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**Locating the sustainability and resilience multiple: a cross-scalar case study of
the transformative impacts of Sustainable Development Goal 11 localisation**

Philipp Ulbrich

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University of Warwick, Warwick Institute for the Science of Cities
Department of Computer Science
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Inclusion of Published Work

This thesis is submitted to the University of Warwick in support of my application for the degree of Doctor of Philosophy. It has been composed by me and has not been submitted in any previous application for any degree. The work presented (including data generated and data analysis) was carried out primarily by the author. Parts of this thesis have been published as the following full paper by the author:

- Ulbrich, P., Porto de Albuquerque, J., and Coaffee, J. (2018). ‘The Impact of Urban Inequalities on Monitoring Progress Towards the Sustainable Development Goals: Methodological Considerations’, *ISPRS International Journal of Geo-Information*, 8(1), p. 6.

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Abstract

There is little doubt about the correlation between hazard exposure, and urban marginality and informality. Recent global development and risk reduction frameworks, such as the 2015 Sustainable Development Goals (SDGs) and Sendai Framework for Disaster Risk Reduction, encourage urban policymakers to address this risk-development nexus by integrating policy siloes and develop interventions that simultaneously promote social and environmental justice. Localised implementation of such globally defined policy goals, notably through participatory exercises with community members and other stakeholders, was an integral methodological aspect of these frameworks. Yet, the localisation approach for the *implementation* of policies and interventions is not mirrored in *monitoring* progress towards achieving those goals. Currently, the tendency to rely on centrally defined methods and concepts for monitoring, easily measurable proxies and centrally produced datasets with little meaningful community engagement limits the extent to which evaluation of implementation is transformative at the neighbourhood level. Such a fragmented view of risk reduction and urban development in turn perpetuates intra-urban inequalities. This problem is exacerbated in many cities in the global South where rapid and informal urbanisation processes where risk and intersecting inequalities are highly correlated, and with adopted monitoring approaches commonly based on western conceptualisations and assumptions. As a result, monitoring is not informed by local knowledge and misses opportunities to recalibrate and enhance the frameworks' local relevance. Moving from the global to the local scale, and based on interviews with global, national and municipal monitoring stakeholders, detailed discussions with community leaders and observational research in three neighbourhoods in Medellín, this thesis investigates how global urban development and resilience monitoring frameworks are localised, and unpacks the extent to which they have resulted in a representative and inclusive picture of urban marginalised communities' situation in terms of sustainable development and resilience. Overall, the study has produced a set of methodological factors to consider when implementing such monitoring frameworks at the different scales, alongside a surfacing of approaches that might enhance the ability to meaningfully and dialogically translate between the different monitoring scales and strengthen context-relevant and endogenous resilience.

Abbreviations

100RC	100 Resilient Cities Initiative
CCSA	Committee for the Coordination of Statistical Activities
CONPES	Consejo Nacional de Política Económica y Social, the National Council for Social and Economic Policy, the highest national planning authority in Colombia
CRI	Rockefeller City Resilience Index
DANE	Departamento Administrativo Nacional de Estadística, the Colombian National Statistics Office
DHS	Demographic and Health Survey
DROP	Disaster Resilience of Place
GUO	Global Urban Observatory
HLPF	High-level Political Forum on Sustainable Development
IDPs	Internally Displaced Persons
JRC	Joint Research Council
LNOB	The 2030 Agenda's Leave-No-One-Behind principle
NIHR	National Institute for Health Research
NSO	National Statistics Office
NUA	New Urban Agenda
SDGs	Sustainable Development Goals
SDSN	Sustainable Development Solutions Network
UN IAEG Data Revolution	United Nations Inter-agency and Expert Group on the Data Revolution
UN IAEG SDGs	United Nations Inter-agency and Expert Group on SDG Indicators
UNDRR	United Nations Office for Disaster Risk Reduction
VLR	Voluntary Local Review

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Chapter 1. Introduction

In September 2020 torrential rain caused a devastating landslide which ripped through the self-constructed neighbourhood of El Pacífico, located on the steep slopes of the Aburrá Valley at the margins of Medellín, Colombia. There were no fatalities but following a risk assessment and considering the structural damage, the municipal department for risk management recommended that as much as a quarter of the households would need to be relocated. Together with the economic impact of the COVID-19 pandemic on a community whose majority of residents rely on income from self-employment in non-permanent and casual work and for whom it is not possible to work from home, this disaster event severely affected this neighbourhood. In the subsequent weeks the community leaders established a working group, the Action and Recovery Board, to coordinate the response within the community and assist those residents who could not return to their homes, and to act as point of contact for interactions with the various municipal agencies. It was one of the most significant landslides in recent years but not the first time El Pacífico had had to deal with the impacts of a multi-hazard event.

Around the same time, in the low-income self-constructed neighbourhood of San Javier (Comuna 13) on the slopes at the other side of the city, the community committee for habitat met online to discuss how to address the issue of solid municipal waste continuing to build up in the neighbourhood's drainage canals and the accumulation of building rubble from repeated construction activity on now empty and difficult-to-access plots further up the neighbourhood which had been affected by landslides in the previous years. The neighbourhood's risk continues to rise because of these developments and is further enhanced by a growth in population, with displaced population, either internally or internationally (mostly Venezuelans) all looking for opportunities to build a life on the densely populated slopes of Colombia's second largest city.

These two examples illustrate the interdependence between risk and development and point to the differences in the interpretations of these two concepts between neighbourhoods, which is significant in cities with high intra-urban socio-spatial inequalities, such as Medellín. In response, global development and risk reduction programmes, notably the 2030 Agenda, the Sendai Framework for Disaster Risk Reduction, the UN Sustainable Development Goals and the Rockefeller 100 Resilient Cities programme, have called on governments at all levels to blend resilience and development through exploiting the opportunities of disaster

preparedness, response and reconstruction to enhance and accelerate sustainable and equitable development.

However, in such contexts a noticeable implementation gap in the delivery of resilience is evident not only because of the lack of resources but also due to complex social, economic, political and institutional reasons. In Medellín, despite significant investment and institutional capacity building programs in the name of urban resilience, against a range of acute shocks, including landslides, actions and interventions still appear inequitable and are either largely concentrated in the more prosperous neighbourhoods and business districts or fail to address the concerns of the local community (Smith *et al.*, 2020). This is despite such programs being centred upon reducing inequality in access to basic services and risk exposure, implying that there is a disconnect between official risk management and development policy and the differential needs of marginalised communities. Moreover, in neighbourhoods which are self-constructed and where state legitimacy is historically low, this implementation gap and *responsibilisation* of communities risks further disenfranchisement. It also relates to questions regarding the politics of urban resilience and the representativeness of urban measurement frameworks. Together, these considerations represent the conceptual base of this thesis, which are 1) the multiple understandings and framings of urban resilience and sustainability, and 2) the role and representativeness of city-level measurement frameworks, particularly the extent to which the latter might support urban transformative capacity or perpetuate patterns of unequal policy interventions in the name of urban sustainability and resilience. Each of these concepts relates to discussions in theory to which this thesis contributes, and which are presented in chapters 1 (this chapter – sections 1.1 to 1.4), chapters 2 and 3. The following section starts with the risk-development nexus, which refers to the interlinkages among the spectrum of factors mediating resilience and sustainability, the notion that these concepts require contextual grounding – which effectively leads to challenges in grasping them, as the discussion regarding the emerging urban resilience and sustainability discourses in section 1.2 will show. These challenges in turn lead to multiple understandings (section 1.3) and a gap between discourses and effectiveness of implementation of urban resilience and sustainability policies.

1.1. The risk-development nexus

The risk-development nexus relates directly to the by now well-established argument that disasters are socially caused. Already in the early 1990s Blaikie et al. (1994) explained how

the complex interactions between the international political and economic systems, social systems and power relations, and socio-demographic characteristics determine inequalities in access to opportunities and exposure to hazards. More recently, many illustrated this nexus by pointing to the impact of the global pandemic with COVID-19 related mortality rates being significantly higher in low-income urban areas. As chapter 7 shows, the lack of government presence in different moments of neighbourhood development has resulted in informality in the various dimensions of neighbourhood life. This most notably relates to the self-construction – often, and especially in the beginning, implying physical structural vulnerability of houses, to governance processes – with informal actors, and to income generation – such as the self-employment as street vendors. It can thus be said that in both the positive and negative sense, out of pragmatism, entire worlds are built on informality (if not most of the world), which is a result and at the same time, a perpetuating mechanism of, the risk-development nexus.

Thoughts on the risk-development nexus are prominent in critical disaster studies and closely linked to resilience theory. With a call to “get beyond frameworks” in disaster risk reduction and emphasising that words matter, Wisner (2020) argued that an unreflective operationalisation of *resilience* and *disaster risk reduction* in global frameworks has resulted in superficial gestures at best and, at worst, in the concepts being invoked for regressive policies. For example, with the monthly government allocation of 600 Brazilian Reals (75 British Pounds) as part of a COVID-19 relief effort, only accessible through an online application form, in areas where many rely on accessing internet at a neighbour’s home or at the community centre, Ikemura Amaral et al. (2020) provide a topical example of the risk-development nexus in operation. Here they have argued that “Brazil’s so-called ‘invisibles’ will need more than resilience to redress the unequal impacts of COVID-19” (ibid.: np) and that the government’s reliance on the communities’ ability to self-empower is a risky strategy, especially in a pandemic. They have thus called for substantive change towards risk reduction by “guaranteeing better and stable income, as well as higher living standards for favela residents”.

These examples resonate with Coaffee’s (2013) warning against *responsibilisation*, in that discourses of community-driven resilience and stakeholder participation practices are in danger of being co-opted by the state to reinforce hegemonic views and to inadvertently justify a “low-cost way for the state, and the elites it represents, to off-load the duty of care and cost of social protection onto risk bearers themselves” (Wisner, 2020) (p. 244). Similar to the arguments found in the resilience literature, Wisner (2020) also points to the urban policy silos which result in risk reduction efforts that do not “engage with all domains that touch people’s lives”, and

therefore ignore the “deeply rooted social processes which make people vulnerable” (p.241). Importantly, Wisner also proposes to move away from the traditional focus on discourses of *risk reduction* and towards better understanding the processes of *risk creation*. This re-framing questions development processes which are likely to manifest in risk-blind interventions and thus perpetuate the unequal allocation of risk in the name of development.

1.2. Emerging urban resilience and sustainability discourses and city-level assessments

With their integrated approach, the Sustainable Development Goals (SDGs), the Sendai Framework for Disaster Risk Reduction (SFDRR) (UNDRR, 2015) and the New Urban Agenda (NUA) (UN-Habitat, 2016a) have emerged in recent years to address the risk-development nexus from three interlinked perspectives. Echoing Wisner (2020), the United Nations Office for Disaster Risk Reduction (UNDRR) (2021; Reduction, 2021) acknowledges that nexus by stating that “disasters threaten development, just as development can create disaster risk...and that the desired outcomes of the SDGs and the Sendai Framework are a product of complex and interconnected social and economic processes with overlap across the two agendas” (np). By repeating the disaster outcome and management indicators in Sustainable Development Goal 1 (No Poverty), Goal 11 (Sustainable Cities and Communities) and Goal 13 (Climate Action) the 2030 Agenda signals the links between disaster risk and human development, urban and human settlement planning and environmental justice. It further emphasises the need for embedding disaster risk reduction strategies and plans into development plans at all levels. The SFDRR specifically mentions the nexus at the community level by arguing that in the recent decades exposure has increased,

“...thus generating new risks and a steady rise in disaster-related losses, with a significant economic, social, health, cultural and environmental impact in the short, medium and long term, especially at the local and community levels. Recurring small-scale disasters and slow-onset disasters particularly affect communities.” (UNDRR, 2015)

To strengthen resilience the SFDRR thus proposes for UN Member states and stakeholders at all levels to implement integrated and multi-policy sector measures, including *structural* changes, which resonates with Wisner’s (2020) concern regarding the superficiality and the lack of political will for fundamental and mainstreamed transformations.

