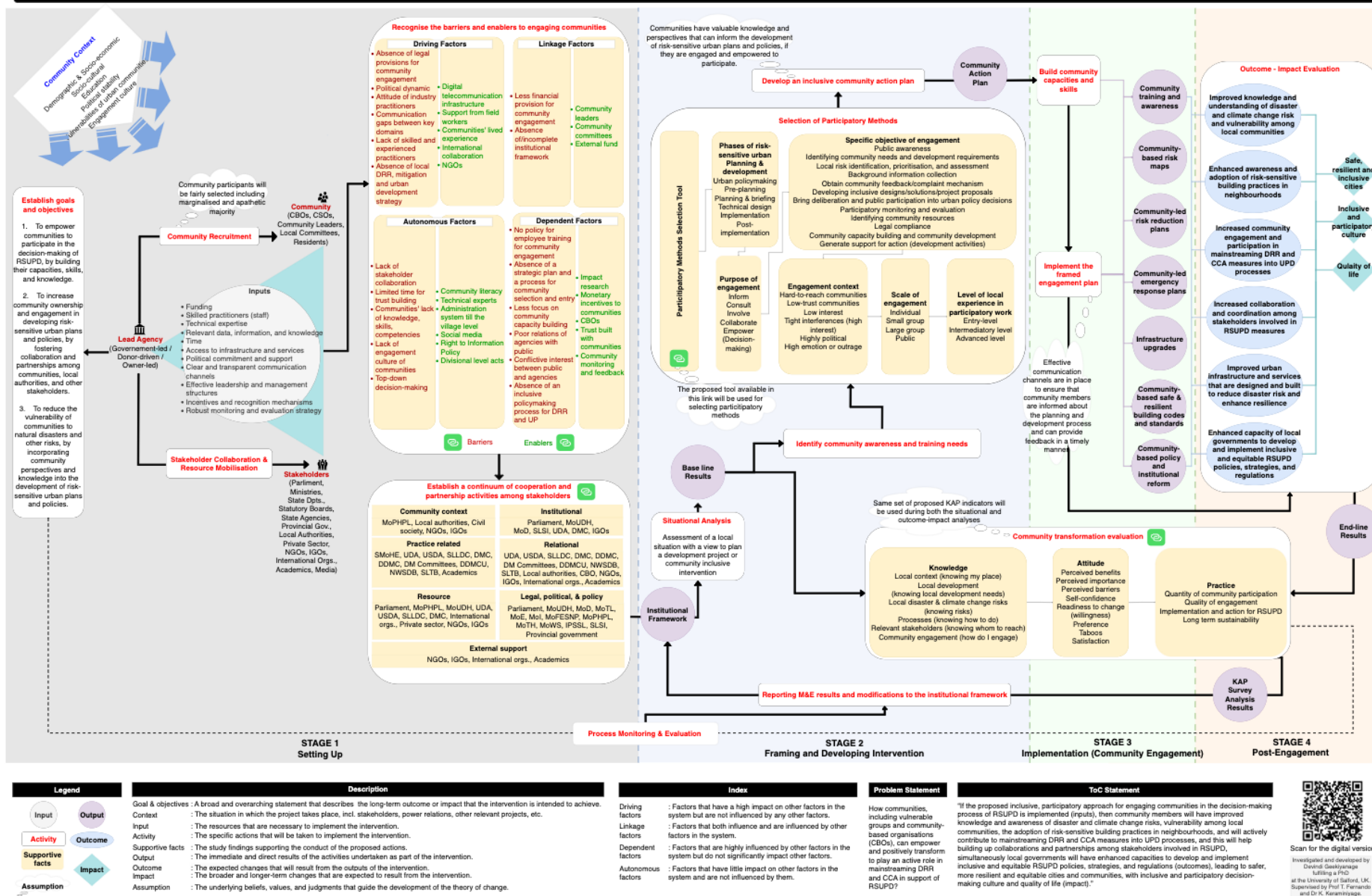


Figure 9. 2: A holistic approach for fostering community engagement in the decision-making of RSUPD

9.5.1 ToC statement

A ToC statement provides a clear and concise description of how and why a programme or intervention is expected to lead to specific outcomes and impacts. It outlines the logical connections between the inputs, activities, outputs, outcomes and impacts of the programme, highlighting the cause-and-effect relationships and the assumptions that underpin the theory. The following is a statement on the proposed ToC:

“If the proposed inclusive, participatory approach for engaging communities in the decision-making process of RSUPD is implemented (inputs), then community members will have improved knowledge and awareness of disaster and climate change risks, vulnerability among local communities, the adoption of risk-sensitive building practices in neighbourhoods, and will actively contribute to mainstreaming DRR and CCA measures into UPD processes, and this will help building up collaborations and partnerships among stakeholders involved in RSUPD, simultaneously local governments will have enhanced capacities to develop and implement inclusive and equitable RSUPD policies, strategies, and regulations (outcomes), leading to safer, more resilient and equitable cities and communities, with inclusive and participatory decision-making culture and quality of life (impact).”

9.6 Discussion and Interpretation

The proposed holistic approach aims to address the question of “how communities, including vulnerable groups and CBOs, can be empowered and positively transformed to play an active role in mainstreaming DRR and CCA in support of RSUPD?” The holistic approach is depicted in a form of a ToC to provide a roadmap for fostering community engagement in the course of RSUPD decision-making. The theory introduces a four-phase holistic approach comprising eight elements: problem statement and goals, context, inputs, activities, outputs, outcomes, impacts, and assumptions. The proposed approach commences with the setting up, followed by framing and developing the intervention, leading to its implementation and post-engagement.

The study suggests that this holistic approach should be initiated by a lead agency. Having a lead agency is important for several reasons and it has already been identified as a key construct in the CCAT by Butterfoss and Kegler (2002). Firstly, it ensures accountability and ownership of the holistic approach. The lead agency can take responsibility for the development, implementation, and evaluation of the participatory intervention. Furthermore, having a lead agency ensures that there is a clear point of contact for stakeholders who want to engage with the proposed approach. Moreover, the lead agency can mobilise resources and coordinate efforts towards the achievement of the proposed approach's goals and objectives. Additionally, the lead agency can facilitate communication and collaboration among stakeholders and ensure that everyone is working towards a common purpose. Overall, having a lead agency helps to ensure the effective implementation and success of the holistic approach.

Phase 1: Setting up

The setting up phase involves five activities. To begin, it is crucial to define the goals and objectives concerning the problem statement. The lack of clear goals and objectives may result in confusion, lack of direction, and ineffective strategies which is one of the barriers to community engagement (Alawadi & Dooling, 2015; Yellow Book Limited, 2017). Harden et al. (2015) and Lima (2019) also stressed that it may be difficult to identify the necessary steps to follow and evaluate the success of a ToC without a clear understanding of the desired outcomes. Without clear goals and objectives, it can lead to a waste of resources and time, as well as disappointment and disillusionment among stakeholders. In some cases, it may even lead to unintended negative consequences. Therefore, it is critical to establish clear and achievable goals and objectives at the beginning of developing a ToC to ensure that the proposed approach is focused, evidence-based, and effective in achieving its desired outcomes. Accordingly, three goals have already been established as part of the development of the holistic approach which the users of the theory can adjust to fit their own specific project needs.

The lead agency can then collaborate with the identified stakeholders and define their roles within the process of the holistic approach, as provided in Chapter 6. Kirshen et al. (2018) and Kegler (2002) also claimed that stakeholder collaboration brings different perspectives and experiences to the table, which can help ensure that developments are inclusive, comprehensive, and reflect the best practices. Consistent with the

resource mobilisation aspect highlighted in the study, Gupta and Vegelin (2016) reported that collaborating with stakeholders can provide access to resources that may be necessary to implement inclusive development. The input element of the proposed approach includes tangible and intangible resources that are critical to the successful implementation of the proposed holistic approach. It is presumed that deploying resources from diverse groups will contribute to overcoming the shortage of certain resources such as finance, expertise, and skilled practitioners. Bowen et al. (2010) also commented that leveraging stakeholder assets increases their ownership and the buy-in in the participatory intervention which is critical to the success of the initiative. Perhaps the least acknowledged inputs within the literature for transformative community engagement are time, incentives and recognition mechanisms, and a robust M&E strategy.

Community recruitment is central in the setting up phase of participatory development. It demands the active engagement of all stakeholders, guided by the lead agency(ies). In this step, it is assumed that community participants will be fairly selected, including marginalised and vulnerable groups. In addition, their willingness to participate, knowledge (i.e. of key categories identified in knowledge indicators) and experience should be considered. Also, as confirmed by Redclift (2002), Ribot (2003), and Shrestha and McManus (2008), it is important to ensure that a diverse range of locals is selected.

Once the partnerships are built between the stakeholders, including the community, firstly, the barriers to, and enablers of, engaging locals should be recognised. Beyond many previous studies (AbouAssi & Trent, 2012; Alawadi & Dooling, 2015; Chifamba, 2013; Cropley & Peter, 2013; Deshpande et al., 2019; Enshassi et al., 2016; Fung, 2015; Gosman & Botchwey, 2013; Harden et al., 2015; Montanari & Bergh, 2014; Wheeler, 2016; Yellow Book Limited, 2017), the proposed approach provides a new understanding and an interpretive classification of driving, linkage, dependent, and autonomous constraints and facilitating factors specific to engaging communities in informed decision-making in RSUPD (Chapter 5). By realising both the barriers and enablers, the holistic approach takes into account the contextual factors that affect the success of community engagement efforts, particularly in the South Asian region. Accordingly, the lead agency can benefit from the study to identify the potential constraining and enabling factors specific to a project and the selected community context, thereby determining whether they are crucial or not. Krishna et al. (2014) in line with this finding emphasised that it is possible to develop targeted interventions

that address these barriers by understanding the specific challenges that may prevent communities from engaging in the decision-making process. Existing enablers can also be utilised to speed up overcoming and minimising the impacts of the identified barriers (Thomalla et al., 2018).

Next, a continuum of cooperation and partnership activities among stakeholders should be established in order to overcome the identified constraints and to enhance the incorporation of facilitating factors. This step reiterates Leck et al.'s (2018) and Kirshen et al.'s (2018) view of having a multi-stakeholder approach for a successful inclusive RSUPD project. The key players for different factors, along with stakeholders' contributions, best practices and the recommended actions discussed in Chapter 6, provide a promising approach for the development of an all-inclusive plan for stakeholder collaboration.

Producing an institutional framework to facilitate community engagement in decision-making in RSUPD is contingent upon the completion of the five activities in the setting-up phase. This is the first output of the proposed holistic approach. Though it has not been named as an 'institutional framework', Fung (2015) claimed that the absence of a plan for collaboration causes a lack of coordination and communication among stakeholders which can lead to misunderstandings, conflicts, and a lack of progress. Without a clear framework in place, it may be difficult to identify roles and responsibilities, allocate resources effectively, and ensure that all stakeholders are working towards the same goals. This can lead to a lack of trust and buy-in from community members and other stakeholders which can ultimately hinder the success of engagement efforts. It is, therefore, essential to form an institutional framework that supports collaboration and partnership activities among stakeholders in order to promote effective engagement.

Phase 2: Framing and developing the participatory intervention

The second phase suggested in the holistic approach is framing and developing the participatory intervention. This phase involves four activities. Though the term 'situational analysis' is not widely recognised in the literature, it aligns with the Queensland Government (2010)'s idea of conducting a needs assessment for a comprehensive understanding of the current situation and the context in which the intervention will take place. Most striking is that the proposed situational analysis examines communities' current knowledge, attitude, and practice regarding participation in mainstreaming risk reduction measures into UPD, as well as identifying

potential stakeholders and resources that may be available to support the intervention. The use of the proposed KAP indicators (discussed in Chapter 8) to understand the locals' state prior to engagement creates the second output: baseline results. It enables identifying existing problems, awareness and training needs, and the priorities of the community and stakeholders related to RSUPD. This information is crucial for developing a participatory intervention that is responsive to the needs and aspirations of the community. Incorporating a situational analysis in the holistic approach is reassuring since it can help to identify the potential challenges and opportunities that may arise during the implementation of the intervention.

There should also be a methodology for engaging communities which creates the need for selecting participatory methods. Practitioners selecting methods indefensibly based on their personnel preferences has been highlighted by Rowe and Frewer (2000) as a critical practice barrier. Thus, the methods selection criteria and the tool introduced in Chapter 7 respond to the knowledge gap concerning the lack of guidance in selecting participatory methods, as highlighted by Gosman and Botchwey (2013) and Rowe and Frewer (2000). The holistic approach provides a justifiable approach to determining the methods that are appropriate for the target phase of RSUPD, the purpose and specific objectives of the engagement, the community context, the scale, and the level of community experience. Having a model for selecting participatory methods ensures that the intervention is well-designed, culturally appropriate, and meets the needs of both communities and agencies. This will increase the likelihood of success and promote sustainable outcomes. Hence, it is assumed that the linked Excel tool will be utilised at this step.

The final step of the second phase is developing an inclusive community engagement action plan. A community engagement action plan should always be designed with the view that residents have valuable knowledge and experience that can inform the development of risk-sensitive urban plans and policies. The resulting community engagement action plan is an important output for launching community engagement in the decision-making of RSUPD. It may include details on the targeted community's awareness and training programmes (Jones & Preston, 2011), prioritised participatory planning and development actions relating to the anticipated RSUPD project (Shand, 2018), the timeline, community roles and responsibilities, and the resources (Esterhuizen, 2015; Tremblay et al., 2017) needed. As evidenced from the review, only some components that are proposed to be included in the community engagement action plan show some consistency with the literature.