The New Urban Agenda (NUA), framed as sustainable development action plan and addressed at city level stakeholders, takes a more explicit view regarding intra-urban inequalities and risk differentials, by committing the international community to

“implementing integrated, age- and gender-responsive policies and plans and ecosystem-based approaches in line with the SFDRR 2015-2030 and by mainstreaming holistic and data-informed disaster risk reduction and management at all levels to reduce vulnerabilities and risk, especially in risk-prone areas of formal and informal settlements, including slums...” (UN-Habitat, 2016a). Importantly in the context of the El Pacífico case noted above, the NUA suggests that disaster risk reduction should promote the “upgrading and rehabilitation” of informal settlements.

Another city level framework which aims to deal with the risk-development nexus equitably and in an integrated manner is the 100 Resilient Cities Initiative¹ (100RC) (Arup, 2014). With its four dimensions (Health and Well-being, Economy and Society, Infrastructure and environment, Leadership and strategy) 100RC also emphasise the need to connect between human development (people), institutions (organisation of cities), spatial planning and environment (place), and knowledge (processes and interactions between stakeholders). The twelve thematical goals into which these four aspects are divided signal a conscious attempt to operationalise the risk-development nexus, as the location of the goal of *Diverse Livelihoods & Employment* within the dimension of *Health & Wellbeing* would suggest. The weighting and translation into action plans is the task of a dedicated Resilience Office and Chief Resilience Officer, which the Rockefeller Foundation funded for two years in the cities that were selected. In Medellín’s resilience strategy (MedellínResiliente, 2016), the focus is upon creating both an equitable city and one that is safe and sustainable: “Medellín needs to identify the barriers that exist in the implementation of land management regulations, [and] strengthen community participation in disaster risk management” (p.9). Landslide risk is listed as one of the city’s acute shocks.

Despite these frameworks’ promising attempts to address the risk-development nexus, their capacity to transform risk-development governance has been questioned. As the following chapters will show, the global agendas (SDGs and SFDRR) might risk being stuck in the middle between vague principles which risk non-transformative implementation and prescriptive blueprints with limited relevance which are handed down (Young, 2017). Similarly, Satterthwaite (2016) suggests that the NUA might represent an unfunded mandate, calling on cities to implement but without enabling their ownership of the agenda. With 100RC being developed with a professional services company, Coaffee and Lee (2016) in turn suggest that it

¹ The 100RC programme was funded by the Rockefeller Foundation until 2019. Medellín, the case study city for this thesis, continues to operate a Resilience Office as an outcome of that programme, which is why it is included here.

coincides with the professionalisation of resilience as it requires experts for setting up its measurement framework. Together these critical voices imply that while they address the risk-development nexus, these frameworks gloss over the politics of implementation, which the following section discusses.

1.3. The multiple meanings of resilience

Resilience performs a multiplicity of roles across scales and sectors, and, being presented as both process, trait, organising principle, or outcome (Chmutina *et al.*, 2016; Meerow and Newell, 2016; Moser *et al.*, 2019), its conceptualisations even encompass dimensions of time. This has increased the importance of explicitly asking the question of the resilience multiple, which is “a politics that has to do with the way in which problems are framed” as it “can be many different things, imagine many different futures and inspire different interventions” (Simon and Randalls, 2016) (pp. 3, 6). Its ubiquity and a perceived implicit, and often unquestioned, familiarity with the concept represent a challenge, especially considering the ever-increasing trans-disciplinary nature of urban interventions and policies that are carried out in its name. As Moser *et al.* (2019) suggest, putting this boundary-spanning concept with its differing understandings across disciplines into context is essential for developing an insight into the different conceptual departure points of the stakeholders from various sectors and scales. Such an insight is required for a meaningful dialogue, and for a collaborative and inclusive development of strategies and interventions that sustainably enhance the wellbeing of urban residents.

There are already several contributions which constructively deal with the tension between the multiple interpretations and the uncritical adoption of the term for regressive policies. With their emphasis on resilience trade-offs, Chelleri *et al.* (2015) argue that awareness of the temporal and spatial scales implicit in resilience strategies is key for a critical evaluation of policies proposed in the name of resilience. While temporal trade-offs refer to differences in the extent to which policies aim at recovery, adaptation or transformation – often implicitly and simultaneously –, trade-offs in scale may be of vertical and horizontal nature. Adaptation at a higher level may mean transformation (not necessarily always of positive nature) at a lower scale while heterogenous vulnerabilities (or inequalities) may manifest in differential effectiveness of interventions across neighbourhoods with similar appearance (*ibid.*), if policies are applied without accounting for “finer scaled differences in adaptive capacity” (p.193).

Taking a normative stance and examining resilience from a rights and entitlements angle, Ziervogel et al. (2017) argued that to make the trade-offs visible in resilience policies, and “for resilience to meet its potential as a progressive social agenda” (p.129), a focus on the degree to which claims to basic rights are fulfilled is needed. They also related resilience to sustainable development by arguing that the rights lens for resilience would align risk management with “struggles of progressive development” (ibid.) and promote resilience as catalyst of sustainable development.

In the process of defining equitable resilience Matin et al. (2018) combined both lenses – the resilience multiple and trade-offs, and the rights and entitlement approach. They argue that “what resilience does on the ground” is mediated by subjectivities, “the lived experiences and affective states of individuals” (ibid.: pp. 197, 199) derived from their intersectional attributes, and their interaction and experience with hazards, amongst other socio-spatial factors (ibid.). Accordingly, subjectivities thus drive the differential framings of resilience, and by extension the differential realisation of rights in the form of vulnerability outcomes and processes of resilience (ibid.). With resilience being conceived as operational concept for enabling sustainability through transformation, it ultimately leads to differential development scenarios (Chelleri *et al.*, 2015), and has implications for the way interventions to address the risk-development nexus are implemented.

The debate regarding the resilience multiple has additional significance for urban resilience and sustainability frameworks when they are applied in the global South. Scholars, especially from critical disaster studies (e.g., (Lizarralde, 2019; Gaillard, 2019; 2020), suggest that while countries in the global South are more severely affected by disasters, conceptualisations of risk, resilience and development are dominated by northern ideas. For Gaillard (2019) “the hegemony of Western ontologies and epistemologies in disaster studies... has sustained decades of international policies that have encouraged the transfer of experience and resources from the West to the rest of the world, which ... often lack the ability to fully capture the reality of people’s everyday life...” (np). In such situations local tacit knowledge is often overlooked, as overseas researchers and decision-makers filter the reality of developing countries through their own cultural assumptions and values. This has commonly led to local explanations and traditional coping mechanisms being usurped and replaced with policies and projects based imported concepts like resilience that do not meet local needs and expectations.

Gaillard (2019), for example, further warns that as a result, standard toolboxes for vulnerability assessments that were created in northern contexts might be inappropriate and ineffective. These discussions in turn mirror debates regarding the ontological and

epistemological politics inherent in classifications that *make up people* (Hacking, 2006) or result in a *knowledge effect* by creating the phenomena to be measured (Engle Merry, 2016) as discussed in detail in Chapter 3. Relating these observations to “development” initiatives, Porto de Albuquerque et al. (2013) argued that the assumption that technoscientific artefacts, such as indicator frameworks, can be parachuted into global South contexts (albeit with minor adaptations), invisibilises local practices, thus risks increasing vulnerability. Here, the view that “localisation” of indicator frameworks merely refers to disaggregation, is being questioned.

1.4. The implementation gap

Section 1.3 argued that sustainability and resilience ideas have “developed incrementally and in a context-specific way, reflecting the emergence of different policy priorities” (Coaffee and Lee, 2016) (p. 60) at different scales and in different locations. These discrepancies in the operationalisation of concepts relating to sustainability and resilience have resulted in an implementation gap. It is thus worth highlighting a number of emerging tensions within the body of literature that have significant implications for its implementation in situ.

Implementation challenges have noticeably emerged around ideas of community engagement and empowerment where resilience discourses have sought to localise resilience by further decentralising responsibility to the community. While this approach has the potential to empower and give voice to conventionally less dominant constituents by “drawing on a full range of individuals, professionals and community groups into decision-making at a range of spatial scales” (Coaffee, 2013) (p. 243), the extent to which the above benefits materialise depend on *how* this engagement is realised. This understanding also emerges from Chmutina et al.’s (2016) analysis of resilience discourses in the UK. These authors find that resilience has evolved in a neoliberal fashion from “governmental concept to public responsibility” (ibid.: p.76), indicating a retreat of the state. However, Chmutina et al. (2016) also find that this framing might be a selective retreat in the sense that it is differentiated by scale. Their findings suggest that localisation meant that the *government* level still maintained a broad understanding of resilience to address “wicked issues” with “complex governance”, while at *community* level the resilience-spirit was invoked in the form of disaster response (ibid.). This point is of particular importance for this thesis which investigates the cross-scalar implementation of the SDG 11 monitoring framework. It also resonates with Kaika’s (2017) critique of urban resilience framings and policy frameworks which “focus on how to make citizens more resilient *no matter*

what stresses they encounter” [original emphasis] and this author’s call for identifying the actors and processes that produce the need to build resilience in the first place” (p.95).

The ambivalence of roles and responsibilities of government and communities in turn echoes Coaffee and Lee (2016) who detect a lack of integration between scales in the form of the limited number of “attempts to link macro-level changes in society with micro-level resilience strategies” (p.67). Here resilience discourses often encourage transformation towards horizontal integration and localised, socio-cultural understandings (Coaffee and Lee, 2016), which, as White and O’Hare (2014) point out, result in heterogenous approaches that “may be difficult to translate into practical outcomes” (p. 944). This observation goes some way in explaining why the top-down interpretation assigned to the community level appears to manifest as reactive. To overcome this conceptual inertia Kaika (2017) suggests for research and policy to “incorporate social processes (including the complex role of communities, leadership, social learning, networks, institutions, etc.) into future methodology design and policy practices” (p.95).

1.5. Situating the thesis

The example of the challenges the two communities in the beginning of this chapter continue to face illustrated the interlinkages between risk and development and the cumulative and context-specific socio-spatial factors that mediate the relevance and effectiveness of resilience and sustainability frameworks. Considering these initial observations, two key bodies of literature to which this thesis contributes were identified (see figure 1 further below). The preceding sections in this chapter discussed the gaps in the first (the resilience literature) relating to the interpretations of resilience from various angles in theory and in practice, with their implicit assumptions regarding the interlinkages and the dynamic relationship between of factors of risk and of development (the risk-development nexus). Commentators pointed to the need to take a critical-political approach to resilience to constructively engage with its multiple, which is necessary to bridge the gap between discourses and implementation of resilience. However, a gap in literature still exists regarding systematic studies that provide methodological entry points to conceptually deal with the multiple beyond individual examples of trade-offs (such as Chelleri et al., 2015). Thus, while it is well established that resilience and sustainability are political terms and that awareness of the trade-offs implicit in their various framings is an important step for effective implementation, systematic approaches for this political challenge are still needed.

Given their global rollout, this thesis takes urban resilience and sustainability measurement frameworks and their methodologies as conceptual vehicles for systematically materialising and engaging with the multiples and their trade-offs across scales. In doing so it contributes to discussions (presented in chapter 2) regarding the purposes and representativeness of these measurement frameworks when applied (*localised*) in different socio-spatial and institutional contexts and travelling across scales. With chapter 2 presenting the debates *about* measuring sustainability and resilience – guided by the question “why monitoring?”, chapter 3 focuses on discussions *of* measurement, thus relating to debates about the “how”. This includes the political character of resilience and sustainability monitoring localisation. Here the discussion particularly focuses on the tension between the call for transformation inherent in the urban resilience and sustainability agendas (discussed in section 3.3) and a necessary yet often uncritical methodological operationalisation of these concepts with varying modes of localised measurement methodologies – especially referring to the main focus on data disaggregation in existing literature data in the name of inclusivity and representativeness, which in turn is likely to affect equity in policy making (or *implementation*). Together, chapters 2 and 3 illustrate the second area of contribution to theory, which relates to the localisation of resilience and sustainable development measurement (see figure 1), thus complementing the discussions regarding the resilience and sustainability multiples, leading to the research question – ***To what extent are global urban resilience and sustainable development monitoring frameworks transformative when applied across scales?***

The thesis addresses this research question with the localisation of the Sustainable Development Goal 11 (SDG 11) monitoring as case study. As cross-scalar application of a measurement framework from the global to the neighbourhood level, this case study enables an insight into how the concepts travel across scales and illustrates the drivers – and the implicit cross-scalar trade-offs of the multiples materialising at the different scales. Medellín (and thus, Colombia at the national level) is the empirical focus for this investigation into the multiple, since the city is often referred to as a “textbook” example of global urban resilience and sustainability frameworks (it is a one of the Rockefeller Foundation’s 100 Resilient Cities and a UN-Habitat pilot city for measuring SDG 11 at city level – also see section 4.2 regarding the choice of the case study approach), while experiencing persistently high levels of socio-spatial inequality.

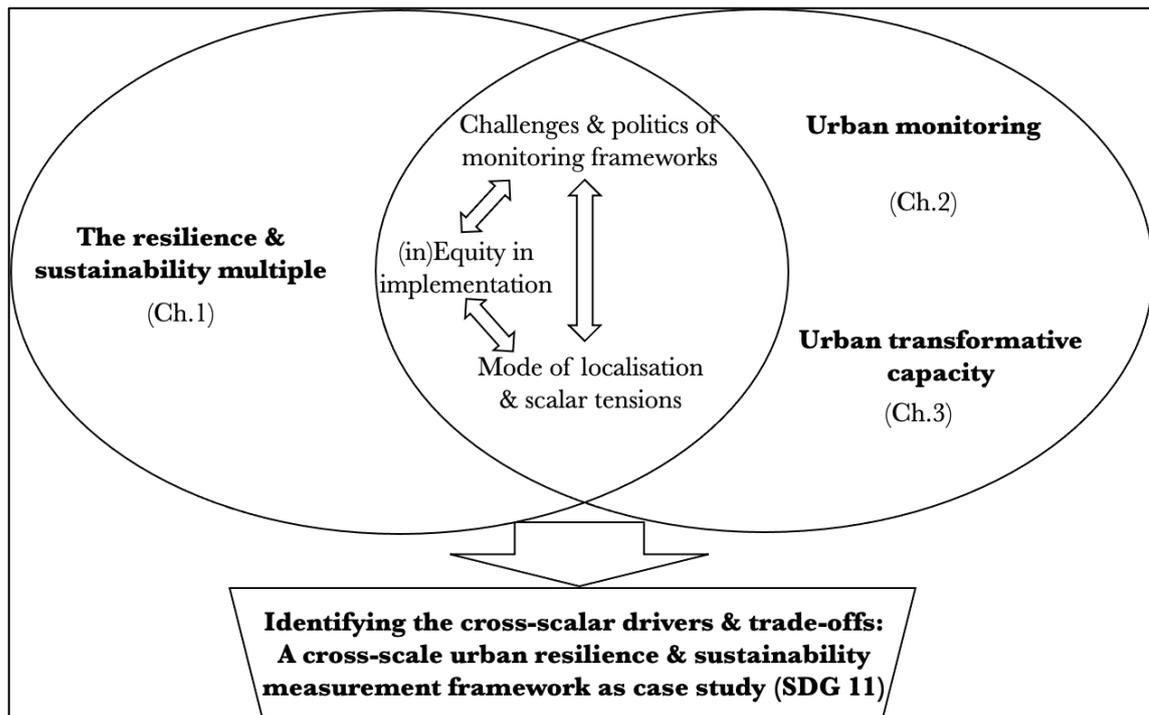


Figure 1: Situating the thesis within the key conceptual strands

With research ideally being driven by personal motivations it is worth briefly describing the wider context for the PhD topic, as it might be helpful to reflect on the extent to which undertaking the PhD have addressed these wider motivations. One was my involvement with proposals for smart cities and so-called urban renewal in India, Angola and Mexico prior to starting the PhD. Observing the high levels of intra-urban inequalities and comparing them with the proposed masterplans and visions for urban renewal while also visiting Comuna 13 as a tourist (as an example of neighbourhood improvement rather than renewal), questions regarding the multiple meanings and manifestations of smart and resilient cities – for whom and how? – arose. The realisation of this multiple was a key moment since these two buzzwords were routinely (and continue to be, as Coaffee and Lee, 2016 reminded us) used for mobilising resources yet without explicitly spelling out their inherent socio-environmental trade-offs. The second moment which shaped the area of research was learning about the *neighbourhood effect* during my involvement in a research project² on healthcare provision in so-called “slums” in five countries in Asia and Africa in the early stages of the PhD. The neighbourhood effect refers to the correlation of a community’s health outcomes with a geographic area due to shared socio-spatial and behavioural characteristics (Lilford *et al.*, 2019) – yet despite these shared characteristics these neighbourhoods are “rarely identified in national censuses, which form the

² the NIHR Global Health Research Unit on Improving Health in Slums

sampling frames for national surveys” (Oyebode, 2016). Extending this observation to resilience, the question arose regarding the extent to which this observation might also apply to the intersection between shared differential socio-spatial criteria and risk-increasing or mitigating community practices in self-constructed neighbourhoods. The third moment shaping the objectives of this thesis was my participation in a UN-Habitat workshop for the preparation of the SDG 11 Synthesis Report to the 2018 High-Level Political Forum. Here I observed the discussions among UN-Agency delegates, sector policy experts and other global level monitoring stakeholders related to SDG 11 and gained an appreciation of the monitoring framework as an outcome of a negotiation process and the need for a pragmatic approach in designing it. These observations framed the following objectives for this thesis, which the following section presents.

1.6. The current study

1.6.1. Objectives

The overall research question above is unpacked in three distinct objectives that focus upon the operationalisation of sustainability and resilience monitoring frameworks in situ:

1. The first objective investigates the processes of *harmonisation* involved in aligning monitoring methodologies at different scales. Whilst global sustainability and resilience frameworks require a degree of comparability, the question addressed here is from a global perspective regarding the extent to which their representativeness might be affected, especially in cities with marginalised neighbourhoods who live with a high degree of risk.
2. The second objective is to investigate the processes by which methodologies advanced at the global level are *formalised* at the national and municipal levels. Here, the research investigates the extent to which the translation of global methodologies and concepts at these scales fixes existing conceptualisations or triggers new practices and the inclusion of new actors in monitoring. This relates to questions regarding the existence and causes of methodological inertia or agility in the ways the government authorities, and other agencies involved in the management of environmental risk and sustainability, currently generate, collect and use data to inform the manifestations of global sustainability and resilience frameworks at their scale.

3. The third objective takes the community level perspective by exploring *community interactions with the risk-development nexus*. This will unpack how communities living in marginalised neighbourhoods have developed various approaches to understand their own risk and planning possibilities, and how different manifestations of inequality, informality, and neighbourhood practices of resilience help mediate their dialogical potential to reframe conceptualisations of the risk-development nexus implicit in the global and municipal monitoring practices.

1.6.2. Approach and Methods

With the aim of investigating the transformative potential of the cross-scalar application of global urban sustainability and resilience frameworks, the approach to address these three objectives is sequential across the scales. Considering the above debates regarding the resilience multiple and its role as mediating factor for the extent to which such frameworks are transformative, this research focused on the moments and factors of scalar translation. Within the context of Sustainable Development Goal 11 (sustainable cities and communities) and its indicator framework it adopted a case study approach, using document analysis, semi-structured interviews, and participant observation as methodological tools. These were applied for investigating the implementation of SDG 11 monitoring at the global level, Colombia for the national level, and Medellín for the municipal level, with three neighbourhoods in Medellín with histories of marginalisation (El Pacífico, Moravia and San Javier – Comuna 13) for the comparison of on-the-ground-reality and experienced inequalities. The outcome of the research is an understanding of the critical factors in the implementation of monitoring that might contribute to perpetuating inequalities at the different scales.

1.6.3. Structure of thesis

This thesis comprises nine chapters, with chapters 1 to 4 providing the conceptual and methodical foundation, and framing. The empirical study spans across chapters 5 to 7. Chapter 8 brings the empirical insights together in light of the conceptual discussions, and chapter 9 presents a summary, the contributions to theory, limitations and suggestions for further research.

With the conceptual basis of the urban resilience and sustainability literature set out in Chapter 1, Chapter 2 compares the purposes of urban monitoring which have been identified

in the literature to the urban sustainability and resilience monitoring frameworks which are currently being applied. It provides a discussion of the critical issues and the resulting challenges in the design and application of such monitoring frameworks and ends by pointing to the methodological scalar factors that represent tensions and affect the design and implementation of monitoring frameworks for cities.

Chapter 3 conceptualises localisation (i.e., translation across scales). It argues that unlike implementation (i.e., policy making and design of interventions) there is limited guidance as to how to maximise the transformative potential of the localised monitoring frameworks. Based on literature on transformation and critical pedagogy it further proposes to view the localisation of SDG 11 monitoring frameworks as thematic investigation and discusses the mechanics which might lead to interferences in the scalar translation and which might perpetuate regressive outcomes, especially when the frameworks are uncritically transferred from the global North to the global South. The chapter acknowledges the democratisation of urban monitoring, which is enabled by enhanced citizen participation in knowledge creation for development and risk management and reduction. It however also questions the extent to which such approaches to citizen engagement are truly empowering.

Chapter 4 discusses the considerations related to the choice of the case study as method, critical methodological issues which were considered during the research, and the methodological tools which were applied.

Chapter 5 is the first empirical chapter. It investigates the extent to which the global SDG 11 framework accounts for spatial intersecting inequalities. The chapter identifies conceptual and practical implementation gaps which might perpetuate inequalities, related to indicator target definitions, the selection of parameters, and data practices in the form of datasets and technologies used.

Chapter 6 analyses the national and municipal translations of the SDG 11 monitoring framework. It does so by starting with a horizontal analysis, by assessing the transformative capacity of the localised SDG 11 monitoring frameworks in the form of ten municipalities' Voluntary Local Reviews. This is complemented by a vertical analysis that compares the transformative capacity of global-to-national-to-municipal localisation, with the examples of Colombia and Medellín. The third component of this chapter is a meta-analysis, which draws on interviews at the national and municipal levels to identify the socio-political factors which shaped localisation and thus mediate the transformative capacity of this exercise and its outcome.

Chapter 7 focuses on the community understanding of their risk and planning possibilities through in-depth analysis from three different neighbourhoods in Medellín. By analysing their governance processes of past episodes of mobilisation and current discourses regarding risk, development and resilience, the chapter identifies entry points to bring the top-down frameworks into dialogue with community processes.

Chapter 8 revisits the multiple interpretations of resilience and sustainable development and discusses the scalar trade-offs regarding transformative capacity at each step of localisation. It proposes a process rather than product view of indicator localisation, and based on the empirical research, suggests a way forward to reframe SDG 11 indicator localisation for an enhanced transformative impact, or at least increased sensitivity to trade-offs that are inherent in this process.