Where there is no community engagement action plan, the community may not have a clear understanding of their role and responsibilities in the RSUPD process, leading to confusion and a lack of direction. This can also result in a lack of ownership and commitment towards the RSUPD project, as community members may not feel invested in the process. In addition, without a community engagement action plan, there may be no clear timeline or milestones for the RSUPD project, making it difficult to track progress and evaluate the effectiveness of the intervention. The absence of a community engagement action plan can also lead to a lack of coordination and collaboration among stakeholders, resulting in suboptimal outcomes from the RSUPD project. Therefore, an inclusive community engagement action plan is a central component of a participatory RSUPD since it provides a structured approach to achieving the intended impacts and establishes a clear and transparent process for decision-making while enabling M&E progress towards achieving the desired outcomes, which is critical for ongoing learning and improvement.

Phase 3: Implementation

Once the institutional framework and community engagement action plan are established, the next phase is the implementation, where true engagement takes place. The implementation phase involves only two activities but is the core of the intervention. It is observed that many pre-work and preparation activities should be conducted inclusively to arrive at this stage of the holistic approach. Before engagement, it is essential to conduct community awareness and training to build local capacities and skills. This provides an avenue to mitigate agencies' lesser focus on CCB which is one of the institutional barriers highlighted empirically, as well as in literature by Harden et al. (2015), Protik et al. (2018), and Swapan (2016). The framed engagement plan can be implemented thereafter. During the implementation, the theory assumes that effective communication channels are in place to ensure that community members are informed about the planning and development process and can provide feedback promptly. This assumption has also been supported by Deshpande et al. (2019). It is crucial to overcome any communication gaps identified between the key domains such as agency practitioners, targeted communities, policymakers, and academics.

Following a participatory intervention, several outputs are expected to be generated as immediate results. Opitz-Stapleton et al. (2019) have emphasised the importance of several outputs, such as community training and awareness programs, community-

based risk maps, community-led risk reduction/mitigation plans, and community-led emergency response plans, proposed in the study. These findings align with their study. However, there is limited literature available to support the significance of two other crucial outputs identified in the study: safe and resilient building codes and standards, as well as community-based urban policies and institutional reforms.

This study also highlights the fact that community members can acquire skills and knowledge to plan and implement their own initiatives to address local risks and to adopt resilient building practices through training and awareness. Community-based risk maps help to identify areas that are at high risk and the factors that contribute to that risk. With this knowledge, city planners can make informed decisions about land use and infrastructure development, helping to mitigate risk and prevent disasters. Community-led risk reduction/mitigation plans are created based on the risk maps and help to identify ways to reduce the risks identified in the maps. The risk mitigation plans can include infrastructure development, land-use changes, and community-based early warning systems, among other factors. Community-led emergency response plans are created to ensure that communities are prepared to respond to disasters. The plans are developed through participatory processes that involve local communities in identifying the hazards they face and the ways in which they can respond to them. The plans can include evacuation plans, emergency shelters, and the implementation of community-based response teams.

Additionally, safe and resilient building codes and standards can be developed based on the risks identified in the risk maps. The codes and standards help to ensure that buildings are constructed to withstand the hazards identified, reducing the risks to people and property. Additionally, urban policies and institutional reforms can be made that are aimed at ensuring that UPD processes are participatory, inclusive, and responsive to the needs of local communities. The reforms are based on the priorities and needs of local communities and aim to ensure that communities have a voice in decision-making processes related to UPD. Above-potential outputs lead to long-term outcomes and impacts. The literature (Mäenpää et al., 2017; Shand, 2018; Taylor et al., 2018) supports the outcomes and impacts of community-engaged RSUPD decision-making as outlined in the proposed holistic approach.

Phase 4: Post-engagement

The post-engagement phase is dedicated to M&E. Scholars (Calder & Beckie, 2013; Ibrahim et al., 2017; Tremblay et al., 2017; Zhang & Liao, 2020) also stressed the need

for M&E during and after engagement but an approach to assessing community change is not apparent in their studies. Addressing this gap, the holistic approach suggests a feasible strategy for assessing the level of community transformation at the end of the participatory project. It suggests conducting an outcome-impact analysis using the same set of KAP indicators utilised during the situational analysis to make this comparison viable. Some elements of the community change evaluation strategy that emerged from this study reflect the concerns of Lindgren and Kelley (2019) and Khandker, Koolwal and Samad (2010). However, the comprehensive list of KAP indicators specifically developed for assessing community transformation in the participatory RSUPD domain represents a significant advancement beyond the existing literature in this field.

Finally, continuous improvements are recommended. Thus this holistic approach is wrapped up with reporting the results of the process and the outcome-impact M&Es to relevant parties and making necessary modifications to the institutional framework and, consequently, the community engagement action plan, for continuous improvements. The holistic approach, therefore, proposes a recursive process of engaging locals in RSUPD decision-making by learning from previous engagement attempts.

Further to the above discussion on the effectiveness of the developed holistic approach for fostering community engagement in the decision-making of RSUPD, there are some noteworthy counterarguments. Yellow Book Limited (2017) maintained that engaging an apathetic majority in RSUPD decision-making may reflect a lack of knowledge or understanding of the issues at hand due to their lack of interest and participation. In this case, it may be more effective to focus on educating and raising awareness among this group rather than expecting immediate engagement and involvement in decision-making. Kita (2017) also opined that engaging the apathetic majority may lead to a dilution of the voices and opinions of more active and invested community members. This could result in decisions that do not fully reflect the needs and desires of those most affected by RSUPD. Wheeler (2016) also argued that engaging the apathetic majority could be a lengthy and resource-intensive process, potentially delaying or hindering progress on urgent issues. In such cases, it may be more efficient to focus on engaging more active and invested community members who are already knowledgeable and engaged in the issues at hand.

9.6.1 Implications of the proposed holistic approach

The impacts defined in this proposed ToC are the potential implications of the holistic approach developed in this study. Noteworthy key implications of the enhanced community engagement are increased social capital, a better understanding of community needs, and improved decision-making outcomes. The multi-stakeholder collaboration proposed within this holistic approach has several implications, such as improved coordination, better use of resources, increased stakeholder buy-in, and inclusive decision-making. As the holistic approach focuses on achieving risk-informed urban plans and developments, the implementation of the proposed holistic approach leads to safe, resilient and equitable built environments, particularly in urban settings. Anticipated CCB and community empowerment through the implementation of the proposed holistic approach could result in increased self-reliance, improved capacity to respond to emergencies, and enhanced social cohesion.

9.6.2 Limitations of the proposed holistic approach

While the proposed holistic approach for fostering community engagement in the decision-making of RSUPD in Sri Lanka has many strengths, there are also some potential flaws that should be considered. The success of the proposed approach is dependent on the willingness of political leaders to support and prioritise community engagement in decision-making related to UPD. Without political support, the proposed approach may not be fully implemented or may be undermined. Furthermore, there may be resource constraints; the proposed holistic approach demands resources including funding, staff, and time, to be effectively implemented. If these resources are unavailable or are limited, the deployment of the proposed approach may slow down and not achieve its intended outcomes. Moreover, locals may not always have the necessary knowledge, skills, or resources to fully engage in decision-making related to RSUPD. This could also limit the effectiveness of the holistic approach. Overall, while the proposed holistic approach provides a promising approach to stimulating community engagement in the decision-making of RSUPD, careful consideration of these potential limitations is necessary to ensure that the holistic approach is implemented effectively and achieves its intended outcomes.

9.6.3 When to apply the proposed holistic approach

The proposed holistic approach is designed to apply to situations where there is a need for community participation and engagement in UPD activities. Specifically, it can be

applied in situations where there is a high level of risk and vulnerability associated with UD, such as in areas prone to natural disasters or areas with inadequate infrastructure and services. This holistic approach can be used in a variety of contexts, including urban renewal projects, housing development projects, and infrastructure development projects. It can be applied in both rural and urban areas, as long as there is a need for community participation in the planning and decision-making process of development activities. This holistic approach is flexible to be employed in any of the six phases of RSUPD, at any of the five engagement levels, for any of the 12 engagement objectives, in any of the six community contexts, and with any group at an entry, intermediate, or advanced experience level. Thus, this approach does not necessarily have to commence at the beginning of the UPD project.

9.6.4 Who will benefit from the proposed holistic approach

The proposed holistic approach can benefit various stakeholders. They include, but are not limited to, communities, local government authorities, development practitioners and agencies, and policymakers. This holistic approach can help to ensure that a community's needs and concerns are taken into account in the RSUPD process. By involving them in the decision-making process, the communities can also gain a sense of ownership over the development process and the resulting outcomes. The local government authorities can also benefit from understanding the needs and priorities of the communities they serve and developing more effective and sustainable RSUPD policies and programmes. This holistic approach can serve as a guide for development practitioners and agencies to develop more participatory and community-driven RSUPD programmes and policies. Overall, the proposed holistic approach can benefit all stakeholders involved in RSUPD processes by fostering community engagement and participation, leading to more effective, sustainable, and equitable UD outcomes.

9.7 Summary and Link

The chapter provides a holistic approach to achieving community change through effective engagement in informed RSUPD. The proposed holistic approach for fostering community engagement in the course of RSUPD decision-making consists of four phases: setting up, framing and developing the intervention, implementations, and post-engagement. While this chapter delivers the outcomes of the study, the next chapter concludes the study.

CHAPTER TEN

REFLECTIONS, CONCLUSIONS AND RECOMMENDATIONS

10.1 Introduction

Having discussed the study's data analysis and findings in Chapters 5, 6, 7, 8, and 9, an attempt is made in this chapter to draw conclusions based on the study outcomes. Starting with a reflection on the problem statement, the six objectives, and the seven research questions set for the study, this chapter synthesises the key research findings. The potential contributions to the theory and practice are drawn with emphasis on the generalisability of the conclusions and the recommendations made from the study. The chapter concludes by outlining the study's limitations alongside future research directions for the continuity of the study scope.

10.2 Reflection on the Problem Statement and the Context

The study attempted to address a timely issue in the context of UPD. It is imperative to acknowledge that community engagement is an essential component in attaining safe, resilient, and equitable built environments, as emphasised in numerous global agreements and roadmaps (e.g., UN SDGs, Sendai Framework, Paris Agreement, NUA). However, the required theoretical knowledge and the optimal practices in mainstreaming DRR and CCA measures into UPD through community engagement are yet to be realised, which presents a gap in the field that needs to be addressed. Considering this gap, the current study set out to address the problem of "how can communities, including vulnerable groups and CBOs, be engaged in the decision-making of mainstreaming disaster and climate risk reduction measures into UPD?" Accordingly, the study developed a holistic approach for fostering community engagement in the course of RSUPD decision-making. The holistic approach was created from empirical evidence due to the fact that community engagement and participatory intervention heavily rely on context. Hence, the study focused on Sri Lanka due to its increasing urbanisation and the impact of past disasters on its urban communities.

10.3 Synthesis of Key Findings

The study comprised multiple data analysis. Firstly, the GT analytic procedure that was followed revealed six key themes (namely (1) barriers, (2) enablers, (3) stakeholders, (4) stakeholder contributions and best practices, (5) participatory methods and selection criteria, and (6) indicators to evaluate community transformation) related to developing a holistic approach for community engagement in the decision-making of RSUPD (Table 4.2). The data analyses delved deeper into the six themes to examine how the concepts and categories that relate to each theme are interconnected and to establish connections between the themes themselves. The integration of the results derived from the in-depth data analysis of each theme contributed to the development of the study outcome.

The **first objective** of the study was to investigate the factors impeding and facilitating community engagement in the decision-making of RSUPD and to analyse their interdependencies. As presented in Chapter 5, a two-fold analysis was employed to explore the 19 barriers and the 19 enablers that emerged from the data coding. Primarily, the TISM was conducted to identify the underlying causal relationships and dependencies between the constraining and enabling factors and thereby two interpretive models of barriers (Figure 5.5) and enablers (Figure 5.10) were developed. The barriers' hierarchy resulted in seven layers with the factors of fewer legal provisions and political dynamics and corruption at the bottom. On the other hand, the current digital telecommunication infrastructure was found to be the most driving enabler.

Subsequently, a MICMAC analysis distinguished between those factors that drive the system and those that are driven by other factors. The classification resulted in six critical barriers: the absence of legal provisions, political dynamics and corruption in the country, the attitude of industry practitioners, the communication gap between the key domains (i.e., policymakers, practitioners, academics, and locals), the lack of skilled and experienced practitioners, and the absence of local strategies for disaster risk mitigation and regional development (Figure 5.6). There are five driving enablers, namely the existing digital telecommunication infrastructure, supportive field workers, incorporation of communities' lived experience, international collaborations, and NGOs (Figure 5.11). One of the significant conclusions drawn by addressing the first objective is that community-inclusive decision-making in RSUPD in Sri Lanka is mainly hindered

by the corrupted and misguided practices of the central government, with external factors and communities playing a supportive role.

The barriers and enablers analyses were expanded to investigate the study's **second objective** which was to identify the stakeholders and analyse their interests', power and resource similarities in contributing to fostering community engagement in the decision-making of RSUPD. As presented in Chapter 6, a combined approach of SNA with SA was employed to provide a comprehensive understanding of stakeholder relationships and contributions in promoting community engagement for RSUD. Primary data coding revealed a list of 62 stakeholders classified into eight categories: (1) the parliament and 12 ministries, (2) 9 state departments, (3) 11 statutory boards, (4) 10 state agencies, (5) 3 provincial government bodies, (6) 4 local authorities, (7) 6 types of community groups, and (8) 6 external groups (Table 6.1). Amongst these, the first four categories are responsible for making and enforcing laws and policies relating to inclusive RSUPD at the national level whereas the provincial and local government bodies can work closely with residents in order to implement policies and programmes at the grassroots level. The multi-stakeholder approach proposed in this study incorporates not only activities designed and conducted by governmental bodies in Sri Lanka but also by civil society and external groups. The study acknowledges the involvement of diverse community groups, such as CSOs, CBOs, community committees, community leaders, religious leaders, and residents. Furthermore, the contributions from NGOs (i.e., several active local and international NGOs in Sri Lanka are the Centre for Poverty Analysis (CEPA), Sevanatha Urban Resource Center, International Federation of Red Cross and Red Crescent Societies (IFRC), World Vision, OXFAM), IGOs (e.g., UN, WB, ADB), the private sector (e.g., LIRNEasia, Janathakshan (GTE) Limited), academics, international organisations (e.g., JICA, USAID), and media should not be overlooked.