Chapter 9 concludes with a summary and by presenting the major findings in response to the research objectives and the thesis' contributions to theory. It ends with a critical reflection on the limitations of this study, and points to opportunities for future research.

Chapter 2. Urban monitoring and the risk-development nexus

Having described the core tension between the risk-development nexus and implementation of global development governance frameworks in the preceding chapter, Chapter 2 analyses the approaches to monitoring as well as the challenges with effectively and meaningfully translating global urban monitoring frameworks to the neighbourhood level. Based on literature, the chapter explores the extent to which the focus of the risk-development nexus can be viewed differently, which is an issue of particular importance in cities with a high degree of socio-spatial marginalisation.

The chapter begins with an analysis of the scholarly discussion of the reasons and aims of urban monitoring, including the conceptual context of global governance for sustainable development through goals and debates on assessing urban resilience and disaster risk, and on the link between monitoring and the various framings of resilience. It also draws on resilience literature and discusses the role of trade-offs, as the latter could contribute to perpetuating inequalities, when different understandings of resilience are uncritically built into monitoring frameworks for risk and development (Section 2.1).

Following this, section 2.2. analyses different monitoring approaches for sustainable development and risk. These include the governance frameworks analysed the introduction (the SDGs, the SFDRR, 100RC) as well as others, notably those that aim to account for differential human vulnerability. The discussion focuses on characteristics such as their scale and level of abstraction, explicit or implicit considerations regarding their applicability to urban contexts in the global South, as well as the association of datasets with specific indicators (e.g., regarding proxies) and the role of the different stakeholders in monitoring. While the first part of the next chapter (Chapter 3) will unpack the conceptual mechanics underpinning the localisation challenges, the analysis in the second part of this chapter highlights the potential for challenges in monitoring localisation at city level as well as the reduced representativeness in attempts to directly translate these monitoring frameworks to urban contexts in cities with high levels of intersecting intra-urban inequalities.

2.1. Why monitoring?

Chapter 1 illustrated the extent to which both urban resilience and sustainable development are contested concepts. Global indicator frameworks to measure them also appear to suffer from similar inherent tensions. They have emerged as result of political negotiations

(for example, in the case of the SDGs) (Pintér, Kok and Almassy, 2017), expert interviews and scientific literature (for example, the Rockefeller City Resilience Index) (Coaffee and Lee, 2016), but have also been accused of reductionism and over-simplification with varying degrees of arbitrariness in the choice of parameters or weighting. Yet again, in many cases their information needs are so demanding that assistance from professional services is often required (ibid.) while their work is highly political and their impact consequential.

How then can we develop a critical understanding of global monitoring frameworks for urban resilience and sustainable development and consider the extent to which they impact upon local spatial inequality? The point of departure might be to weigh the reasons for developing indicators against the extent to which they are able to fulfil this role. Given that there is no general agreement on what to measure, how to measure it, and to what end (Cutter, 2016), we might find answers in analyses of resilience indicators and sustainable development frameworks. The question therefore is not how these frameworks frame urban resilience and sustainability – rather, what do authors say about why these concepts have been measured in different contexts?

In their analysis of the challenges with operationalising resilience, Prior and Haggmann (2014) suggested five reasons for measuring, which are to 1) characterise resilience, 2) raise awareness, 3) allocate resources, 4) build resilience, and 5) monitor policy performance (p. 284f), to which Coaffee and Lee (2016) added learning and advocacy. These correspond to Hák et al.'s (2016) view, who wrote in the context of SDG governance and relate the indicators to the policy cycle. They argued that indicators should support policy formulation, policy legitimisation (both requiring articulation and advocacy), and evaluation (mirroring monitoring policy performance). In rolling out many centrally managed policies, monitoring is often driven by funding being made conditional on quantitatively measurable outcomes of project success and indicators of productivity. Here policy makers and funders seek to obtain a what is perceived to be an unbiased and truthful account of interventions, to establish “evidence-based” correlations and comparisons, and to enhance accountability (Engle Merry, 2011). Cutter (2016) complemented this top-down view and puts these functions into relation to scale by suggesting that top-down approaches respond to the need for understanding spatial variability and are used for resource allocation and monitoring progress while bottom-up monitoring frameworks, which incorporate local understandings of resilience, are more suitable for monitoring change and generating community buy-in (ibid.).

The importance of mobilisation of supporters in monitoring and goal-setting to which Young (2017) referred, brings the indicators’ political aspect to the fore. Pointing to the their

inherent politics, Janoušková et al. (2018) saw the main functions of sustainability indicator frameworks in the communication of evidence for decision-making, the stimulation of new ideas and viewpoints, and social learning, which, they argued, is only possible if the degree of abstraction is adequate and understandable to the respective target audience. This observation is a reminder that abstraction for developing a model to assess urban resilience and/or sustainability is a political activity, and while the conundrum in which Prior and Haggmann (2014) saw the resilience modeller – i.e. in finding the right balance between the level of simplification and proximity to real world – cannot be solved, strategies to deal with such a dilemma can indeed be identified (Batty and Torrens, 2005). After all, a key feature of indicators relates to “their capacity to convert complicated contextually variable phenomena into unambiguous, clear, and impersonal measures” (Engle Merry, 2011).

Although the political view of indicator frameworks is not a main concern of their contribution, Prior and Haggmann (2014) also suggested in their concluding remarks that “the operationalisation of resilience [in the form of indicators; comment added] not only represents a major methodological challenge today, but also highlights a political challenge” (ibid. 296). In their attempt to further unpack this challenge, and echoing the discussion regarding implicit differences in the interpretation of resilience (Simon and Randalls, 2016; Meerow and Newell, 2016), Hák et al. (2016) further emphasised the need to be explicit about the relevance of indicators, more specifically the relevance of what (referring to the thematical area) and for whom. These authors defined relevance as “the [indicator’s] content and suitability of the indicator to measure the phenomenon considered” (ibid: 569), which is mediated by the accuracy of the underlying assumptions about the latter (ibid.).

Considering the above-mentioned arguments regarding the monitoring frameworks’ function to raise awareness, their role as instruments of advocacy, as well as of legitimisation of often implicit views about relevance, an important aspect of monitoring and indicator development is their ability to stimulate conceptual reframing and agenda-setting, or at least to promote engagement with the concepts they claim to represent. The former is the case with resilience broadening the risk management paradigm, for example in order to extend to community disaster resilience (Cutter, 2016). It is also the case with sustainability, a term whose addition to development (as in the Millennium Development Goals) signalled a renewed emphasis on development criteria other than economic progress and of interlinkages and trade-offs among the domains (Kanie *et al.*, 2017a). This argument provides further weight to the view that monitoring is instrumental for implementation (Pintér, Kok and Almassy, 2017), and that it goes far beyond providing input for tracking progress, especially considering the role of

comparability as mobilising factor in non-binding sustainability and resilience policy frameworks, such as the SDGs (Biermann, Kanie and Kim, 2017).

Representing the need to establish measurability and going further than describing concepts, as Prior and Hagmann (2014) suggested, this argument is also related to the creation of knowledge in an ontological sense where indicators create their phenomenon for previously varyingly interpreted concepts. With the example of the British colonial authorities defining the hitherto non-existing categories for the “untouchable” caste in India for the purpose of conducting a census, Engle Merry (2011) referred to this process as the *knowledge producing effect*, which leads to categories that subsequently become *fixed*, “taking on permanent existence as a form of knowledge” (ibid: S84). Although not referring to it as such, Pintér et al. (2017) provide another example by arguing that the creation of gross domestic product (GDP) as indicator actively shaped the economic-growth focused conceptualisation of development. The *knowledge producing effect* (discussed in more detail in Chapter 3) is thus particularly important for policy concepts that are still contested while being operationalised by global institutions and networks – such as those associated with sustainable development and urban resilience.

2.2. Monitoring approaches in praxis

Having reviewed the scholarly views on the reasons for monitoring these concepts, what does grey literature in sustainable development and urban resilience say about the reason for monitoring and their approach to it? In this sense, this section does not provide a critique of the frameworks’ technical tools and toolsets, it rather focuses on exploring their approaches for implementing them, or as Levine (2014) put it – “measuring resilience [and sustainability; comment added] is one of the few times when the devil is not in the detail, but in the attention to the detail” (p. 5).

At the global level, the Sustainable Development Solutions Network (SDSN) suggested that the SDG indicators are framed as management tools for tracking progress in the form of a report card, for raising awareness, allocating resources and establishing accountability (SDSN, 2016). Here the indicators are tools for Member States to report to the annual High-Level Political Forum on Sustainable Development (HLPF), as an input to the HLPF’s role as “orchestrator” and its mandate to follow up and review progress of governments’ commitments in SDG implementation (Bernstein, 2017). With three monitoring levels (i.e. the global, regional/sub-global, and national; and a thematic domain focusing on interlinkages) that are to be operationalised in an integrated architecture (UNECE, 2018), scale is a key consideration,

although monitoring is to be country-led, and thus focuses on the national level (UNGA, 2015). Mirroring the scholarly views reviewed above, here the emphasis is on methodological *harmonisation* among National Statistics Offices (NSOs). Importantly for this research into the multiples embedded in resilience and sustainability monitoring across scales, it is proposed for the NSOs to use existing and official data sources and operationalise the “leave no one behind” principle through disaggregation. Comparability and reducing the possibility of creating any additional burden for NSOs are the most important requirements at the global level (SDSN, 2016). This would, in theory, enable learning among UN Member States and provide evidence to steer decisions regarding countries’ needs for technical assistance and global areas of policy focus in implementation (UNGA, 2015; SDSN, 2016).

For the national level, UN discourses emphasise the need for the goals to be meaningful. Countries are thus encouraged to “define the nature of the indicators, their specifications, timing, data collection methods, and disaggregation to suit their national needs and priorities” and consider using alternative, non-NSO data sources to enhance monitoring richness and stimulate participation (SDSN, 2016) (p.10). In this regard SDSN (2016) acknowledged the methodological scalar tension between the global and national monitoring levels, in that “a trade-off exists between the need for harmonized global data and countries’ need to ensure that data is collected in a manner and subject to standards that reflect local needs and priorities” (p.10). The Latin American and the Caribbean countries thus propose to account for that region’s specificities (ECLAC, 2017), and in their methodological report on data for SDG monitoring SDSN advanced an idea of a two-track monitoring approach at the *national* level, with country-driven indicator sets on the one hand, and a reduced number of globally methodologically and conceptually harmonised indicators on the other (SDSN, 2016). However, there appears to be no widely implemented solution to address this dilemma, nor a critical reflection on the scalar methodological conflicts and their impacts on inclusiveness and representativeness at the various scales.

At the local level, practitioner guidance on localising the SDGs in cities highlights the benefits of monitoring and evaluation for decision-making in terms of raising awareness and tracking policy performance for resource allocation as well as for accountability, stakeholder mobilisation and advocacy, and learning (SDSN, 2016). The scalar methodological tension the authors of the 2015 SDSN report identified between global and national level reporting, does not reappear at the city level guidance in the form of a municipal/national monitoring trade-off. Rather, city-level monitoring is seen as a disaggregated version of national level monitoring, facilitated “through processes which enable analysis of disaggregated and aggregated statistics”,

using “data [as] raw material that is collected and processed to track progress and review the success of development programs” (ibid: pp. 55, 57). Localisation of monitoring to the city level for these authors thus is a question of technical capability, mediated by the availability of open data and access to technology, such as the ability to conduct surveys on a mobile device (ibid.). The question of relevance is not mentioned in the city level monitoring guidance document. Moreover, the notion of data as raw material is contested – arguably even more so if framed as transparently “open” – as there is increasing acknowledgement that data are never raw but ‘variously cooked’ within the circumstances of their collection, storage, and transmission” and mediated by conflicts (Gitelman and Jackson, 2013) (p. 3) (the literature review in chapter 3 explores this argument in depth).

A review of the UN-related grey literature on sustainable development monitoring for the global, national and subnational scales thus suggests that the overarching advice for Member States is to focus on global comparability for the purpose of reporting to the HLPF, while localisation is implemented through disaggregation down the scale, using existing datasets and measurement methodologies while taking advantage of emerging technologies for enhanced capacities for disaggregation. Thus, although it is an important topic in *policy* localisation at the national, and most notably at the city level (SDSN, 2016), the process of knowledge creation by determining local meanings of sustainability for *monitoring* is not explicitly mentioned. This means that in terms of the role of monitoring, the opportunity for reframing interpretations of sustainable development is not actively promoted across scales, and questions of relevance and the indicators’ role for mobilisation beyond policy-level stakeholders, appear to be limited.

SDG 11 summarises the interaction between resilience and sustainability, i.e., the framing of resilience driving the sustainability outcomes and being mediated by differentials therein. How then does the approach to monitoring look like on the resilience side in global governance? As already indicated in Chapter 1, addressing differentials in exposure and resilience features high on the global policy agenda. Notably, the SFDRR Guiding Principles make a strong case for gaining a local understanding of risks and for identifying underlying risk factors (UNDRR, 2015), and UNDRR (2021) points to the link between the SFDRR and 13 of the 169 SDG targets. However, the need for comparability and perceived objectivity leads to a global monitoring approach that focuses on outcome and implementation/administrative (i.e. existence of plans or governance strategies) measures (UNDRR, 2017), with a narrower conceptualisation and fewer links to SDG targets (i.e. 1.5, 11.5 11.b and 13.1) (IISD, 2016). Beyond the indicators for global comparability, countries are invited to develop customised

targets and indicators that correspond to the Framework’s four priorities (UNDRR, 2017), although methodological guidance and grey literature for *national* SFDRR monitoring appears to be scarce. This contrasts with municipal-level reporting. While adopting the city as unit of analysis is new for global monitoring, as it primarily only emerged recently with SDG 11 (UN-Habitat, 2018b), global disaster risk reduction and resilience frameworks have a comparatively longstanding tradition of monitoring at municipal scale. Moreover, unlike SDG monitoring, in the case of the SFDRR, the concepts measuring policy outcomes used for global monitoring (e.g. the number of deaths attributed to disasters) can be applied to all scales, while the concepts used for *city*-level monitoring (for example regarding the societal capacity for resilience; (UNDRR, 2017) are not found in the global level framework. With the UNDRR/IBM/AECOM *Resilience Scorecard* narrative framing of resilience leaning towards “bouncing back to pre-disaster state”, monitoring in the form of an urban resilience assessment is conceived of as a fixed baseline for an urban *Resilience Action Plan* (UNDRR, 2017). Covering *Ten Essentials of Making Cities Resilient*, the scorecard focuses on institutional capacity building (Coaffee and Lee, 2016) and encourages municipalities to apply a standardised approach in evaluating their governance and financial capacity. The thematic areas include processes, such as *Plan making* and *Knowledge of approaches for attracting new investment to the city for disaster risk reduction*, municipal planning and stakeholder disaster preparation and preparedness, specifically the existence of *grass-roots organisations* and of *protective infrastructure*, and their capacities relating to response and recovery, such as *Early Warning* and *Post event recovery planning – pre-event*. However, even though it is implemented at the sub-national level and used for establishing a baseline against which change is measured, this scorecard thus still appears to be of top-down character and limited in its ability to account for local understandings of risk and underlying risk factors. While this does not mean that these approaches are not valid or representative – quite the contrary considering the need for comparability in global goal-setting, and given that municipal users emphasised the scorecard’s convening power across sectors (Schofield and Twigg, 2019) – these observations regarding the SFDRR point to the ongoing challenge of complementing the top-down approaches with bottom-up views to obtain a differentiated view of spatial variability in resilience and the causes of change therein, especially in response to the SFDRR Guiding Principles mentioned above.

Like the Disaster Resilience Scorecard, the Rockefeller City Resilience Index (CRI) is a globally deployed goal-setting framework developed in collaboration between an international organisation (a philanthropic foundation in this case) and a professional services company, and it is applied at the city level. Based on academic and policy literature, the CRI

encourages cities to take an integrated view and frames urban resilience around four cross-sectoral dimensions, comprising 52 indicators, covering social, economic, environmental, organisational and built infrastructural aspects of a city (Arup, 2016). Unlike monitoring for the SDGs, its primary purpose is not global comparison but peer-to-peer learning, to “provide a common basis of measurement and assessment to better facilitate dialogue and knowledge-sharing between cities”(Arup, 2017). The 100 Resilient Cities Initiative (100RC) – of which Medellín is a member – clearly defined their understanding of the purposes of monitoring urban resilience which they relate to indicator characteristics. These are 1) ranking – requiring comparability, quantification and standardisation; 2) influencing change – requiring local relevance and specificity, yet also the ability to enable objective analysis; and 3) understanding and diagnosing performance – calling for quantitative and qualitative indicators which need to be globally comparable among the 100RC network of cities (Arup, 2014). *Facilitating Decision-making, Managing Complexity, and Aggregation by Design*, the principles underpinning 100RC’s monitoring design framework resonate clearly with the purposes for urban resilience monitoring found in the scholarly literature mentioned above. 100RC also mention the monitoring framework’s role for decision-making through communication and mobilisation, while their principle of *Managing Complexity* indicates the intention to operationalise an integrated approach of resilience and appears to reflect the awareness of a need to account for interlinkages in the risk-development nexus, as the sustainability literature suggests (see chapter 1). *Aggregation by Design* resonates with calls to consciously address the modeller’s dilemma and the need for adequacy that Janoušková et al. (2018) emphasised, as well as synthesising capacity as a quality criterion of indicator frameworks (Engle Merry, 2011). Illustrating their thinking on relevance, 100RC point to the practice of localisation by selecting themes to be measured from a broader set of domains. Stating that there is no guideline yet for aggregation when creating an index, and that weightings and proxies may result in distortion and carry the risk of misinterpretation (Arup, 2014), 100RC appear to critically reflect on the inherent politics. Relatedly, the report discusses the ownership of the measurement process (assessment owned by cities, city networks or implemented by cities with the assistance of a facilitator vs. assessment owned by an external actor) and the implications of the varying ownership structures for the different reasons for monitoring (ibid.). They also point to the differing role of indicators which in the SDG vocabulary are referred to as *implementing* and *outcome* indicators (*leading* and *lagging* indicators in 100RC’s terminology) by relating the *lagging indicators* to indicator frameworks that are for an external audience, which is not further specified but might include stakeholders interested in comparison and accountability, “...while those [indicator frameworks] used to

drive change within organisations may use a mix of both lagging and leading indicators” (ibid.: 13). The 100RC *Urban Measurement Report* also contained a discussion of critical issues identified in their review of frameworks³. Based on their literature review and analysis of indicator frameworks 100RC then make conceptual and methodological choices, the most relevant of which are the decision for their monitoring framework to be used for driving change, the definition of priority areas for measurement that would be selected by city administrations to match their policy priorities, the use of existing *variables* (i.e. proxy parameters and data) wherever possible, and for the municipalities to own and implement the measurement process. With its reflective take, 100RC’s methodological review report represents an operational step forward from the SDG and other monitoring guidelines reviewed above (e.g. (SDSN, 2016)), which encourage Member States to localise and adapt but appear to provide limited guidance regarding the issues that might need to be considered when doing so.

100RC’s progressive approach to resilience monitoring further relates to the attempt to account for the interlinkages between factors of risk and development. With its structure consisting of four themes or *dimensions* (*Health and well-being*, *Economy and Society*, *Infrastructure and environment*, and *Leadership and Strategy*, as introduced in Chapter 1) divided into twelve goals, which in turn are informed by 52 indicators, the City Resilience Index (CRI) clearly aims at supporting and integrating decision-making at the municipal level. As an illustration of 100RC’s integrative approach and the apparent conscious attempt to enhance the framework’s fidelity in terms of its ability to represent the experienced interlinkages of lived reality of the risk-development nexus, the CRI’s *Health and Well-being* dimension for example comprises multiple ingredients of *human vulnerability* (combining housing provision and other urban services, such as water and sanitation), with *Livelihood* (including labour policies, training and local business support) and *safeguards to Human Life* (including healthcare and emergency service provision). In addition to making the link between risk and development (which is not an explicitly stated aim of the CRI), it could be argued that the process of establishing the CRI at the city level thus has the potential to bring previously fragmented yet collectively experienced policy areas together and encourage a reflection on their interactions. Shared learning and mobilisation of sectoral stakeholders around a selected theme at the municipal authority level appear to be the key aim of this indicator framework and reflects 100RC’s intention to encourage organisational change. In that sense, the question arises to what extent the prescriptive approach to correlation, as a form of integration of broader themes (e.g. the CRI’s

³ These issues are discussed in more depth in the following section.

Health And Well-Being dimension, which integrates infrastructural with economic and institutional considerations, or the *Leadership And Strategy* dimensions, combining *Community Awareness And Preparedness* with *Adequate Education*) is conducive to localisation, or whether the identification of interlinkages is better left to the local stakeholders. In any case, for the CRI relevance is a function of the city authority's selection and prioritisation of *dimensions* with their defined sets of *goals* and the resilience *qualities* the indicators represent (*flexibility, redundance, robustness, resourcefulness, reflectiveness, inclusiveness, integration*). The indicators are informed by *preferred metrics* (parameters) or, in case of specified datasets being unavailable, *supplementary metrics* proposed by 100RC (Arup, 2014).

Given 100RC's intention to encourage organisational change at the municipal level it can be said that the CRI represents a significant step forward in the search for monitoring approaches that could trigger lasting transformation for integrated interventions. This is due to its explicit goal of eliminating (or at least significantly reducing) fragmentation, its inherent potential of uncovering correlations between factors of vulnerability (e.g. the indicator of *robust protective infrastructure*) and development (e.g. the *effective sanitation* indicator) and specifically its implicit attempt to stimulate enhancements in systems and processes towards an increased ability to better balance trade-offs in resilience priorities and outcomes, for which Levine (2014) had called in a critique of quantification of resilience assessment. Yet, 100RC also suggest that there is no framework that measures urban resilience holistically and comprehensively (Arup, 2014) in: Coaffee & Lee, (2016) – a view which Coaffee and Lee (2016) elaborated further by pointing to the lack of a framework “at the national and international level to measure *differential exposure* of urban areas and/or communities to risks and their [differential; comment added] ability to mitigate them” (ibid: 100).

At this point of the discussion, it might be useful to return to academic views, especially since we are looking for approaches which have not (yet) been conceptualised by organisations working in urban resilience and sustainability at the global level. Cutter et al. (2008) emphasised the differences in vulnerability and resilience between different communities at different scales, and remind us that this may lead to disparities in recovery. To address these challenges, they proposed the Disaster Resilience of Place (DROP) model to “capture such disparities by focusing on the place and the spatial interactions among the social system, built environment, and natural processes” (ibid.: 599). Such an indicator framework that systematically accounts for differentials and the dynamics between the variables looks promising as it could help urban stakeholders with developing contextually aware interventions, and to do so at different scales.