The SNA identified 51 core stakeholders who have high power and resource similarities to promote community-inclusive decision-making in the context of RSUPD (Figures 6.3, 6.4). The study further revealed that three core factors, namely the communities' lack of knowledge, skills and competencies, integration of communities' lived experiences, and community monitoring and feedback, can be supported by a majority of the stakeholders. The SNA highlighted that the UDA, DMC, NGOs, and IGOs are well-connected and influential within the stakeholder network, making them leaders in facilitating community engagement in RSUPD decision-making in Sri Lanka. Therefore, partnerships should be established among these stakeholders. The most

obvious finding to emerge from this study is that the SA identified seven state agencies specified for UPD and DM as the key players in overcoming the identified critical barriers (Figure 6.5). Instead, NGOs and IGOs were confirmed as having a high potential to promote existing enablers (Figure 6.7). The study suggests that while the central government has the responsibility to minimise negative factors, external groups can empower local communities to participate in the decision-making process of RSUPD. This restates and affirms the previously drawn conclusions regarding the first objective. This study not only mapped stakeholder contributions with the factors but also provided insights into best practices that each group of actors can practice in promoting inclusive RSUPD (Table 6.11).

Moving ahead, the **third objective** was to evaluate the applicability of participatory methods to engage communities in different circumstances in the process of the RSUPD. As presented in Chapter 7, the study participants commented on a list of 40 community engagement methods (Table 7.1), comprised of global applications with a few locally found methods. Acknowledging the extant literature explaining the general characteristics, pros, and cons of almost all participatory methods, the requirement was to determine the criteria for selecting methods justifiably for the differing circumstances during the RSUPD process. The study created an Excel tool ensuring a fair and reasonable selection approach of engagement methods with six selection criteria, where each criterion has a list of options to select (Table 7.9). The six criteria included 6 phases of RSUPD, 5 purposes of community engagement, 12 objectives of community engagement, 6 community contexts, 4 scales, and 3 levels of communities' participatory experience.

It is recommended to select at least one option from each key criterion, thereby the tool (available at <https://docs.google.com/spreadsheets/d/1BXVE91j9Ma7ldP1gcKS4c3TckCh5jC0Y/e dit#gid=22232129>) proposed in this study will offer at least one or several methods that will comply with all aspects. If no methods result from the selection, that implies that the chosen options do not serve common interests. To illustrate, there could be no methods shown when the selection includes urban policymaking with low-interest community groups or at the individual level. Urban policymaking is effective with communities with high influence or interest who possess sound knowledge, attitude, and practice in different aspects related to RSUPD (e.g., DRR, UPD, participatory interventions). Similarly, consulting with individual opinions instead of a group of communities could potentially thwart inclusivity in policy decisions. Likewise, the tool

generates methods only for reliable circumstances whereby communities can be purposefully and effectively engaged in informed decision-making in the course of RSUPD.

Integrating the findings of the first three objectives, this study provides a promising approach to community engagement in RSUPD. Nonetheless, no participatory intervention is complete until its impact on the engaged communities is assessed. This serves the **fourth objective** of the study which was to develop indicators to evaluate the level of community transformation resulting from community engagement in RSUPD. Exploring the community transformation theme that emerged from the GT analysis, the study developed a strategy to evaluate the degree of community transformation through engagement, as presented in Chapter 8. The proposed strategy suggests conducting a situational analysis prior to engagement and an outcome-impact analysis at post-engagement. The study claims that a change intended through engagement in RSUPD decision-making will initially be reflected in a community's knowledge development which creates a positive shift in attitudes and, ultimately, enhances neighbourhood practices for safe, resilient, and inclusive built environments.

To assess a community's state prior to and post-engagement, a comprehensive list of KAP indicators is introduced. The 40 knowledge indicators proposed include variables for assessing residents' understanding of their locality, local risks, local development needs, RSUPD processes, stakeholders, and their know-how on community engagement (Table 8.2). Thirty-seven (37) attitude indicators are also introduced to assess locals' perceptions of the benefits, importance, barriers, self-confidence, readiness to change, preference, taboos, and satisfaction relating to participatory RSUPD (Table 8.3). Lastly, 20 indicators were provided to evaluate the quantity, quality, implementations/actions, and long-term sustainability of communities' practices regarding community engagement and RSUPD (Table 8.4). A comparison between the results of the KAP surveys at the pre- and post-engagement phases will yield an understanding of the degree to which the participatory intervention has transformed a particular community.

The study achieved the **fifth objective** which was to construct a grounded theory depicting a holistic approach for fostering community entry and engagement in RSUPD decision-making by combining the results derived from addressing the first four objectives. Chapter 9 introduces the holistic approach which is aimed at fostering community engagement in RSUPD decision-making. The drafted approach was

internally validated through member checking to achieve the **final objective** of the study. The verified holistic approach comprised eight elements: a problem statement and goals, community context, 12 inputs, 15 activities, 12 outputs, 6 outcomes, 3 impacts, and 5 assumptions. The holistic approach is graphically demonstrated (<https://dydg6qncmtzvupikzq73wa.on.driv.tw/www.framework/>), dividing it into four phases, namely: (1) setting up, (2) framing and developing the intervention, (3) implementation/community engagement, and (4) post-engagement. Briefly, the setting-up phase involves establishing the goals and objectives, stakeholder engagement and resource mobilisation, community recruitment, and developing an institutional framework that recognises stakeholder contributions to dealing with the factors that could possibly impede and foster the intended participatory development project. Subsequently, the development of the participatory intervention commences with a situational analysis to identify community awareness and training needs. Next, there is the selection of the engagement methods using the proposed tool and, finally, an all-inclusive community engagement action plan is developed. The engagement phase consists of conducting community awareness and training followed by the participatory actions taken as per the community action plan. During the post-engagement, a two-fold M&E process is suggested (process M&E and outcome-impact M&E) with an evaluation of community change using the proposed KAP indicators. The holistic approach concludes with reporting the M&E results and making necessary continuous improvements.

Accordingly, from a constructivist stance, the study developed a grounded approach to accomplish the study's aim of devising a holistic approach to empower communities to engage in, and influence, the decision-making of RSUD to achieve safe, resilient and equitable outcomes. Conclusively, the theory empirically developed, based in Sri Lanka, was triangulated using the systematic review findings to corroborate it with prevailing knowledge.

10.4 Contribution to Theory

The study provides several valuable contributions to the theory.

10.4.1 Contextualised interpretive links between the salient factors of community engagement

This study is vital for identifying the factors that influence community engagement in RSUPD initiatives and for understanding the interdependencies between the factors, which the status quo literature has failed to address. This study contributes to theory by providing self-explanatory conceptual models for the barriers to, and enablers of, participatory RSUD by establishing contextual knowledge with rich interpretations that is comprehensive in methodology. By employing TISM, the study mapped the hierarchical structures of these factors, highlighting their dependencies and impact levels. This provides a comprehensive framework for the current body of knowledge in studying community engagement, not in standalone DRR nor UPD but in mainstreaming DRR into UPD. Furthermore, the MICMAC analysis provides insights into the direct and indirect effects of these factors, shedding light on the causal relationships between them. Prior to this study, it was difficult to prioritise the factors, especially the barriers, to develop strategies tailored to deal with them. Therefore, this study expands upon previous studies covering factors, and their interlinks, connecting to three global focuses: DRR and CCA, UPD, and inclusive development, making the study's findings timely and appealing to a wide audience.

10.4.2 Defining stakeholder contributions for promoting community engagement specific to mainstreaming DRR into UPD

Contrasting with previous studies which highlight silo approaches to community-based DRR or participatory planning, this study contributes to intensifying and substantiating the idea of multi-stakeholder collaboration for fostering community-inclusive decision-making in the course of RSUPD. Attempting to fill the existing knowledge gap in defining which actors should deal with which factors in enabling inclusive development, this study provides a comprehensive understanding of the stakeholder landscape, highlighting the key players and their roles in promoting community engagement. The study offers insights into the complex web of relationships among stakeholders who possess power, resources and interest in promoting community engagement in the decision-making of RSUPD. By utilising SNA, the study mapped and analysed the

connections and interactions among stakeholders at various levels, ranging from central government to grassroots, including international actors. Furthermore, the SA allowed for a detailed examination of the potential contributions of different stakeholders towards promoting community engagement at different tiers, such as legal, political, institutional, grassroots, and external. The SNA and SA outcomes together enhance the understanding of the dynamics and complexities of stakeholder relationships and their impact on the decision-making processes related to inclusive RSUPD.

10.4.3 Expanded classification of participatory methods

By extending the generic and popular classification of participatory methods across the IAP2s' spectrum of community engagement (from inform to empower), this study provides a reasonable approach to selecting engagement methods specific to the field of RSUPD. The study's elaboration of five additional classifications across 6 phases of RSUPD, 12 potential objectives, 6 different community contexts, 4 scales, and 3 levels of community experience in participatory interventions, contributes to addressing the existing gap regarding the lack of guidance in selecting methods for inclusive and fair local engagement in the course of mainstreaming DRR into UPD. To illustrate, this expanded classification of methods awakens the possibilities of engaging residents throughout the process of RSUPD including urban policymaking, pre-planning, planning, design, development, and post-development. This further introduces a wide range of possibilities for engaging locals in different community contexts. The study further accentuates the idea of engaging communities from the individual to the public level despite their experience levels. This empirical justification of the additional classifications strengthens the theoretical foundations and provides a more nuanced understanding of the factors that should be considered when selecting participatory methods. By considering the specific context of RSUPD and incorporating the different dimensions of community engagement, the study enhances the theoretical understanding of how to effectively engage communities in decision-making processes.

10.4.4 Linking the concept of community transformation with participatory development

From a theoretical standpoint, this study expands the understanding of community engagement beyond its immediate impact on decision-making processes. This study

has provided a deeper insight into potential long-term and sustainable changes that can result from meaningful engagement in RSUPD. This theoretical advancement enriches the existing literature by emphasising the broader societal and community-level outcomes that can be achieved through community engagement. Compared to the systematic review findings, this study appears to be the first comprehensive investigation of eliciting the idea of transforming communities through participatory development. It opens up new avenues for research and exploration on the transformative power of engagement in shaping urban environments and communities.

10.4.5 Holistic approach for engaging communities in RSUPD decision-making

Unlike existing models, the proposed approach presents a holistic methodology to transforming communities through engagement in RSUPD, with the added advantage of providing a temporal perspective on the development of these processes. The graphical illustration of the proposed approach provides a complete loop from stakeholder identification to impact evaluation, while most of the existing models have been unable to produce possible indicators to measure the status of a transformed community. These results, therefore, provide valuable theoretical guidance by clarifying and detailing how transformation processes and the consequent community and system changes should emerge and develop.

10.4.6 Leveraging multiple analysis techniques to develop a theory

Unlike the theories based solely on GT principles, the utilisation of multiple analysis in a single study enhances the overall effectiveness of the research process. Under the GT strategy, the study leveraged multiple analysis techniques, including iterative qualitative data coding with memoing, TISM, MICMAC, two-mode SNA, and SA, to develop the holistic approach. Each analysis technique brought its own unique perspective and provided a different lens through which to explore the research problem. By employing multiple analysis, the study obtained a more comprehensive understanding of the phenomenon under investigation. Different analysis techniques offer complementary insights and uncover different aspects of the research data. For example, the GT analytic procedure helped in identifying key themes and patterns, TISM and MICMAC provided a structural understanding of relationships and dependencies, SNA revealed the dynamics of stakeholder relationships, and SA captured the contributions of different stakeholders. Leveraging these approaches

allowed the integration of various perspectives into a cohesive GT. Furthermore, the use of multiple analyses enabled triangulation of the findings, meaning that the study cross-validated and corroborated the results obtained from different analytical approaches. This methodological triangulation enhanced the robustness and credibility of the grounded theory by minimising potential biases and increasing the reliability of the findings. Scholars, researchers, and academics can benefit from this study by recognising that the utilisation of multiple analysis techniques in a single study significantly enhances the research process's overall effectiveness.

10.5 Contribution to Practice

This study offers feasible solutions and guidance to overcoming several limitations which thus can improve the current practice of engaging communities in the decision-making of RSUPD. The study's outcomes will help bridge several crucial gaps between theory and practice.

10.5.1 Contributions tailored for Sri Lanka

A salient gap in Sri Lanka is the silo approaches to DRR and UPD and the absence of a holistic approach to engaging communities in their decision-making. As the study is based in Sri Lanka, the holistic approach, along with the other key findings, provides practical solutions to overcome several crucial gaps impeding community-inclusive decision-making in RSUPD. These include the following:

1. The contextualised interpretive links established through the TISM and MICMAC analysis offer a valuable tool for practitioners from state agencies, PGs, Las, community organisations, and other organisations to assess the impact of various factors on community engagement. By understanding the interdependencies among these factors, decision-makers can prioritise their efforts and allocate resources effectively to address the most significant barriers and leverage the enablers to enhance community engagement.
2. A detailed analysis of community-context barriers helps field workers and community leaders to identify and address structural inequalities and power imbalances within communities that prevent certain groups from participating in the decision-making processes. This can help to ensure that the voices of marginalised communities are heard and considered in the planning of RSUD projects.

3. At a time when the country has separate visions for UPD, DRR, and CCA outlining their stakeholders' contributions, the stakeholder contributions defined in this study offer a tailored and comprehensive account of the roles and responsibilities of 62 stakeholders with possible collaborations among them in mainstreaming DRR and CCA into UPD through community engagement. The study provides a customised list of actors, including parliament and the ministries, state departments, statutory boards, state agencies, provincial governments, local authorities, NGOs, IGOs, international organisations, the private sector, local communities, academics, and media, for Sri Lanka. This particular finding, therefore, defines a promising multi-stakeholder approach, that can be particularly used by the national level decision-makers and policy making institutes, for amending existing or creating new visions/policies focused on inclusive, risk-sensitive cities.
4. As the SA provides a comprehensive classification of key players for different contexts such as community, institutions and practices, legal and political context, policies, and resources, a lead agency can liaise with the relevant actors to deal with factors specific to a particular context. Additionally, individual actors can independently focus their efforts and allocate resources to reduce barriers and enhance enablers within their respective areas of influence.