In contrast to the conceptualisations of the grey literature reviewed above which include aims of comparability, organisational change and shared learning among a wider set of stakeholders, Cutter et al. (2008) framed their indicator framework around the community, which they define as the “totality of social system interactions within a defined geographic space” (ibid.: 599). Differences in resilience and vulnerability among communities are thus conceptualised as differentials and disparities in the way different constellations of the social system’s constituents interact during and after a shock or slow-onset event (ibid.). The purpose of their resilience monitoring framework therefore is to assess the *antecedent* conditions in six dimensions (*ecological, social, economic, institutional, infrastructure, and community competence*) and help decision-makers with developing a resilience and vulnerability assessment to a given hazard. Comprising factors of community resilience and vulnerability, these authors related them to the characteristics of the community’s *social system, its natural system, and the built environment*. In combination, these mediate the effectiveness of the *coping responses* that determine the severity of its impact immediately after the event. These characteristics also determine *adaptive* resilience, which include variables relating to the capacity for *improvisation* and *social learning*, and which determine the *degree of recovery* (Cutter et al., 2008). A key distinguishing feature is that the DROP model appears to represent an extended variation of the four phases of a disaster (i.e., mitigation, preparedness, response, and recovery) and to relate them to qualitative criteria within each of the six *dimensions* of the *antecedent conditions*. Moreover, since it is designed to be applied at a more granular level than the other global frameworks reviewed above, another distinguishing feature is the inclusion of the community capacity dimension. That dimension most clearly illustrates the model’s strategic approach, which is its attempt to represent the dynamics between the disaster phases and variations in the antecedent conditions:

For example, if a community experiences a 10-year flood, it is unlikely that its absorptive capacity will be exceeded. However, if this same community experiences a 10-year flood every year for several years, each event has reduced the monetary resources available to cope with the next event, making it that much harder to recover. Conversely, if the community learns from the hazard event and the opportunity to improve mitigation and preparedness are utilized, the community is likely to have increased its inherent resilience before the next event occurs. (Cutter et al., 2008).

Thus, here the authors relate the community’s experiences with past disaster events and their frequency to *coping responses* and *absorptive capacity*, which are implicitly related to the *economic dimension* (e.g., *municipal finance*) and *community competence* (e.g., *local understanding of risk*). Although the authors do not explicitly refer to it as such, this example also points to an entry point to

address the inherent scalar tension and complement top-down monitoring approaches with bottom-up views that might enhance the model's robustness.

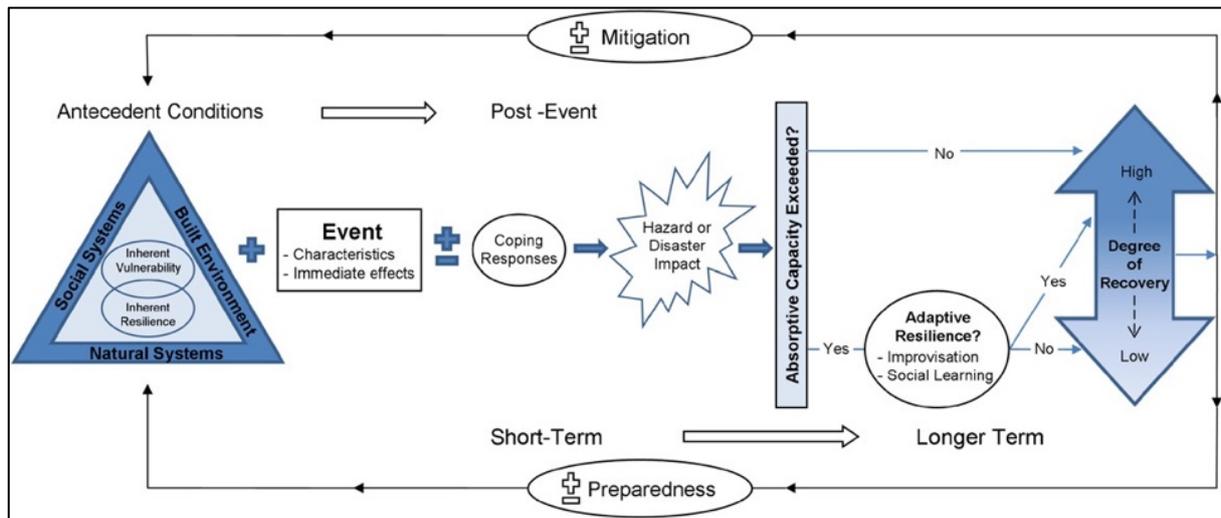


Figure 2: The DROP Model (Cutter *et al.*, 2008: 602)

In other aspects however, the model's methodological approach is similar to frameworks at higher scales such as the ones reviewed above. This particularly applies to its categorisation of policy sectors which remain within their thematic areas and the similarity of several *candidate variables* therein (e.g., *employment* in the *economic dimension*). In this aspect, the model's ability to generate new insights regarding differentials beyond conventionally fragmented and pre-established conceptualisations appear limited. Moreover, the assumptions regarding the link between the characteristics of the antecedent conditions and the differentials in resilience and vulnerability underpinning the model appear to remain implicit. Continuing with the example above, the exact risk-development mechanisms which link, for example, the impact with monetary resources, and which could explain variations therein and differences in the effectiveness of shared learning among the communities, are also implicit. Despite its focus on the community, consideration to adequacy, relevance and the politics inherent in operationalising the model for which scholarly and grey literature reviewed above has called (Prior and Hagmann, 2014; 2014; Hák, Janoušková and Moldan, 2016; Janoušková, Hák and Moldan, 2018), appears to be limited in the DROP model.

However, although not explicitly conceived of as such, Cutter's later contribution (Cutter, 2016) did add to the discussion regarding the above-mentioned call to make visible the *mechanism between context and outcome* (Coaffee and Lee, 2016), and by extension, the risk-development nexus. Building on the DROP model, this author distinguished between *dynamic* and *static features* of resilience indicators that measure "existing conditions (inherent resilience)

or the post-event adaptive process and outcomes (adaptive resilience)” (Cutter, 2016), but also adds that there is no empirical proof of concept for this relationship.

In reviewing resilience indicators applied in the USA, Cutter (2016) introduced four methodological attributes of indicators, which refer to *focus* (infrastructure assets vs. community baselines), *spatial unit* (global vs. local), *method* (top-down vs. bottom-up), and *domain* (characteristics vs. [process-] capacities of systems or the community). Based on the review, this author proposed a *measurement core of resilience* which extends the six dimensions from the 2008 paper by dividing them into *attributes/assets* and *capacities*, with Cutter et al.’s (2008) *community competence* being replaced by *capacities* relating to *social capital* (including the *number of civic organisations*) and *information/communication* (which includes *learning from the past*). Emphasising the lack of methodological consensus in the reviewed indicators, the author suggests that this proposal represents a preliminary methodological concept based on the broad tendencies that emerged from their review of resilience indicators. Cutter (2016) also called for community input to further develop the *measurement core* and “involving new data and methods [which] integrate both top-down and bottom-up approaches” and “are co-produced [to] address the social dynamics and decision making within communities” (ibid.: 754f).

Given the apparent tensions in monitoring, section 2.1 above explored the opinions regarding the purpose and discussed the critical methodological issues in the process of monitoring that are identified in the existing literature. Reflecting the discussion regarding the politics of the multiple in Chapter 1, section 2.1 focused on the political nature of resilience and sustainability indicator frameworks, specifically its relation to scale, to their target audience, and their implicit assumptions. It also presented emerging arguments that monitoring is instrumental and a part of implementation, and that the role of monitoring frameworks goes far beyond the task of measuring the effectiveness of interventions. Section 2.1 further pointed to the *knowledge producing effect* (discussed in detail in Chapter 3) of indicators creating or fixing previously contested concepts.

This section (2.2) reviewed proposals for putting monitoring into practice at various levels, which included their conceptual approaches as well as their proposed operationalisations. It discussed the inherent tensions of monitoring frameworks in the grey literature which relate to scale, comparability, meaning and representativeness and identified a lack of critical reflection on scalar tensions. Grey literature, especially at the global level, largely appears to frame the local application of monitoring frameworks as disaggregation while the global disaster risk/resilience monitoring frameworks appear to account for local understandings of risks to varying extent. The literature review in the paragraphs above also

suggested that commentators writing on community risk/vulnerability appear to have provided some entry points to address with the challenges with conceptual flexibility of top-down monitoring for improved inclusiveness and bringing in community views. As a result, the following interacting dimensions of monitoring framework localisation emerged (see figure 3 below). Measurement is not limited to evidence-based progress tracking. While it is related to the policy cycle, this must be seen in the context of scale. Reflecting the inherent tensions, scale corresponds to purpose e.g., monitoring frameworks applied at the international level are used for comparison, and frameworks that where “born local” aim for institutional capacity building and municipal organisational transformation, and (to some extent) mobilisation.

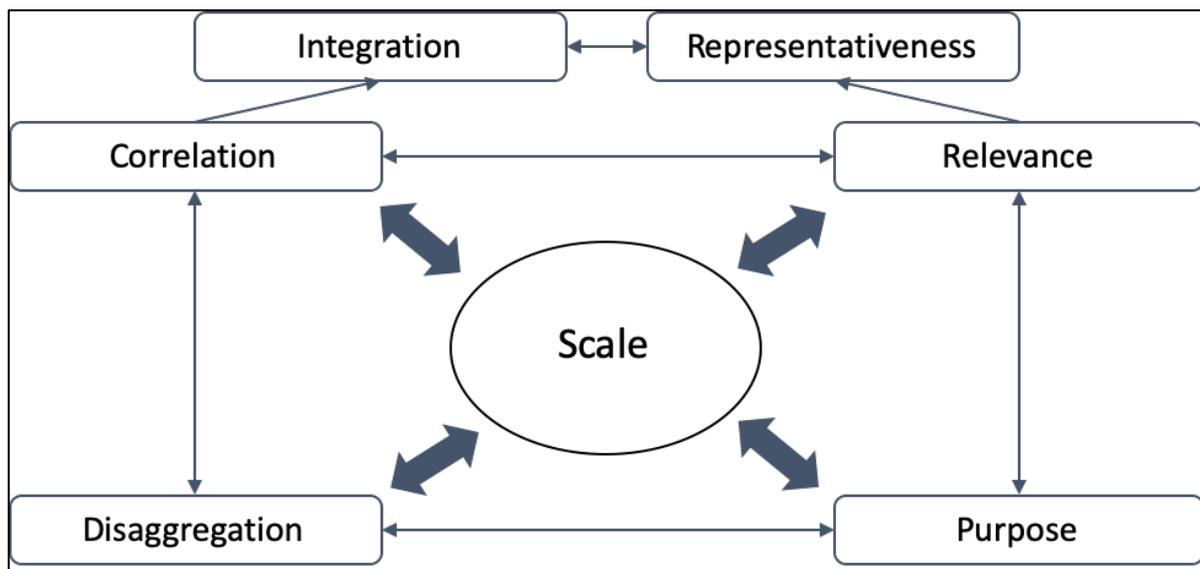


Figure 3: Dimensions of urban development and risk monitoring and scale as core factor (own figure based on the literature reviewed)

Thus, while the focus of some indicator frameworks is at a single scale (e.g., the CRI and the Disaster Resilience Scorecard, both at municipal level), other monitoring frameworks (e.g., the SDGs) have multiple purposes and thus propose simultaneous implementation at various scales. The tension between top-down and bottom-up approaches, which commentators in the scholarly and grey literature identified in the form of global comparability versus local representativeness and relevance, is addressed differently by the frameworks. The frameworks that are “born globally”, such as the SDGs and the SFDRR, primarily focus on disaggregation, although UN literature does point to the need for relevance and adaptation of the indicators to reflect national policy priorities. Still, there is limited guidance regarding the methodological considerations that would need to be taken into account, especially if the aim is transformation, which might require a focus on policy areas and related thematical and social elements, as well as socio-spatial relations, that hitherto received less attention. Frameworks that started at lower scales but aim for universal applicability address the issue of relevance in

their approach and methodological guidance. This appears for example to be the case with the CRI (city level) proposing a correlated set of indicators related to an overarching policy area, and the DROP model (community level) with its adaptable *measurement core* principle, although they appear to do so for different purposes – the CRI to trigger organisational integration around the broad policy areas, and the DROP model, to increase representativeness by providing flexibility in the identification of *antecedent conditions*. Based on the DROP model, the latest academic monitoring framework (Cutter, 2016) ended with calling for a combined top-down/bottom-up approach in the implementation of monitoring, as well as for empirical studies that investigate the relation between existing socio-spatial conditions in the community and resilience outcomes (ibid.). This relates to the scholarly comments regarding the politics of creating and implementing indicator frameworks, which is a salient issue in some of the grey literature but does not seem to be explicit in the methodological guidance. Relatedly, the mobilising as well as a *knowledge producing effect* in the ontological sense, are factors that remain implicit (discussed in detail in Chapter 3). The 100RC framework is one example of approach which appears to attempt to leverage on these effects to trigger organisational change within municipal authorities. Scale, including the frameworks’ “entry points” in terms of scale, again plays an important role here for the purpose of monitoring, the approach used for abstraction, particularly the use of proxy concepts and datasets, which in turn affects such social and institutional learning.