10.5.2 Potential scaling of the study findings to different contexts

Despite the fact that the study is grounded in Sri Lanka, the study offers several valuable practical implications and applications of the research findings that can be scaled up in comparable settings.

1. Customised suggestions for possible collaborations, key players for different fields, and contributions can be made by replacing the study's stakeholder list with another set of stakeholders, specific to a different setting. However, care needs to be taken when replacing actors, especially government actors, considering their role, power, and resource similarities in the context of participatory RSUPD.
2. The proposed participatory methods' selection criteria specific to RSUPD offer field workers, including CBOs, CSOs, and NGOs, guidance and a practical tool for choosing appropriate methods that align with different RSUPD phases, purposes and objectives, community contexts, and scales of engagement.

Furthermore, decision-makers and policymakers, whether at the national or institutional level in any context, can utilize the tool to allocate adequate budgets and other necessary resources for the effective implementation of engagement methods. This allocation can be informed by the identification of engagement methods that align with the specific needs of their projects, institutions, and communities.

3. The KAP indicators, along with the proposed strategy for evaluating community change resulting from engagement, provide the lead agency and field workers with a practical framework for assessing the effectiveness and impact of community engagement initiatives in RSUPD. These indicators serve as measures that can be used to assess the extent of community transformation, capturing both qualitative and quantitative changes. This contribution bridges the gap between theory and practice by offering a systematic approach to evaluating the outcomes and effectiveness of community engagement efforts in RSUPD.
4. The study defines a mechanism for identifying community awareness and training needs using the proposed KAP indicators and methods for public awareness that can be applied in any community context. This finding holds particular significance for local authorities and external organisations that invest resources in community training and awareness initiatives.
5. The holistic approach provides practical guidance for implementing inclusive decision-making and participatory development practices by clarifying and detailing how community transformation and the consequent system changes can emerge through inclusive RSUPD. It can be customised to any context to advise on the development of guidelines and policies that promote meaningful and inclusive community participation throughout the RSUPD decision-making process. The proposed approach can be adopted by lead agencies, whether they are state-led or privately/donor-led, for participatory development initiatives. However, it may pose a challenge for community organisations to implement independently unless they possess legal authority, political support, and establish robust partnerships with other relevant stakeholders.

10.6 Recommendations for Practice and Policy

The study findings have a number of important implications for future practice and policy.

10.6.1 Practice implications

1. The lead agency and other key stakeholders involved in an RSUPD project should initially make efforts to attract political support and formalise community engagement for the project which will minimise the occurrence and impact of many subsequent constraints.
2. Regular training for local authorities and field officers should be conducted to build their capacities and attitudes for effective community engagement.
3. Impact-driven research should be promoted through international collaboration and a mechanism to report grounded results to policy formation institutes in the country/region should be devised.
4. NGOs and IGOs should be welcomed in participatory projects to attract more funds, knowledge, and technical support to overcome resource constraints.
5. Remote or hybrid engagement methods should be prioritised, utilising the prevailing digital telecommunication infrastructure to attract youth and economically active populations.
6. Strong partnerships should be built among the UDA, DMC, NGOs, and IGOs as the study found that they are at the forefront of facilitating community-inclusive decision-making in the context of RSUPD in Sri Lanka.
7. The above-mentioned key stakeholders should build and maintain collaborations with state agencies such as USDA, SLLDC, DDMC, DM committees, and DDMC as they impact over 50% of the constraining factors.
8. It is recommended to use the Excel tool provided in this study; if not, at the least the proposed six criteria should be considered when selecting methods to engage communities in the decision-making of RSUPD.
9. Both an institutional framework and a community engagement action plan should be developed before commencing the community engagement phase.
10. A situational analysis using the proposed KAP indicators should be conducted to assess communities' status before engagement, thereby identifying community awareness and training needs.

11. The level of transformation that a community has achieved through engaging in an RSUPD project should be evaluated and, thereby, continuous improvements for a recursive community engagement approach can be made.
12. A recognition mechanism (e.g., incentives, tax benefits, childcare benefits) should be placed to appreciate the active and informed contributions of locals.

10.6.2 Policy implications

1. As the study concludes that the absence of legal provisions and policies for community engagement is one of the constraints to inclusive decision-making in RSUPD, policymakers can develop regulations, guidelines, or legislative frameworks to promote inclusive development using the factors prioritised in the TISM models and MICMAC classifications.
2. The government should formalise community engagement for UPD, at least for areas with high disaster risks/significant climate change impacts.
3. The identified key stakeholders and their contributions to promoting community engagement in RSUPD can be utilised to design policies and programmes that foster partnerships and collaboration for dealing with co-attended factors.
4. Policies and guidelines can be developed to promote the use of the recommended participatory methods selection tool to formalise the fair use of methods, ensuring that decision-making processes are transparent, inclusive, and responsive to community needs.
5. The proposed data-driven approach for evaluating community change expected from engagement enables policymakers to make informed decisions, allocate resources effectively, and monitor the progress of RSUPD projects. It supports evidence-based policy-making and promotes accountability in community engagement efforts.
6. The concept of transforming communities through community engagement highlights the potential long-term impacts of engagement initiatives in RSUPD. Policymakers can use this insight to prioritise policies and programmes that aim at sustainable community development and resilience. This may involve integrating community engagement into broader UPD strategies, ensuring that the voices and needs of the community are central to the decision-making processes.
7. The study findings can inform the development of capacity-building programmes and training initiatives for stakeholders involved in RSUPD.

Policymakers can allocate resources to provide training and support for both communities and decision-makers, enhancing their understanding of community engagement principles and methods. This can empower stakeholders to effectively engage with communities and facilitate more inclusive and participatory decision-making processes.

8. 'Inclusive and risk-sensitive development' could be introduced as part of the secondary education curriculum to address the lack of community awareness. The module can include the subject areas of participatory methods, the economics of DRR, safe and resilient construction practices etc.
9. Taken altogether, the study does not exclusively support adopting a bottom-up governance approach. Instead, it is recommended to adopt a system that incorporates elements of both top-down and bottom-up governance. This hybrid approach recognises the strengths of each system and draws a clear distinction between their respective roles. To illustrate, top-down governance can be more effective in formulating and enforcing laws and policies, while bottom-up governance is better suited for policy and programme implementation.

10.7 Limitations of the Study

No research is without limitations. Firstly, given the social distancing regulations imposed due to the Covid-19 pandemic, it was challenging to get permission to access urban communities, especially in slum upgradation projects which could bring new perspectives to the study findings. Thus, the community participants involved in the study were drawn from RSUPD projects based in both urban and semi-urban settings. This, however, uncovered different aspects pertaining to rural development that also made useful contributions to understanding the system beyond the highly dense settings. Secondly, the study's outcomes may be influenced by the study participants' subjective interpretations, biases, and knowledge. For instance, experts' opinions may contain criticism of local communities, and vice versa. This could be reflected in some parts of the findings, such as the factors impeding engagement and stakeholder contributions. However, in GT, the goal is to achieve theoretical saturation which means that enough data is collected until new data begins to confirm or replicate the concepts, categories, and relationships that have already emerged from the analysis.

Regarding the data analysis, the TISM and MICMAC analyses alone do not portray the relative weightings of the factors. Hence, Structural Equation Modelling (SEM) and the Analytic Network Process (ANP) can be used to enhance the developed system hierarchies further. Also, social networks are dynamic and can change over time. Thus, a static analysis of stakeholder contributions might not capture the evolving nature of relationships, and it may be necessary to conduct multiple analyses over different periods to gain an updated understanding. However, the integration of diverse analytical approaches within the study compensated for the limitations of individual methods and achieved a more holistic understanding of the research topic.

Additionally, the theories resulting from the GTM may have limited generalisability to broader populations or contexts. This is because GT is often more focused on exploring depth rather than the breadth of understanding. Lastly, the holistic approach was internally verified through member checking as the time left in the course of the study was limited for real scenario validation due to the longitudinal nature of transforming communities through engagement. Notwithstanding this, the theoretical triangulation performed with the systematic review findings implied some external validity.

10.8 Scope for Future Research

This study uncovers the following directions for future research in the domain of inclusive and sustainable development.

1. Analysing stakeholder engagement networks in RSUPD across different countries and regions can shed light on the dynamics of power, influence, and collaboration. Conducting such a study can help uncover collaboration patterns, knowledge-sharing practices, and power dynamics that impact upon the effectiveness of community engagement.
2. Investigating the role of emerging technologies, such as digital platforms, mobile applications, and virtual engagement tools, in facilitating community engagement in RSUPD is a timely area of research. This exploration can assess the opportunities and challenges associated with using technology for engagement, the digital divide and inclusivity concerns, and the potential of these tools to enhance participation, data collection, and decision-making processes.
3. UPD interlinks with the construction industry, particularly in architectural design. A study examining the influence of community-inclusive architectural

design on the public perception and reputation of the construction industry can inform valuable insights that could enhance public trust and improve the industry's image through community engagement in architectural design.

4. Lastly, the study can be approached from a pragmatic standpoint to integrate quantitative data and introduce a weighted index, particularly for M&E.

10.9 Personal Reflection

Researcher believes that the comprehensive analyses, theoretical advancements, and practical insights provided in this doctoral study laid a solid foundation for future research endeavours, particularly in the field of inclusive RSUPD. By addressing a timely problem and exploring the potential for future research, this study paved the way for continued advancements in theory, policy, and practice, ultimately aiming to create more inclusive, sustainable, and resilient communities in the face of urban challenges. As the researcher, the most valued part of this journey was listening to participants' narratives and progressing with their stories. By engaging as an independent researcher, the locals were able to express their concerns and perspectives which may not have been effectively communicated through project-centric approaches. Overall, the study enabled me to gain deeper insight into the phenomenon, as well as helped me to reassess my original thoughts, perceptions and attitudes relating to engaging communities for safe, resilient and equitable cities. I hold the optimistic view that the readers of this thesis will not only expand their knowledge but will also cultivate a deeper understanding and a positive mindset towards contributing to a better world. In the end, the study prompted an intriguing question as to whether the current global standards, policies and programmes governing community engagement for world development are flexible enough to accommodate emerging threats and opportunities.

For a final thought,

“Without community say, we risk building skyscrapers that stand tall but lack the heart and soul of the people they are meant to serve.”

Devindi Geekiyanage

Appendix 1: Reporting Systematic Review Processes Conducted Within the Study

Step 1: Formulating research questions

Part II	Part III	Part IV
What are the prevailing barriers and enablers to engaging communities in risk-sensitive urban planning & development?	Which participatory methods would be effective for community engagement in risk-sensitive urban planning & development?	What are relevant theories influencing transformational community engagement in risk-sensitive urban planning & development?

Step 2: Developing the search strategy

Initially, the four PICO terms: (1) population, (2) intervention, (3) comparison, and (4) outcome were identified within each of the above research questions.

	Part II	Part III	Part IV
Population (P)	risk-sensitive urban development	risk-sensitive urban development	Risk-sensitive urban development
Intervention (I)	Community engagement	community engagement	transformational community engagement
Comparator (C)	-	participatory	-
Outcome (O)	barriers enablers	methods	theories

The comparator element was excluded in part II and IV reviews as the study intends to systematically explore the concept of community engagement where it is not necessary to consider an alternative to the identified intervention, i.e., community engagement (Cooke et al., 2012).

Following the PICO approach, an initial logic grid was formulated, and an initial search was conducted in one of the bibliographic databases: Scopus. Alternative terms or synonyms for the identified PICO terms were then determined by scanning the titles and abstracts of retrieved articles in each initial search to populate a comprehensive logic grid. As the final step in developing key terms for the search, search-field descriptors and wildcard characters were applied to the identified keywords and index terms in the logic grid (i.e., wildcards are indicated by the "*" and "?" signs).

Once all the search terms were collected and finalised, the final search strategy for each research question was developed. Initially, the key terms and synonyms in the logic grid were combined using Boolean operators: 'OR' to combine words/phrases within a column; 'AND' to combine words/phrases in different columns. Subsequently, three systematic searches were undertaken across all the selected citation databases using the finalised search strategies presented below.