After this review and discussion of scholarly and grey literature regarding the visible characteristics of monitoring, the following section addresses the factors which might drive these methodological parameters.

2.3. Conceptualising the challenges in monitoring

In their critique of urban, community and economic resilience measurement frameworks and indices, Coaffee and Lee (2016) emphasised the challenges with the often unreflective adoption of causal links between concepts in different socio-spatial contexts. For example, the correlation between resilience to floods and low-density settlements Cutter et al. (2008; 2010) had identified and validated in the South-eastern USA, are not necessarily applicable to European contexts which experience less social segregation and tend to have a higher intensity of land use. In their discussion on resilience indicators Coaffee and Lee (2016) thus pointed out that that such mechanisms are not globally generalisable as “indicators can be

interpreted in contradictory ways that are either negative or positive for the city, depending on the local and national context” (p. 119).

Similar considerations apply for measuring urban sustainability. With their case study of Bogotá, Brussel et al. (2019) compare the currently proposed access criterion for SDG 11.2, (500 metres walking distance to the nearest public transport stop) with a localised *accessibility* criterion of 45 minutes public transport travel-to-work trips. The former results in 92% coverage, which would suggest that Colombia’s capital is well under way of achieving SDG target 11.2. Applying the *accessibility* criterion their study however indicates that only about a quarter of that city’s residents have a *locally acceptable* commute of 45 minutes or less, with the poorer segments of the population facing an even longer commute (Brussel *et al.*, 2019). In the context of humanitarian and development policy, Levine (2014) further argued that using the number of organisations of which individuals are members as indicator of social capital for resilience is “meaningless without consideration of the nature of those organisations, the relationships that exist between people within them, the costs of belonging to them and many other questions” (p. 8). This author also provided the example of frequently used indicators of economic resilience, such as the diversity of income sources, as it might indicate economic adaptive capacity but equally may signify households’ response to livelihood stress (*ibid.*).

Hence, the scale for which the indicator framework is being conceived and implemented plays a role here, as ecological fallacy in the form of aggregated views based on a city scale assessment “may gloss over the needs of the most marginalised and vulnerable by celebrating average improvement at the national or city level” (Coaffee and Lee, 2016; Ulbrich, Porto de Albuquerque and Coaffee, 2018). Ecological fallacy in this context thus not only refers to its statistical meaning. It also refers to processes of conceptual aggregation that are mediated by scale.

These examples are important for global sustainability and resilience indicator frameworks that are being deployed at different scales and socio-spatial contexts, because they warn against blue-print type translation and localisation of methodological concepts. This in turn suggests that disaggregation for monitoring localisation without first establishing these contextual links may reduce validity. Coaffee and Lee’s (2016) statement above equally implies that a subsequent re-aggregation of the indicator outcomes for the global level may result in global comparisons with unreliable significance and limited explanatory power.

Moreover, for global monitoring framework stakeholders whose aim it is to reconcile both local understandings *and* global comparability of contested concepts, the above observations are a warning to avoid inadvertently getting stuck in the middle. This risk has its

origins in the relation between the contested nature of the two concepts and governance through goals as steering mechanism. As indicated in section 1.1, goal-setting, as implemented by the SDGs and other global development and resilience frameworks, aims to direct collective behaviour by determining global policy priorities, and motivating supporters to work towards that long term vision, notably by establishing targets and benchmarks for monitoring progress (Young, 2017). Arguing for the combination of goal-setting and rulemaking (rulemaking implies compliance and enforcement) in global governance, Young (2017) warned against the pitfalls of falling into one of the two extremes, i.e. “goals in the absence of rules that are apt to degenerate into vague aspirations that everyone embraces conceptually but no one knows how to fulfil in practice” and “rules in the absence of goals that degenerate into bureaucratic requirements” (p.49). Thus, in terms of monitoring, this means that the former results in uncertainty at the national and local scales as to how to relate the local context to the global goals (translation up the scale), and the latter would translate into an unreflective adoption of the global concepts which do not necessarily account for the local context (translation down the scale).

Relevance and interlinkages in monitoring are also key concerns for Pintér et al. (2017) who unpacked the politics of monitoring. They argued that issues relating to statistical methods and methodologies, as well as to the communication of the SDG indicators will continue to require attention but that transformation can only be expected if “the work of measurement is also seen through the broader lens of governance and political economy” (p. 99). Similarly, in the resilience literature, the calls for a critical approach regarding the resilience multiples, trade-offs and the focus on equitability have heightened sensitivity to the underlying politics (as discussed in Chapter 1). For Pintér et al. (2017) it is the mandate of *sustainability* (i.e. for social, environmental and economic justice) that puts the focus on the “underlying subject – *what* is being measured, why, and by *whom*, ..., questioning the norms, values, and power structures of the concepts that are being measured” [emphasis in the original] (p.100). To do so, they suggested that in advancing the impact potential of monitoring frameworks, stakeholders should not limit themselves to the technical aspects and take a critically yet constructive stance towards the *governance of measurement*, not least regarding the implications of using (or the re-purposing) existing monitoring practices and methodological portfolios whose transformative potential they question, which, they argue, tend to be conservative and static. The political economy view thus calls for attention to the intersection between the entities’ interests on the one hand, and the approaches and reasons for their methodological choices on the other.

Pintér et al.'s (2017) framework of measurement governance consists of four key *dimensions*, which are concepts, actors, mechanisms and institutions, and instruments. Regarding concepts, these authors reflect on the challenges relating to the measurement of a contested concept such as sustainability and point out that such conceptual inconsistencies make it difficult to understand potential trade-offs and thus – the interlinkages, a core element of the Global Goals' integrated agenda. They further emphasise the need for better awareness regarding the process of the translation of sustainability narratives into indicators. In terms of actors, their second dimension, they argue that the field of actors involved in measurement continues to broaden. Here they identified a potential challenge from traditional, *supply side if-we-build-[indicators; comment added]-they-will-come* approaches to measurement, and thus call for more work to advance *place-based measurement initiatives*, which, in reference to the framework derived from the literature above (see Figure 3), could increase relevance and representativeness. Given this expansion they also saw a need for coordinated and transparent integration of sustainability-related information from diverse sources which can be used for monitoring the SDGs (translating up the scale), while maintaining local relevance to context-specific policy priorities (translating down the scale). With *mechanisms and institutions*, they referred to procedural considerations of measurement which they implicitly link to scale as well as purpose, resulting in differences in processes of indicator selection and -development between the global and sub-global (country and sub-national) levels. While there are no methodological proposals for localisation, Pintér et al. (2017) suggested the use of global approaches (indicator sets and reporting templates) as a starting point for monitoring at the subnational level and encourage the inclusion of bottom-up, community-driven initiatives to trigger collective discussions that would ultimately lead to stronger *salience, buy-in*, and a common vision for collaborative policy design. In *instruments*, their fourth measurement governance dimension, Pintér et al. (2017) perceived as critical the inertia of indicator frameworks, as the latter are entangled with the operations of government and the private sector, yet also can leverage significant processes of transformation once metrics are changed. For such processes to happen, these authors called for stakeholders to understand the path-dependencies of what could be called the indicator *supply side*, and on the *demand side* find participatory approaches to “build the conceptual frameworks and thematic focus around shared societal values and in the process build and strengthen ownership” (ibid.: 108), not least to complement indicator frameworks with qualitative information.

With its four dimensions, the political economy view of measurement is a useful summary of the critical issues and a toolbox – though not necessarily the only one – for an

analysis of the localised implementation of global monitoring frameworks. It is instrumental for constructively embracing the contested nature of these concepts (as Levine (2014) suggested regarding resilience) to identify the drivers of purpose, relevance and disaggregation at different scales. However, their proposal to transform the governance of sustainability measurement by using centrally determined concepts as starting point and complement them with community views, however, might require further elaboration. While it might help with filling information gaps regarding the local context, locally determined interlinkages and causalities might remain unexplored, limiting the potential for transformation. More specifically, the challenge of translating up and down the scale due to limited local relevance might still remain without an understanding of local correlation. Regarding resilience metrics, Levine (2014) for example argued that “even if locally appropriate indicators of asset ownership were chosen, such as ownership of cattle, land or bank accounts, the same essential problems remain: resilience is seen as modular, with any ‘module’ (e.g. assets) able to substitute for deficiencies in any other (e.g. exploitative local elites), and the solutions to a lack of resilience are thus disconnected from the *actual causes of vulnerability* [emphasis added] faced by any group of people (p.7)”.

Coaffee and Lee (2016) also encouraged measurement stakeholders to go beyond a comparison between antecedent conditions and resilience outcome (see Cutter *et al.*, 2008) and address this blind spot by investigating the link between *mechanisms and outcomes* as a way of re-assessing assumptions, for example regarding the links between resources, poverty and resilience. This suggests that the measurement gap regarding the risk-development nexus might be exacerbated by the modular approach. Although the political economy view of measurement represents an essential structured starting point for critical thinking about the drivers for the measurement frameworks’ localised versions, a focus on mechanisms might be particularly important for uncovering disparities as well as triggers of transformation, especially in highly unequal cities (Ziervogel *et al.*, 2017). In the conceptual literature model further above (figure 3), it can therefore be said that the *mechanisms* drive correlation within the risk-development nexus, yet there still appears to be a need for methodological proposals for systematically making the nature of these mechanisms and trade-offs visible across scales and for incorporating them into global resilience and sustainable development measurement.

Another aspect which has been discussed but does not appear to have received critical attention in the reviewed literature is the role and mode of community participation and engagement in monitoring (a detailed discussion regarding participation follows in Chapter 3). Commentators in both scholarly and grey literature encourage community participation, with the latest scholarly discussions emphasising the need for co-creation to address social dynamics

and create *salience and buy-in* (Cutter, 2016; Pintér, Kok and Almassy, 2017). However, there still appears to be a need for a debate regarding the relation between co-creation for measurement, a localised understanding of *mechanisms and outcomes*, and translations thereof across scales and considerations regarding integration, relevance and representativeness in the localisation of monitoring frameworks.