Part II	(barrier OR challenge OR constraint OR obstacle OR enabler OR driver OR opportunit* OR incentive) AND ("community engagement" OR "civic engagement" OR "community involvement" OR "human involvement" OR "community participation" OR "local participation" OR "urban population" OR "civil society" OR "community?based" OR "community?driven" OR participatory OR inclusive) AND ("risk?sensitive urban development" OR "risk?sensitive urban planning" OR "risk?responsive urban development" OR "risk?responsive urban planning" OR "risk?integrated urban development" OR "risk?integrated urban planning" OR "urban development" OR "urban planning" OR "urban project" OR "urban area" OR "sustainable development" OR "land use planning" OR cit* OR urbanisation OR "risk reduction" OR "risk management" OR DRR OR DRM OR "climate change adaptation" OR CCA OR "city building" OR "city?making" OR "urban governance" OR "infrastructure development" OR "infrastructure planning")
Part III	(method OR tool OR concept OR theor* OR philosoph* OR model OR system OR approach OR procedure OR technique OR process OR "best practice" OR policy*) AND ("community engagement" OR "civic engagement" OR "community involvement" OR "human involvement" OR "community participation" OR "local participation" OR "urban population" OR "civil society" OR "community?based" OR "community?driven" OR participatory OR inclusive) AND ("risk?sensitive urban development" OR "risk?sensitive urban planning" OR "risk?responsive urban development" OR "risk?responsive urban planning" OR "risk?integrated urban development" OR "risk?integrated urban planning" OR "urban development" OR "urban planning" OR "urban project" OR "urban area" OR "sustainable development" OR "land use planning" OR cit* OR urbanisation OR "risk reduction" OR "risk management" OR DRR OR DRM OR "climate change adaptation" OR CCA OR "city building" OR "city?making" OR "urban governance" OR "infrastructure development" OR "infrastructure planning")
Part IV	(theor* OR model OR framework OR principle OR poli* OR method OR tool OR approach OR procedure OR technique OR process OR practice) AND ("community transformation" OR "civic transformation" OR "public transformation" OR "society transformation" OR "social transformation" OR "neighbourhood transformation" OR "local transformation" OR "citizen transformation" OR "community transfiguration" OR "civic transfiguration" OR "public transfiguration" OR "society transfiguration" OR "social transfiguration" OR "neighbourhood transfiguration" OR "local transfiguration" OR "citizen transfiguration" OR "community change" OR "civic change" OR "public change" OR "society change" OR "social change" OR "neighbourhood change" OR "local change" OR "citizen change" OR "community conversion" OR "civic conversion" OR "public conversion" OR "society conversion" OR "social conversion" OR "neighbourhood conversion" OR "local conversion" OR "citizen conversion" OR "community evolution" OR "civic evolution" OR "public evolution" OR "society evolution" OR "social evolution" OR "neighbourhood evolution" OR "local evolution" OR "citizen evolution" OR "community reshape" OR "civic reshape" OR "public reshape" OR "society reshape" OR "social reshape" OR "neighbourhood reshape" OR "local reshape" OR "citizen reshape" OR "community revolution" OR "civic revolution" OR "public revolution" OR "society revolution" OR "social revolution" OR "neighbourhood revolution" OR "local revolution" OR "citizen revolution") AND ("community engagement" OR "civic engagement" OR "community involvement" OR "human involvement" OR "community participation" OR "local participation" OR "urban population" OR "civil society" OR "community?based" OR "community?driven" OR participatory OR inclusive) AND ("risk?sensitive urban development" OR "risk?sensitive urban planning" OR "risk?responsive urban development" OR "risk?responsive urban planning" OR "risk?integrated urban development" OR "risk?integrated urban planning" OR "urban development" OR "urban planning" OR "urban project" OR "urban area" OR "sustainable development" OR "land use planning" OR cit* OR urbanisation OR "risk reduction" OR "risk management" OR DRR OR DRM OR "climate change adaptation" OR CCA OR "city building" OR "city?making" OR "urban governance" OR "infrastructure development" OR "infrastructure planning")

Step 3: Setting inclusion and exclusion criteria

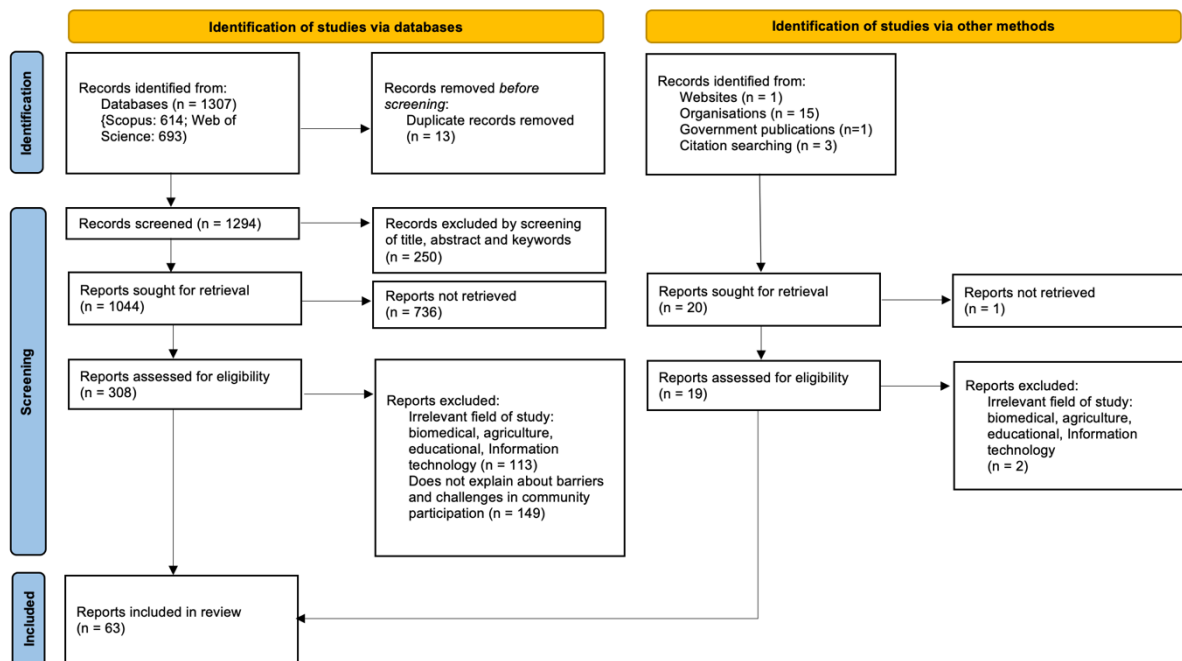
Criteria	Inclusion criteria	Exclusion criteria	Rationale
Publication year	From 2001 to May 2022	Before 2001	To exclude outdated content

Subject/ research area	Social Science, Social Work, Sociology, Social Issues, Psychology, Arts and Humanities, Urban Studies, Development Studies, Decision-making	Medical science, Engineering science	To exclude studies irrelevant to the chosen subject area
Document type	Journal article	Grey literature, Conference proceedings, Books, Book chapters	To consider only the credible peer-reviewed source of academic information
Language	English	Other languages	The majority of quality publications are in English

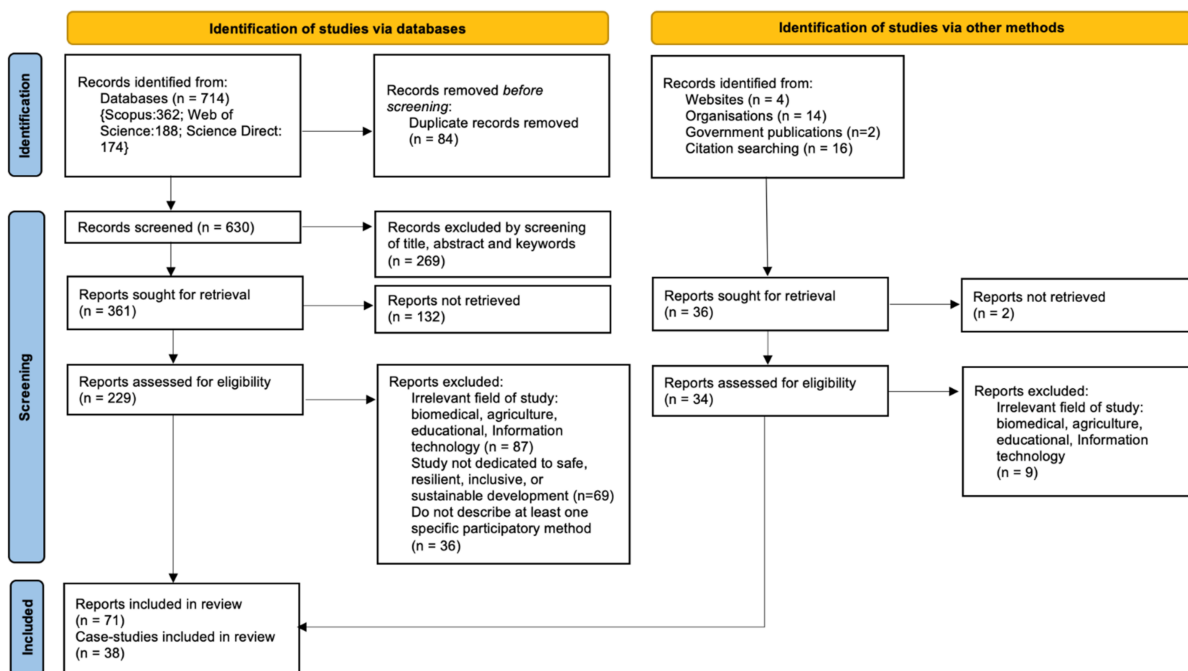
Step 4: Results of the systematised literature searches

	Part II	Part III	Part IV
Records from publication repositories	1,307	714	249
Records from manual search	17	36	7
Total records	1,324	750	256
Duplicates	13	84	5
Subjected to initial screening	1,294	666	251
Excluded from initial screening	250	269	180
Full-text not retrieved	736	134	18
Subjected to in-depth review	337	263	53
Excluded publications	264	154	41
Included publications	63	109	12

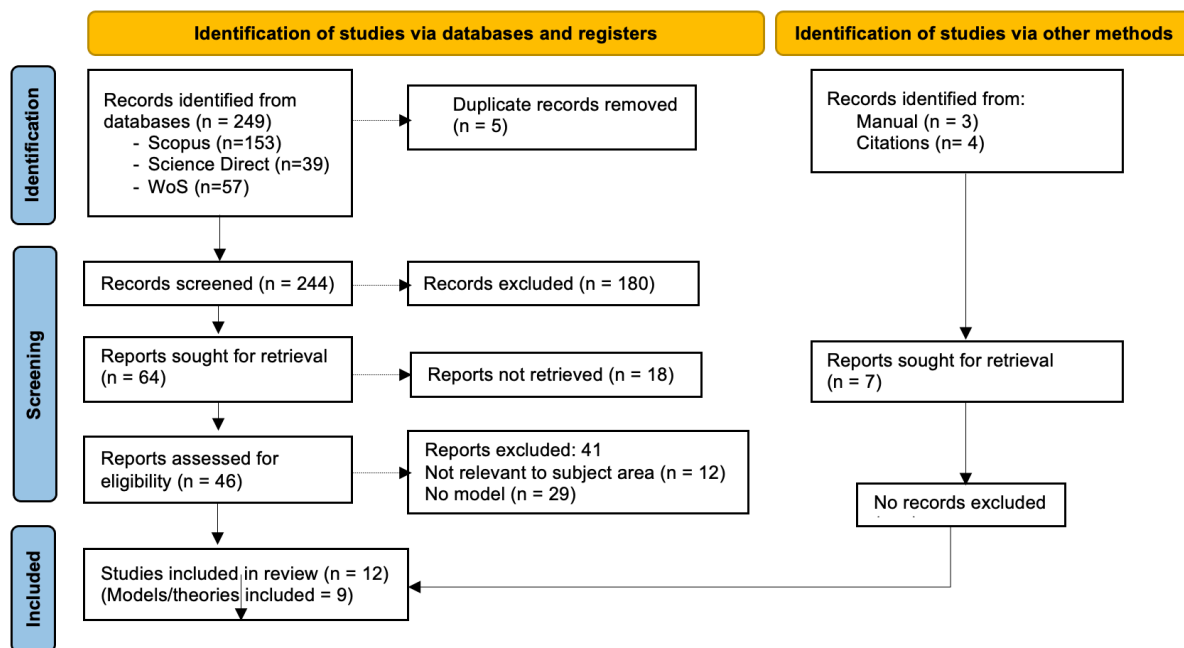
The depth of the literature searches is presented in the below figures, according to the preferred reporting of items for systematic reviews and meta-analyses (PRISMA) method proposed by Page et al. (2021).



PART II: PRISMA 2020 flow diagram of the literature search for barriers and enablers for community-inclusive RSUPD



PART III: PRISMA 2020 flow diagram of the literature search for the application of participatory methods in RSUPD



PART IV: PRISMA 2020 flow diagram of the literature search on theories and indicators of transformational community engagement

Note: A “study” is an investigation, such as a case study, that includes a defined group of participants and one or more interventions and outcomes. A study might have multiple reports. A “report” could be a journal article, preprint, conference abstract, study register entry, clinical study report, dissertation, unpublished manuscript, government report or any other document providing relevant information.

Appendix 2: Classification of Participatory Methods

Participatory Method	Examples of Tools	Strengths	Limitations	Sources
Presentation and dissemination of information				
Printed material	Newsletters Letters Posters Fact Sheets Brochures Reports	Easy to use Less cost	A traditional method, hence, does not reach the younger generation	[3-8]
Advertising, Media coverage	Paid advertisements on radio, newspapers, TV or online Free media (press releases, news conferences, media packages or letters to the editor)	Can be readily accessible by a wider community	Tend to attract elite audiences, people who already have identified their needs or have a special interest Often very costly Prominent level of competition for audience attention	[31,32]
Displays / Exhibits	Set up at relevant public locations (e.g., libraries, ward or electorate offices, shopping centres, community festivals, etc.)	Provides project information and raises awareness about particular issues Can be personalised and interactive Can be readily accessible	Brief attention spans Limited amount of information that can be conveyed Competition for attention at events	[3-6]
Presentations, Live streaming, Videos	PowerPoint Visme Haiku Deck Canva YouTube Live	A creative and attractive way of engaging people A great tool to convey messages quickly and succinctly	Need creative knowledge and skill in designing Need specific software in designing	[4-6]
Website	Fact sheets Downloadable resources Photo galleries Registration forms Information repository	Relatively simple and easy to produce Some can be made more interactive than conventionally published material Capable of reaching a large audience at a low cost Popular information resource	Not personalised Require computer literacy and skills People without access disadvantaged Technical difficulties Hard to navigate	[3-7, 9-12]
Infographics	Hand drawn visual image such as a chart or diagram used to represent information or data Image drawn using a software	A great tool to simplify complicated or complex information Fun and uncomplicated way to learn about a topic or issue without heavy reading Useful for documenting progress and reporting back during the engagement process	Need creative knowledge in design Need specific software in designing	[4, 11]

Dissemination of information and building conversations				
Social media	Facebook Twitter LinkedIn Instagram Snapchat Pinterest Online forums	Useful for generating interest and feedback from the public over some time Accessible at any time The forum can be open to anyone and can be anonymous, or only to members who sign up with a special username Facilitates public networking Low cost	Need access to digital devices	[31,32]
Field observations				
Site visits/Tours	Opening up a project venue for the public to visit Optional tours associated with a conference or workshop	A theoretical or abstract discussion can be brought into focus by seeing direct evidence that is available in the field or at a specific location	Expensive planning	[4, 13]
Public awareness				
Public meetings	Presentation followed by questions and answers Town-hall meeting Panel/roundtable Large group/small group	Relatively easy to convene, familiar procedures can involve a wide range of stakeholders Provides an opportunity to relay information, explain processes and gather feedback with a large group of people	Discourages those not used to speaking in larger groups Can be difficult to control The audience is not likely to be representative Attendance levels can be low unless people feel deeply connected to the issue and/or make the time to attend Ensure the meeting place is accessible	[3, 14]
Opinion collection from a selected group of general publics				
Interviews	Face to face Using virtual tools such as Microsoft Teams, Zoom, Skype Telephone	Generate in-depth information on a specific topic	Time-consuming Should continue until a data saturation point is reached	[3-6, 10, 14-20]
Focus groups	Face to face Virtual tools: Microsoft Teams, Zoom, Skype, Mural	Can explore different perspectives of a small group of people of a common issue/goal	Not effective for providing information to the public	[3-6, 13, 20]
Opinion collection from a large body of the general public				
Polls	Physical polling booths Postal vote Online vote (SmartSurvey)	Are a highly representative nature	Measure an immediate response to a question, thereby granting little	[3-6, 11]

		Using scientifically developed techniques, samples from polls generate an accurate match of the population Allow issue specificity with immediate feedback	opportunity for informed opinions or discussion of issues Polling information is meaningless if it is not statistically valid	
Surveys	Paper survey Postal survey Email survey Online surveys (Google Forms, Typeform, SurveyMonkey)	Find out the opinions of local people on a particular topic in a structured way that can be extensively analysed Provide a baseline for measuring changes in people's views Inform people about the project that is taking place Prompt further involvement by asking if people would like to receive information or invitations to future events Reach a large group of people and involve those who may not be in a position to engage in other ways	Time-consuming process Results may be statistically incorrect if a large sample is not involved	[3-6, 8, 10, 14-19]
Citizen science, Crowdsourcing ideas	Crowdsourcing sites like 99 designs or Fiverr Social media platforms like Twitter, Facebook, and Instagram	Facilitate the collection of data in an organised way by members of the public, typically in collaboration with professional scientists Fantastic way to engage the community and provide the opportunity to network, hear fresh ideas, and problem-solve together	Assessing the quality of the provided data and identifying bias is difficult	[31,36,48]
Gathering expertise and scientific knowledge				
Expert panels, Working groups	Round tables GoToMeeting Slack WebEx Igloo	Suitable when highly specialised input and opinion are required for a project Allow citizens to hear a variety of informed (expert) viewpoints from which to decide on recommendations or courses of action about an issue or proposal	Expensive in recruiting experts	[31,32,41]
Mapping ideas				
System dynamics (SD)	Group model building (GMB) Participatory SD modelling Community-based SD	Allows researchers and relevant stakeholders to come together and, in a participatory manner, elaborate conceptual models of system behaviours/problems Effective tool to elicit a common vision on a complex problem	Complex and need advanced knowledge in the application	[9, 14, 21-25]
Community mapping/Mind mapping	Round tables Public participatory geographic information system (PPGIS) Virtual mapping tools (Mapping for Change CIC)	Enable citizens to map the social, ecological and economic assets, along with historical events of their community A useful way for initiating dialogue and planning in a community The method can be used to document certain aspects, strengths or weaknesses, or locations of	Time-consuming Expensive in process	[31,53,54]

		services within a community, neighbourhood, or municipality		
Bring deliberation and public participation into public policy decisions				
Citizen juries	Round tables Virtual meeting tools	Bring new thinking to the issue at hand Develop a deep understanding of an issue Help build participant capacity through involvement and increased knowledge Limitations and possibilities can be identified Can dispel misinformation Can build credibility & provide unexpected benefits	Group selection can be mistrusted Participants may not show up on the day Sessions can lose focus The cost can be extensive Time-consuming for all involved The sample of the community is small	[4-6, 13]
Citizen committees	Physical gathering Virtual meeting tools	The committee can offer specialised, practical expertise that may not be available from other sources such as government authorities Can lend legitimacy and credibility to the ultimate decision made by a government	No clear formal mechanism to input into the decision-making process Need to offer sufficient time for members to commit to the process Timeframes are unrealistic Agenda too ambitious or not specific enough	[4, 8]
Visioning	Facilitated idea-sharing and recording Notecard/flip chart brainstorming Graphic facilitation (e.g., PATHM)	Brings citizens and stakeholders together to assist a group of stakeholders in developing a shared vision of the future	Require long-term commitment It may be challenging to give a healthy balance of attention to each of the areas determined to be important in the community	[3-5, 26, 27]
Community indicator projects	Community Indicators' Consortium toolbox	Offer the opportunity to discuss what is important, systematically review whether things have been getting better or worse, and establish priorities for policy response Indicators measure what the community cares about and track whether the community is moving in the right direction These metrics provide essential guidance for action and key tools for appropriate engagement of the public	Require long-term commitment	[4]
Creating solutions				
Workshop, Open space events	Physical workshops Remote workshops using Mentimeter, Slido, Go Create	Help to translate detailed discussions into action plans Provide an opportunity to bring together the knowledge of all participants and is attractive because they set the workshop agendas	Participants attending may have very disparate skills and knowledge Logistics-It can be difficult to arrange meetings and workshops for different geographical locations and time zones	[3-5, 7, 8, 13, 20, 28]
Design charrette, Tactic-urbanism	Physical gathering	Provide a forum for ideas and offers the unique advantage of giving immediate feedback to the designers	With multiple perspectives represented in the charrette, it is challenging and	[4]

(Placemaking, Pop-ups)	Digital tools such as SketchUp, Dynamo, Grasshopper		time-consuming for all involved to agree on the final design solution Experts may dominate it	
Knowledge/document co-creation	Open Innovation Digital Platforms	Allow for the collection of Indigenous wisdom and creating design solutions with social empathy and inclusion	High dependence on communities' views/interests	[9, 22, 28-30]
Participatory asset management				
Asset-based community development (ABCD)	Maps such as Google maps Interviews Surveys Community events Canvassing	Allows citizens to discover, map and mobilise existing assets in communities Strengthens community relationships-people are connected for sustainable community development to take place Citizens at the centre-citizens are actors, not recipients	Linking social capital often requires exceptional skills and connections that only comes from external catalysts & expertise Difficulties in building relationships among community members	[4, 5]
Participatory budgeting (PB)	Citizen Budget online budget simulator Cobudget	Allows citizens to identify, discuss, and prioritise public spending projects, and gives them the power to make real decisions about how money is spent Local people are often given a role in the scrutiny and monitoring of the process following the allocation of budgets	Lack of representation of extremely poor people May struggle to overcome existing clientelism Misallocation of resources	[4, 31-34]
Participatory monitoring and evaluation				
Most significant change (MSC)	Capturing stories through interviews and note-taking Reporting forms Selecting the significant story by voting or scoring Thematic coding	Best used in initiatives that are complex and produce diverse and emergent outcomes Focus on peoples' narratives Technique for prioritising needs	Time-consuming process Only certain individuals can be part of the story generation process, so may not represent the entire community's narratives	[4]

[1] Queensland Government, 2010; [2] Tamarack Institute, 2017; [3] Aslin & Brown, 2004; [4] Customer Service - Communication and Consultation Services, 2012; [5] Münster et al., 2017; [6] Brown & Chin, 2013; [7] Hernantes et al., 2019; [8] Rollason et al., 2018; [9] OECD, 2015; [10] Chini et al., 2017; [11] Rodríguez et al., 2018; [12] Perrone et al., 2020; [13] Xue et al., 2020; [14] Mulligan et al., 2019; [15] Sharifi, 2016; [16] Parsons et al., 2016; [17] Bowen et al., 2008; [18] Hardoy et al., 2019; [19] Pagano et al., 2019; [20] Hedelin et al., 2017; [21] Basco-Carrera et al., 2017; [22] Ricciardi et al., 2020; [23] McEvoy et al., 2018; [24] Mahjabeen et al., 2009; [25] Jones & Noble, 2007; [26] Raymond et al., 2017; [27] Martín et al., 2020; [28] Könst et al., 2018; [29] OECD, 2019; [30] Pickering & Minnery, 2012; [31] Savic, 2015; [32] Stańczuk-Gałwiczek et al., 2018

Appendix 3: Guideline for Expert Interviews and Focus Group Discussions

Purpose	Probes for interviews with industry experts	Probes for FGD with community participants
To collect demographic information of participants	<ul style="list-style-type: none"> • Organisation • Designation • Working experience (yrs.) • Area specialised in 	<ul style="list-style-type: none"> • Years of residence in this address (C) • Age (C) • Civil status (C) • Employment (C) • Highest level of education (C)
To understand the participants' relevance and experience of the research focus	<ul style="list-style-type: none"> • Current role and years of experience within the RSUPD field? • Have you been involved in decision-making processes related to UPD? If yes, could you provide examples? • What is your understanding of community engagement in the context of RSUPD? • Have you previously collaborated with communities or engaged them in decision-making processes? If yes, what were the outcomes or challenges you encountered? • Any legislation/standards/policies followed for community engagement during the project? 	<ul style="list-style-type: none"> • What is your affiliation with the community or the specific location under study? • How familiar are you with the concept of RSUPD? • Have you ever been involved in a government development project? If yes, what is it? how did you involve? duration of the involvement? by which approach/through whom did you involve? • Have you participated in any decision-making processes related to UPD in your community? If yes, could you provide examples? • In your opinion, what role should communities play in the decision-making processes for UPD?
	<ul style="list-style-type: none"> • Did you benefit from community engagement? If yes, how? If not, why? • What are the key elements to focus on when engaging with communities using participatory approaches? 	
To investigate existing barriers and enablers for community engagement and potential solutions to overcome the constraints (Objective 1)	<p>Barriers:</p> <ul style="list-style-type: none"> • What are the noticed barriers and challenges to community engagement? <ul style="list-style-type: none"> - Any legal or regulatory barriers? - Any communication challenges or language barriers? - Any financial or resource constraints? <p>Solutions:</p> <ul style="list-style-type: none"> • Any actions taken to mitigate or eliminate the above-discussed barriers and challenges? • Any further solutions or recommended practices to overcome these? <p>Enablers:</p> <ul style="list-style-type: none"> • From your perspective, what factors or conditions facilitate successful community engagement? • How can technology or digital platforms be utilised as enablers for community participation? • What role does trust-building between stakeholders play in fostering community engagement? How can it be nurtured? • Are there any specific policies, guidelines, or frameworks that encourage community involvement in decision-making processes? If so, please describe them. <p>Links between the factors (Used Miro to illustrate links):</p> <ul style="list-style-type: none"> • How do you see the relationship between different barriers/enablers to community engagement? Are there any synergies or dependencies among them? 	

	<ul style="list-style-type: none"> • Can you identify any potential connections between enablers and the removal of specific barriers in the context of community engagement? • How might the presence or absence of community engagement influence other aspects of RSUPD, such as project outcomes, social equity, or resilience? • In your opinion, what are some strategies or interventions that can address multiple barriers and create a more interconnected and inclusive approach to community engagement?
<p>To identify relevant stakeholders and investigate their contributions/ role in promoting community engagement (Objective 2)</p>	<p><u>Identifying relevant stakeholders:</u></p> <ul style="list-style-type: none"> • In your opinion, who are the key stakeholders to involve in RSUPD processes? Do they all involve? At what level? • Can you provide a list of organisations, agencies, or groups that play a significant role in decision-making related to UPD? • Are there any CBOs or advocacy groups that actively promote community engagement in these processes? • Are there any specific individuals or leaders within the community who are instrumental in facilitating community participation? <p><u>Contributions and roles of stakeholders:</u></p> <ul style="list-style-type: none"> • What responsibilities do you think government agencies or local authorities have in fostering community involvement? • Can you identify any initiatives or programs undertaken by community-based organisations or NGOs that have successfully facilitated community engagement? • What role do residents or community members themselves play in driving community engagement efforts? • Are there any examples where collaboration between different stakeholders has led to effective community involvement? If yes, please describe them. • Have you observed any positive examples or best practices where community engagement has been effectively promoted? If yes, could you provide some details? • Any efforts taken to promote equitable resilience or equal participation in the decision-making process of urban development projects? (P) • How important is ongoing communication and dialogue between stakeholders in promoting community engagement? Are there any existing platforms or mechanisms for such communication? <p><u>Potential areas for improvement:</u></p> <ul style="list-style-type: none"> • In your view, are there any areas or aspects where stakeholders can improve their contributions to community engagement efforts? • What resources or support do stakeholders need to enhance their roles in promoting community involvement? • How can stakeholders better address issues of inclusivity and equity in decision-making processes? • Are there any lessons or best practices from other contexts or regions that can be adapted to improve stakeholder engagement in your specific setting? • In your opinion, what other organisations can involve improving the engagement of communities in development or any other projects?
<p>To investigate effective methods to engage communities (Objective 3)</p>	<ul style="list-style-type: none"> • At what phase or level do you think community should engage? • What is the current practice in selecting methods to engage communities? what is basis? Any rules/guideline you follow? Any difficulties? • What methods have commonly been applied in practice? Why not other methods? • What are the tools and techniques used to <ul style="list-style-type: none"> - inform communities? - consult with communities?

	<ul style="list-style-type: none"> - involve - for participatory planning? - for collaborations? - for co-decision-making etc? • Why do you think communities need to engage in the process of RSUPD? • Methods specific for different phases of RSUPD? • Methods specific for different communities, especially for marginalized groups? • Methods appropriate for people with less experience or new to participatory work? • What strategies or approaches can be employed to empower vulnerable communities and enable their meaningful participation in RSUPD processes? • Are there any successful examples or best practices where vulnerable communities have empowered in the decision-making and planning of urban development projects? • How can capacity-building programs or initiatives design to enhance the knowledge, skills, and confidence of vulnerable community members? 	
<p>To investigate a strategy to evaluate the level of community transformation and indicators (Objective 4)</p>	<ul style="list-style-type: none"> • Can communities change through participation? If yes, any experience or evidence? • Have you ever measured the community transformation in any of the participatory projects you involved in? if yes, how? What measures are in place? • Any framework/ guideline/ model followed for community transformation? • What other measures can use to evaluate a community change? 	<ul style="list-style-type: none"> • What knowledge would you think you should enhance to engage in RSUPD?
<p>To network with more participants</p>	<ul style="list-style-type: none"> • Any suggestions for appropriate contacts for further interviews? • Any proposed areas for further research? 	

Appendix 4: Participant Information Sheet and Consent Form

PARTICIPANT INFORMATION SHEET

Working Title: A Holistic Approach for Fostering Community Engagement in the Decision-Making of Risk-Sensitive Urban Planning and Development.

Introduction

I, Devindi Geekiyanage, a doctoral student at the University of Salford, UK, hereby kindly invite you to take part in my research study as an interviewee to collect the data required for my doctoral study. The focus of this study is to develop an institutional framework for empowering vulnerable communities in the decision-making process of risk-sensitive urban development projects. I have identified you as one of the potential participants who can contribute to my study's data collection. Therefore, I hereby kindly invite you to take part in my study as an interviewee.

First, I want you to know that taking part in the research is entirely voluntary. If you do decide to take part, you will be given this information sheet to keep (and be asked to sign a consent form). You may choose not to take part, or you may withdraw from the study at any time. In the case of withdrawal, I, as the researcher, appreciate if it you could inform me of your reasons for the withdrawal but that is not enforced. If you wish to withdraw at a time after the data collection, all the information and data collected from you to date will be continuing to be used, however, your identification details will be removed from all the study files. In either case, you will not lose any benefits to which you are otherwise entitled, nor will you otherwise be penalized.

I request you carefully read and understand the research protocols and the other specific information provided below for the successful completion of this study. Furthermore, kindly note that these are only applicable to you if you agreed to take part in this research study. Before you decide to take part, please take as much time as you need to ask any questions and discuss this study with me as the interviewer, Prof Terrence Fernando as the main supervisor, Dr Kaushal Keraminiyage as the second supervisor, or with family, friends or any of your advisers.

The Research Study

1. Research Protocol

If you agreed to take part in this research study, you will be participating in an interview and a focus group discussion as part of this research study to develop an experimental framework to empower vulnerable communities to develop risk-sensitive and equitable urban developments and to support intervention and transformation of communities.

During the interviews, you will be asked questions about your background (i.e. general background if you are a community representative and professional background if you

are an organisational representative), working relationships/willingness for participatory approach, challenges and barriers to community inclusive urban development projects, potential solutions to overcome any barriers and challenges opined, knowledge on community engagement methods/tools, and opinions on community transformation and equitable resilience. This interview should take approximately one and a half hours.

Each individual may ask for their consent to record the interview or discussion carried out with them on the consent form.

2. Risks / Discomforts

Once you provided your consent to be a research participant and faced the data collection process, I ensure to keep your responses confidential, and I perceive little to no foreseeable risks to taking part in this study. However, your participation is entirely voluntary. You may skip over any questions for any reason, and you may stop at any time. Your responses will be kept confidential and your name or any other identifying information will not appear in any of my final products. When the results of the research are reported in interim reports, academic journals, conferences, or academic thesis, the people who take part are not named and identified. Any data used is constructed to preclude identifying participants.

3. General or Participant Benefits

In general, participants will not be entitled to any financial reward for taking part in this research study. However, the outcomes of the study including scientific research publications and presentations will be disseminated to participants upon their interest.

4. Information Handling Procedure

All information about you that is collected during the research will be kept strictly confidential, and any information about you which leaves the university will have your name and address removed so that you cannot be recognised.

Furthermore, the audio recordings of your interviews and discussions made during this research will be used only for analysis. No other use will be made of them without your written permission, and no one outside the project will be allowed access to the original recordings.

5. Problems or Questions

If you have any problem or question about your rights as a research participant or any research-related concern, please contact the researcher at:

Mrs. Devindi Geekiyanage

Doctoral Student

ThinkLab

School of Science, Engineering & Environment

7th Floor, Maxwell Building,

The University of Salford, M5 4WT, UK.

T: +

E-mail: M.d.hembageekiyanage@edu.salford.ac.uk

For more information on this study or any other issue, you may contact the supervisors of the research student at:

Main supervisor:

Prof Terrence Fernando

Director of the THINKlab
School of Science, Engineering &
Environment

7th Floor, Maxwell Building,
University of Salford, M5 4WT, UK.

T: + [REDACTED]

t.fernando@salford.ac.uk

www.salford.ac.uk/thinklab

www.salford.ac.uk

Second supervisor:

Dr Kaushal Keraminiyage

Reader in Quantity Surveying
Research Centre for Disaster Resilience
School of Science, Engineering &
Environment

Maxwell 505f - Floor 5, Maxwell Building,
University of Salford, M5 4WT, UK.

T: + [REDACTED]

k.p.keraminiyage@salford.ac.uk

www.salford.ac.uk

<https://www.keraminiyage.info>

Thank you for your time and consideration in reading this information sheet.

Date: 18 June 2021

RESEARCH PARTICIPANT CONSENT FORM

Working Title: A Holistic Approach for Fostering Community Engagement in the Decision-Making of Risk-Sensitive Urban Planning and Development.

Participant's Consent

Carefully read each consent statement provided below and indicate your specific agreement with each statement in a 'YES' to accept or in a 'NO' to refuse.

I confirm that I have read the information sheet dated 18 June 2021 for the above study. I have had the opportunity to consider the information, ask questions and have these answered satisfactorily.	
I understand that my participation is voluntary and that I am free to withdraw at any time without giving any reason.	
I understand that the information collected about me will be used to support other research in the future and maybe shared anonymously with other researchers.	
I agree to allow audio/video recording during the data collection.	
I agree to take part in the above study.	

Signature of the participant:	Date:
-------------------------------	-------

Thank you for agreeing to take part in my doctoral research study.

Signature of the doctoral student:	Date:
------------------------------------	-------

***Please keep a copy of this document in case you want to read it again.*

Appendix 5: Research Ethics Approval Email

Subject: Ethics Application: Panel Decision

Date: Tuesday, 6 April 2021 at 12:45:06 British Summer Time

From: ethics <ethics@salford.ac.uk>

To: Malsha Hembra Geekiyanage <M.D.HembraGeekiyanage@edu.salford.ac.uk>

Priority: Low

The Ethics Panel has reviewed your application: Empowering vulnerable communities in decision making in urban development processes to promote equitable resilience
Application ID: 1375

The decision is: Application Approved.

If the Chair has provided comments, these are as follows:

Is there a Safeguarding and Prevent training course that needs to be completed by the researchers for this project?

I do not believe those under 18 or over 60 should be considered as part of this research.

Please use the Ethics Application Tool to review your application.

Appendix 6: Sample of Data Coding

Participant Code:	P10
Name:	Mr.
Organisation:	ADPC
Designation:	
Area of expertise area:	DRR

2 What is your experience in community inclusive developments or projects?
3 Well, I started my career as a disaster management professional way back in 2003. That I was with the United Nations Development Programme (UNDP). So, my first assignment was in the Hambantota district as one of the district specialists working with the district administrators, divisional administrators and civil society organisations in the NGOs and the impact on some of that risk communities. So, that is how I started interacting with the communities and looking at the risk profile of the district and identifying some of the existing as well as potential risks. And then obviously, developing strategies, policies, and programmes at the district level to ensure kind of risk reduction strategies, right. So, that is how I started interacting with communities in their own words. I was there until just before the tsunami in 2003, to 2004 December. During that period, most of my interventions were only me to community members, I mean, the district administration, divisional administrators, as well as community organisation to understand their problems and help them devise appropriate strategies policies and programmes. And during that period, I remember that there was a flood in that part. And some of the community infrastructures including irrigation tanks, and canals, irrigation systems were impacted. And I remember I was involved in that damage assessment process as well interacting with the community, understanding their problem, and then, supporting and funding the government and community initiative to rebuild the infrastructure including irrigation schemes, and so on. So, that is how I started and then I went to Colombo, and since then I work until 2007, in Sri Lanka with the disaster management centre and the UNDP leading the disaster risk management programme covering 24 districts of the country. And in that also, there were a lot of programmes district-specific programmes and there were some landslide specific programmes. There was some flood specific programme, there were some tsunami recovery-related programmes. I was at the national level, but most of my staff were based in the districts and they were implementing a multi-hazard community-based disaster risk management programme. From 2007 until now, I am here in Thailand. And I am working for more than 26 countries. But we do have some programmes in Sri Lanka as well. So, one of the programmes that we call Asian preparedness partnerships, again, mobilised the government, civil society and the private sector. And in that also there are multiple engagements with the local actors and community-based organisations supporting them to develop design and implement risk reduction programmes.

4 You mentioned that you are directly working with the community as a direct district administrator and division administrator. So, in that case, I would like to explore your experience, how you are involved with communities and in which cases? what is the purpose of involving communities in that particular project?

5 Most of the cases, I think, our engagement with the community during that period, even now, when we engage with the community, one of the most important parts is to understand the problems; problem in the sense - it could be identifying the hazard and then quantifying the risk, risk levels and so on. So, in most cases, engagement started with the identification of the problem. And then we do consider community engagement as a process, then a product, what I mean is that it allows them to engage in the process, then it helps us as facilitators to understand the problem, and from there we as community mobilizers, we would be able to work with them to identify potential solutions. So, it is starting from identification of a problem and then brainstorming potential solutions and maybe prioritising appropriate solutions and then implementing the appropriate solutions, and then, monitoring and evaluations to see the impact. So, it is all stages of the planning process, I would say starting from the problem up until the evaluation of things back.

6 What sort of participatory methods do you use to engage with the communities in terms of identification of the problems?

7 We use pretty much what we call the participatory risk assessment (PRA). And then we also extended that into the participatory planning process - what we call community-based risk reduction planning process. And this is pretty much a kind of extension of the participatory rural appraisal that we all know as the PRA tools, we have modified that into

..Non-governmental organisatic

IMPORTANT

..Community-based organis

..identifying key problematic

..6.making inclusive solusion

..6.making inclusive solusion

..5. Construct / implem

..6. Continuous improver

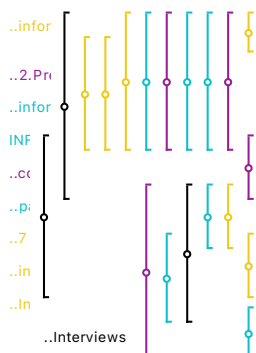
..Monitoring and feedb

..top-down + bottom-up

..Identifi community need:

..Participatory Rural Appr:

..participatory risk assess



a more on identifying risk as participatory risk assessment and then from there, there are a few tools that we use to convert that into a participatory planning process.

8 **How did you get the information and what sort of information did you gather in terms of risk assessment?**

9 It is quite a long-term process. Ideally, it goes up to like several months, but obviously, depending on the project period, budget and other factors like staff time availability as well. So, it can be like just a couple of days up to a couple of months process. And how we do is basically: the first step is to go and establish the rapport. There is the six-step process of the community-based risk assessment process, but I may miss one or two, but you know, I am just telling you as far as I remember, I can also send you some materials on that, but what we do is basically we follow the standard process of community engagement starting from establishing rapport and you know, there are multiple participatory community risk assessment tools, including mapping, venn-diagram (Venn diagram: diagrams designed to collect social data by using circles to show the links or relationships between different parts of a community or institution. Because they reveal similarities and differences between institutions, partners, people and issues within a community, they can be useful in identifying problems and possible solutions. Venn diagrams are especially relevant for institutional analysis as they can help to identify specific organizations that could be involved in implementing a community action plan or specific risk reduction projects), seasonal calendar (Seasonal calendar: for a seasonal calendar, a chart is created with the months of the year along the horizontal axis and the events and activities significant to the community listed in the vertical axis. Completion of the chart by the community helps the CRA team to see the hazards and risks in terms of when they occur. The analysis can help a community to rethink its living habits according to its vulnerability to hazards), kind of historical profile and so on. So, we use various tools which are very useful to engage with them. And from there, we extract information, we extract in the sense we start the process through rapport, but then at the end of the day, we identify some community-based champions. Champions could be some elderly people, educated people like the school principal, so it could be even like monks, sometimes it could be like school children, especially during school holidays and so on. So, we identify some segments/champions those who could lead this and actually then they take the tools and they develop by themselves like identifying risks, I mean, we might start with very simple tools like mapping and we might start with them just asking to demarcate the border of the village or that particular community and then we might ask them to identify some landmarks within their local attics and then there onwards, we might ask them to identify potential risks sources, such as rivers, mountains or whatever, depending on the locality. It helps them to map and locate various risk sources as well as risk factors. So, that is an easy one and from there onward we might go into another tool called seasonal calendar, which helps us to identify the seasonality of hazards and then we might go into a bit more complex tools such as profiling and all, even sometimes we use participatory GIS tools. So, we use multiple tools, depending on the context starting from easy ones to a bit more complex ones. If you just Google search on participatory community assessment, Asian disaster preparedness centre, there is a manual on that. And I remember, when I was in Sri Lanka, we used that and obviously when I am in ADPC also. Now, as a director, I do not go into the community-level engagement. So, I basically guide the project team to do so, during the period that I was working at the field level, we use this manual. Also within the Red Cross, there is a manual on that.

10 **As the next step you mentioned that after the risk assessment, you did participative planning with the community. So, in that case, did you use the same tools? Or do you have different methods/approaches to engage with communities in terms of participatory planning?**

11 No, we basically take the tools that we used for the risk assessment as a kind of information gathering tool. And then we triangulate that information: after we gathered that information, we do an exercise called triangulation, which means getting the information from these tools and getting information from other sources such as secondary data, maybe previous reports or previous exercises or maybe interviews and others, so we collect and later triangulate data from multiple sources. And then when it comes to planning, we use another tool called planning tool, which might be a simple like kind of a prioritisation tool. If a community is not well educated, we might use simple tools, like having a matrix and giving them some seeds or pebbles so that they can vote in prioritising the interventions. But specifically, in countries like Sri Lanka, most people can read and write, in that case, we might use paper-based tools for them to identify and prioritise. So, it might be just a standard template for the community-level planning process, so that they can start writing, prioritising and so on. So, we use the risk assessment tools to call it data and triangulate data, but then when it comes to



documenting those, we might use an existing template or maybe we might adapt those to the context.

12 You mentioned that participating in risk assessment and the planning come under the identification of the problems. So, after that, you come to the step of identification of the solution. So, in that case, how do you engage with the communities?

13 I mean, the solution has to come from them. It would be very impossible or impractical for any external partner/external person, having worked with the sector for 20 years, if I go to a community and start giving solutions, most of my solutions would not work also. So, specifically at the local level, the solution has to come from them. And obviously, our role would be as animators or facilitators to give additional knowledge, the technical knowledge if they need it, but they know better than us in terms of the context in terms of needs in terms of other issues that may not be obvious during this process. So, what we do is basically give them the menu of options. It is like a restaurant, right? So, you have a menu option at the end of the day, what option they would select has to be from them. As an expert or as practitioners, we might have a long list of potential options, but which option to select, and which option would work best for that particular community has to come from them - this is what I call prioritisation. Those are the things that we do. Let's say, a particular community, when they propose certain interventions, we see whether these are kind of standard set of interventions or whether these are out of box interventions. So, if we see, like, let us say, in a particular community A, if a potential solution that I see as a potential solution is not there in their list, I might ask a question like, would this work for your community? They might say, yes, this is a great idea, but this may not work in our community. So, I think at the end of the day, our task is to give them kind of a menu of options and let them select what works best for them. So, that is how we do most of the cases.

14 Next, you are moving to the implementation of solutions in the implementation stage. So, in that stage, how do you engage with the communities or how do you keep them engaged within the process?

15 When you look at most organisations, including the government, the UN, NGOs, including civil society, the power of community-based solutions has not been fully utilised and maximised. The reason is that nowadays, I see most cases, communities are engaged ceremonially, and they are not necessarily involved in the implementation, which is very bad. So, the reason is that this community engagement is not an easy process. It needs maturity, patience, and understanding. And it takes time, and you may not be able to go to a community and just start a community-based planning process without having appropriate relations and rapport. So, most of the time, my point is that this organisation actually spoiled the process, and they might even pay some money for the community member, or they might you pay them money and all these things to make it happen in such a short time. And then most of the decisions are being done by the moderator, animators or community mobilisers, and the solution might not work, and they might not engage in the implementation process as well. But if we use this community-based approach rightly, the implementation has to be by the community themselves, not by external partners, external partners, all have to be either providing additional resources, additional technical support, additional technical guidance, and so on. But the whole philosophy of community-based approaches is that risk identification says planning, and risk reduction implementation has to be by them. And they need to identify the role of external partners like us. That is the ideal path. But in practice, in most of the cases, if not all, external partners basically do this process. And that's why most community-based practice programmes or plans do not work.

16 So, my answer to your question is how we should engage them in the implementations: there should not be an engagement, by default implementation has to be by themselves and they need to identify what can be done by themselves and what can be done by external. I think in the Sri Lankan context in the past, we had this concept called Shramadana, where they do most of the work by themselves. Shramadana has been used for centuries for agriculture purposes, irrigation purposes or even for various other purposes. So, that is the whole concept: I mean, Shramadana is the classic example of community-based work in Sri Lanka - I remember when I was a school kid, even I used to engage in some of this Shramadana campaign related to disaster risk reduction, it can be on drought, it can be only on flood or it can be just cleaning canals and so on. When we engage in Shramadana, we never asked for money, and we all feel like this is our work. And obviously, when we do Shramadana, we might also ask for additional support from local government officials, Divisional Council, and other planners because we might not be having that knowledge, technology a community bridge, for example. So, we might get the support from the technical officer or the engineer or from local authorities, but most of

3/10

Appendix 7: Interpretive Logic Knowledge Base of TISM

(a) Interpretive logic knowledge base for direct pair-wise contextual relationships between the barriers to community inclusion in RSUPD in Sri Lanka (Phase 1 data collection)

#	Influencing barrier	Influenced barrier	Summary of interpretive relationship statement
1	B1	B4	Communities' little knowledge of DRR and UP policies and plans Communities' consultation fatigue
2	B3	B4	No funds for situational analysis with community participation
3		B9	No funds for capacity building
4		B10	No funds to train employees
5		B18	Officials' reluctance to allocate a budget for engagement
6	B4	B17	Agencies try to convince the public of their plans
7	B5	B4	Difficulty in selecting community experts
8		B18	Unfair representation of communities
9	B6	B4	No methods are defined for inclusive policymaking
10		B5	Ill-defined community selection criteria
11		B9	No community capacity-building guideline
12	B7	B3	No influence from local development strategies
13		B6	No engagement strategy in local authorities
14		B9	No local level community capacity-building strategy
15	B8	B17	Do not incorporate community needs
16	B9	B1	No awareness programmes
17		B2	No participatory programmes
18	B10	B11	No periodic employee training
19	B11	B4	Little expertise in inclusive policymaking
20		B5	No understanding of community selection criteria
21		B6	No expertise in inclusive developments
22		B9	No expertise in capacity building
23		B14	Fewer communication skills
24		B18	Making conflicts
25	B12	B3	Reluctance to allocate budget for community engagement
26		B4	Ego
27		B5	Political followers among officials
28		B6	Reluctance to engage
29		B9	Reluctance to engage
30		B10	Senior officials' attitude of engagement is impossible due to communities' lack of knowledge
31		B18	Negative attitudes towards seldom-heard people
32	B13	B3	No inter-organisational collaboration for fund allocation for community engagement
33		B5	Different community selection strategies make collaborative developments failed/hard
34	B14	B3	No inter-organisational collaboration for fund allocation for community engagement
35		B9	No integrated approach for community capacity building
36		B13	Improper exchange of information
37		B17	Agency-led developments do not incorporate community needs
38		B18	No information exchange between the public and agencies
39	B15	B3	No national-level budget allocation
40		B4	No legal requirement
41		B6	No legal enforcement to establish a proper mechanism for engagement
42		B8	No legal enforcement to impose bottom-up urban planning
43		B9	No legal impact
44		B10	Reluctance to allocate budget for employee training on engagement

45	B16	B3	Political corruption	
46		B4	Politicians have their agendas	
47		B5	Politicians want to include only their supporters	
48		B6	Not allowing officials to form procedures as it would have gone against their corrupted political plans	
49		B7	Political corruptions	
50		B8	Politicians have their agendas	
51		B12	Political followers among practitioners	
52		B18	Political pressure	
53		B19	B17	No time to seek community requirements
54			B18	No time to inform or consult communities in decision or plan making
Bi-directional relationships				
55	B1	B2	Consultation fatigue	
56	B2	B1	Reluctance to attend awareness and community committees	
57	B3	B6	No financial encouragement for community inclusion	
58	B6	B3	No institutional budget allocation as there is no focus on engagement	
59	B15	B16	Political corruption	
60	B16	B15	Politicians not allowing laws to form for inclusive developments	

(b) Interpretations for accepted transitive links by the experts (Phase 2 data collection)

#	Influencing barrier	Influenced barrier	Transitivity cause(s)	Expert clarification
1	B2	B4	B1	Communities' lack of knowledge, skills, competencies
2	B3	B5	B6	Absence of/incomplete institutional framework
3	B7	B10	B3	Little financial provision for community engagement
4	B10	B5	B11	Lack of skilled and experienced practitioners
5	B10	B9	B11	Lack of skilled and experienced practitioners
6	B12	B11	B10	No employee training policy
7	B13	B9	B3	Little financial provision for community engagement
8	B14	B5	B13	Lack of stakeholder collaboration
9	B15	B7	B16	Political corruption
10	B15	B12	B16	Political corruption

(c) Interpretive logic knowledge base for direct pair-wise contextual relationships between the enablers of community inclusion in RSUPD in Sri Lanka (Phase 1 data collection)

#	Influencing enabler	Influenced enabler	Summary of interpretive relationship statement
1		E3	Try to solve problems themselves
2	E1	E5	People with lifelong experience take leadership (senior citizens)
3		E6	Provide valid feedback
4	E2	E6	Effective communication
5	E4	E3	Village unions develop as CBOs
6		E6	Collective feedback
7	E5	E3	Community leaders form CBOs
8		E6	Represent community perspectives
9		E3	Strengthen continuation of CBOs (consultation)
10	E7	E4	Create engaging culture
11		E9	Expertise of field
12		E10	Rapport
13	E8	E9	Develop practical tools to fulfil ground requirements
14	E9	E10	Finance to hire technical experts
15	E11	E9	Action research
16		E12	Encourage the entry of poor locals
17	E12	E10	Financially induced motivation
18	E13	E6	Instant feedback
19	E14	E6	Effective communication
20		E13	Wider communication
21		E18	Virtual collaboration
22	E15	E10	Field workers represent the community at above the village level
23	E18	E9	Provide necessary funding and technical expertise for practical initiatives
24		E11	Generate funds from global sources
25	E19	E11	Charity funds
26		E12	Community capacity building
Bi-directional relationships			
27	E4	E5	Appoint leaders
28	E5	E4	Form village committees

(d) Interpretations for accepted transitive links by the experts (Phase 2 data collection)

#	Influencing enabler	Influenced enabler	Transitivity cause(s)	Expert clarification
1	E1	E4	E5	Attempt to unite for self-develop through community leadership
2	E7	E5	E4	Field workers identify community leaders
3	E14	E9	E18	Promote collaboration among global research labs and local agencies
4		E11	E18	Generate funds from global entities
5	E18	E12	E11	Utilise global aids to encourage local participation

Appendix 8: Elements and Related Propositions of the Proposed Holistic Approach

A Holistic Approach for Fostering Community Engagement in the Decision-Making of Risk-Sensitive Urban Planning and Development	
Element	Propositions
Problem Statement and Goals	<ol style="list-style-type: none"> 1. To empower communities to participate in the decision-making of RSUPD, by building their capacities, skills, and knowledge. 2. To increase community ownership and engagement in developing risk-sensitive urban plans and policies, by fostering collaboration and partnerships among communities, local authorities, and other stakeholders. 3. To reduce the vulnerability of communities to natural disasters and other risks, by incorporating community perspectives and knowledge into the development of risk-sensitive urban plans and policies.
Community Context	<ol style="list-style-type: none"> 1. Demographic & Socio-economic 2. Socio-cultural 3. Education 4. Political stability 5. Vulnerabilities of urban communities 6. Engagement culture
Inputs	<ol style="list-style-type: none"> 1. Lead agency 2. Funding 3. Skilled practitioners (staff) 4. Technical expertise 5. Relevant data, information, and knowledge 6. Time 7. Access to infrastructure and services 8. Political commitment and support 9. Legislative enactments & policy provisions 10. Clear and transparent communication channels 11. Effective leadership and management structures 12. Incentives and recognition mechanisms 13. Robust monitoring and evaluation strategy
Activities	<ol style="list-style-type: none"> 1. Establishing goals and objectives 2. Community recruitment 3. Network with relevant stakeholders and resource mobilisation 4. Recognise the barriers and enablers to engaging communities 5. Establish a continuum of cooperation and partnership activities among stakeholders 6. Conduct a situational analysis 7. Identify community awareness, training and capacity-building needs 8. Select engagement methods 9. Develop an inclusive community action plan 10. Building community capacities and skills 11. Implementing the framed engagement plan 12. Outcome-impact M&E 13. Process M&E 14. Evaluation of the level of community transformation 15. Reporting M&E results and modifications to the existing institutional framework
Outputs	<ol style="list-style-type: none"> 1. Institutional framework 2. Base-line results 3. A community action plan 4. Community training and awareness 5. Community-based risk maps 6. Community-led risk reduction plans 7. Community-led emergency response plans 8. Infrastructure upgrades

	<ul style="list-style-type: none"> 9. Community-based policy and institutional reform 10. Inclusive building codes and standards 11. End-line results 12. KAP survey results
Outcomes	<ul style="list-style-type: none"> 1. Improved knowledge and understanding of disaster and climate change risk and vulnerability among local communities. 2. Enhanced awareness and adoption of risk-sensitive building practices in neighbourhoods, cities and regions, leading to broader impact and replication of successful strategies. 3. Increased community engagement and participation in UPD processes, leading to more inclusive and equitable decision-making. 4. Increased collaboration and coordination among stakeholders involved in UPD, leading to more effective and efficient risk reduction measures. 5. Improved urban infrastructure and services that are designed and built to reduce disaster risk and enhance resilience. 6. Enhanced capacity of local governments to develop and implement inclusive and equitable RSUPD policies, strategies, and regulations.
Impacts	<ul style="list-style-type: none"> 1. Safe, resilient and inclusive cities 2. Inclusive and participatory culture 3. Quality of life
Assumptions	<ul style="list-style-type: none"> 1. The community participants will be fairly selected, including the marginalised and apathetic majority, during the community recruitment. 2. The proposed tool for selecting participatory methods (embedded in the) will be used for selecting participatory methods. 3. Communities have valuable knowledge and perspectives that can inform the development of risk-sensitive urban plans and policies if they are engaged and empowered to participate. 4. Effective communication channels are in place to ensure that community members are informed about the planning and development process and can provide feedback in a timely manner. 5. The proposed KAP indicators will be used during both the situational and outcome-impact analyses.

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