The question regarding the extent to which *mechanisms* of resilience and sustainability meet local needs and address local vulnerabilities also relates to the discussion regarding the risk of uncritically exporting northern resilience and sustainability discourses embedded in urban risk and development measurement frameworks to the global South. Given the ubiquity and urgency to implement the post-2015 development agenda globally, disaster risk reduction scholars have begun to question the extent to which global resilience toolboxes, which “rely on taxonomic categorisations of people’s resources and identities often associated with quantitative and/or demographic indicators and pre-conceived ideas of people’s everyday lives” (Gaillard, 2020) (np), are inclusive enough to represent the realities of historically marginalised communities in the global South (Lizarralde, 2019; Gaillard, 2020). Commentators in critical data studies and data justice might add that these toolboxes ignore “historical datalessness” of such communities, the role of forms and flows of data and of the politics in “data assemblages” for social (in)justice (Kitchin, Lauriault and McArdle, 2015; Heeks and Shekhar, 2019). These considerations are also discussed in further detail in Chapter 3.

Section 2.3 provided examples from literature which point to the importance of contextually grounded urban resilience and sustainability frameworks. It related the risk of getting stuck in the middle between vague goal setting without rules and goal-less compliance to rules to the contested nature of the two concepts and thus called for a critical awareness of scale and the governance of measurement frameworks. Adopting the view of urban resilience and sustainability frameworks and their implicit assumptions about the mechanisms between risk and development as material manifestation of the multiple, a key contribution of this thesis to the conceptual and practitioner challenges is the investigation of scalar methodological conflicts in urban monitoring, their drivers and the potential impacts on the monitoring frameworks’ effectiveness. It does so by taking a critical view of data practices (i.e., “sourcing”, processing, (dis)aggregating, interpreting and framing – see literature review in the following chapter). By bringing to the surface the issues which affect urban resilience and sustainability monitoring at the different scales this research thus aims to pave the way for systematic approaches for a meaningful, co-produced and inclusive translation up and down the scale, thus addressing the tension between global comparability versus local representativeness and

relevance. Given the 2030 Agenda's *Leave No One Behind* Mandate, the empirical analysis of monitoring the risk-development nexus and the socio-spatial factors that mediate differentials in its causal links (the *mechanisms*) is placed in the context of marginalised urban neighbourhoods. The literature review chapters of this thesis theorise urban sustainability and resilience monitoring in a phased approach. Chapter 1 (Introduction) discussed the concepts of resilience and sustainability and the tensions inherent that lead to implementation gaps in risk-development governance frameworks. Chapter 2 focused on the purpose of urban sustainability and resilience monitoring and implementation gaps therein related to scalar and conceptual tensions. The following literature review chapter identifies these discrepancies and discusses theoretical approaches to consider for enhancing meaning and socio-spatial inclusiveness in urban resilience and sustainability monitoring and its localisation.

Chapter 3. Localisation and engagement in monitoring practices

Following on from Chapter 2, this chapter conceptually unpacks the process of localisation and its role in making visible the risk-development nexus in monitoring. It starts with the argument that localisation is well defined for policy implementation while the inherent tensions in monitoring framework localisation are unexplored with localisation mostly framed as data disaggregation down the scale (Section 3.1). Section 3.2. unpacks this discrepancy from the city-level localisation perspective, discusses the organisational-institutional tensions which drive the inherent scalar conflicts, and explores existing approaches to monitoring localisation. Given these tensions, Section 3.3 draws on sustainability transformation literature to address power differentials in knowledge production and proposes a reframing of the monitoring localisation “exercise” and monitoring as transformative processes. With urban sustainability and resilience frameworks being rolled out globally Section 3.4 problematises their application as devices for knowledge creation. It does so with a global South lens, as this provides an additional contrast for the analysis of the multiple understandings and the socio-political factors shaping them. Section 3.5 suggests that emerging methodologies for participatory data creation promise democratisation and citizen engagement to enhance ownership of the data and indicator frameworks, yet the extent to which such initiatives are truly empowering and thus transformative is questioned.

3.1. Developing a local interpretation of the global narrative

Working through the dimensions of risk and development monitoring that emerged from Chapter 2 (see figure 3), national and municipal government officers charged with SDG localisation focus on creating an institutional strategy and monitoring framework to “leave no one behind”. But what are the factors which might impact on their decisions regarding their localised version of the SDG monitoring framework?

There is already a rich conceptual discussion regarding localisation of SDG monitoring and transformation, and emerging grey literature discussing the first couple of batches of city level SDG progress reports, termed Voluntary Local Reviews (VLRs), and the processes of territorialisation of the SDGs (Siragusa *et al.*, 2020; OECD, 2020). Both national and municipal governments started developing their localised SDG monitoring frameworks soon after the launch of the 2030 Agenda in 2015, yet literature about how SDG monitoring localisation has manifested in practice and critical appraisals of Voluntary Review practices are to date limited

with the exception of Canzutti et al. (2020). The definition of parameters, spatial scales and boundaries, and datasets used will also have an impact on the extent to which inequalities are made visible and can therefore be acted upon – or remain invisible and are perpetuated. These often implicit and inherently political methodological choices in the process of localisation thus mediate the degree of transformation and affect the political question (“sustainability and resilience for whom?”).

The most common understanding of localisation is the process of accounting for the national and subnational context in the entire policy cycle, from setting policies, or *implementation* in 2030 Agenda terminology, to tracking progress (*monitoring*) (Lucci, 2015; Pipa and Conroy, 2020). This process is instrumental to the multi-level governance design of the 2030 Agenda which relies on coherence among the vertical layers of actors, and the integration and negotiation of horizontal trade-offs. Calling for actions to “add up” across all levels Gupta and Nilsson (2017) suggested that this multi-level governance model depends on aligning national, sub-national, and municipal policies, often based on “vastly differing interpretations to align with their own interests” (p.277), to the SDGs. This emphasis on alignment, however, does not necessarily imply uniformity. The idea of localising the SDGs is rather to bring about synergies of previously fragmented or conflicting interventions across scales by enabling actors to interpret the Goals in the context of their policy priorities. Intentionally built on weak institutional arrangements, commentators argue that the SDGs’ governance framework is designed to trigger diversity and thus maximise “buy-in, political action and resource mobilization by a wide number of actors and intermediary institutions at multiple levels” (Kanie *et al.*, 2017a). This open institutional architecture is a result of the approach during the formulation of the SDGs with emphasis on consultation, culminating with a UN General Assembly resolution that was supported by non-state stakeholders. This approach thus specifically aims at addressing the lack of inclusiveness, one of the main points of critique regarding the Millennium Development Goals (Kanie *et al.*, 2017b; Liverman, 2018b).

Following this evolution in the overall approach and the design of a governance structure that encourages goal-oriented diversity in localisation, questions regarding the factors and parameters which might mediate the transformative potential of municipal level localisation inevitably arise. More specifically, to what extent does localisation lead to a transformation in both the processes of implementation and the practices of monitoring? In terms of processes, a negotiation between bottom-up (municipal) and top-down (state) approaches is clearly necessary although this might however not be specific enough (Gupta and Nilsson, 2017). As Pipa and Conroy (2020) argue “even this [view regarding SDG localisation]

leaves unsaid who is doing the work and what the concrete steps are, while implying bottom-up and top-down actions” (p. 287). Their view resonates with earlier work that highlighted “a lack of clarity concerning the precise roles and responsibilities of local actors in governing sustainable development” (Fenton and Gustafsson, 2017) (p.130) – despite the importance placed on municipalities in the frequently invoked statement of the “struggle for Global Sustainability being won or lost in cities” (Ban, 2012). This debate about the contested roles and responsibilities in localisation indicates an inherent tension in the weak institutional framework’s intentional design. This tension relates to the need to allow for flexibility and diversity in localisation in both implementation and monitoring without a prescriptive operationalisation that enforces processes and methodologies of how to make social, economic, spatial, ontological etc. inclusivity, and thus transformation, happen. A municipal officer starting with localisation might well ask what to look out for in this process, if the localisation is to be both inclusive and transformative?

One specific factor underpinning this tension is the organisational setup across scales, that is the relation between the UN organisational framework, its member states and the municipal entities and stakeholders. Decisions at the global level are endorsed by national governments, while the responsibility for implementation in many policy areas – specifically of those related to SDG 11 – is by devolution (*de iure*) and the practice (*de facto*) of local action by non-state stakeholders at city level and below, such as municipalities and community groups (Graute, 2016). Seemingly counteracting the idea of coherence and a key consideration for this investigation of multiple interpretations of resilience and sustainability across scale, their drivers and impacts, this results in “haphazard implementation and significant disparities...in terms of target-setting, implementation and monitoring” (Fenton and Gustafsson, 2017) (p.130). The following section discusses this tension in more detail.

3.2. City level localisation

With the wider governance structure shaping the processes of designing the localised monitoring framework at each level, a brief look at the policy documents guiding localised SDG policy implementation seems necessary. As “a key instrument for enabling national, subnational and local governments and all relevant stakeholders to achieve sustainable urban development” (UN-Habitat, 2016b), the New Urban Agenda (NUA) aims to provide clarity for municipalities regarding their position within the SDG governance framework. Such a clearer understanding of the municipalities’ position within the 2030 Agenda’s multi-level governance

frameworks is necessary, but it may still not be sufficient for effective and transformative localisation. Leading this discussion back to the above-mentioned need for buy-in, Satterthwaite (2016) emphasised the importance of *relevance* for municipal and community actors as a key factor of the NUA's transformative potential. According to Satterthwaite's reading of the NUA, it misses the opportunity to acknowledge the centrality of municipal governments for city level implementation, and there is no evidence of concrete steps to enable municipal actors to take ownership of localisation. Rather to the contrary, this author argued that the NUA is a document where "national governments commit to strengthen national government" (ibid.: p.122). More recently, Satterthwaite (2018) strongly questioned the NUA's effectiveness and ability to establish relevance and municipal ownership of the 2030 Agenda, stating that "its [the NUA's] use [might] be limited to some governments mentioning it to legitimate what they are doing or plan to do anyway" (p.123).

With its mandate to "promote practical solutions for sustainable development" municipalities and other non-state actors might then look at the SDSN take on localisation for more specificity on how to maximise the probability of transformation when localising the SDGs. Almost anticipating the critique of the NUA – which was adopted at Habitat III in the same year – SDSN issued an SDG localisation guide (SDSN, 2016) for city stakeholders. In it SDSN defined localisation as "process by which local authorities and local stakeholders will adapt and implement these targets within cities and human settlements...not as mere implementers of a global or national SDG agenda, but [as] partners in co-creating and defining policy, and in the implementation and monitoring of progress against the goals and targets" (ibid.: 15). With the aim of filling the knowledge gap in municipal level localisation of the Global Goals, SDSN emphasised the need for a careful and inclusive process when defining a city's SDG priorities, with vertical coordination ranging from the national level to communities, and horizontal integration to identify trade-offs and synergies across policy sectors. In an ideal case SDSN proposed this process be placed within an enabling institutional environment, consisting of adequate and representative decentralisation, for example by reducing unfunded mandates and enhanced legitimacy for revenue collection, integrative governance processes, and supporting territorial policy frameworks. Localisation of SDG implementation at the municipal level is therefore framed as inclusive, participatory process, consisting of several iterative stages. The SDSN authors proposed for local authorities to lead this process, for them to reduce spatial inequalities by listening to marginalised resident groups along with wider institutional and private sector stakeholders, and aim for a reflexive re-evaluation, prioritisation and redesign of existing policies to ensure integration and alignment with the 2030 Agenda. The SDSN called

for decisions regarding trade-offs and prioritisations to be “evidence-based, ... using hard data”, and validated by public input (ibid.: p.33). Since it is aimed at getting municipal stakeholders to start thinking about localisation, apart from stakeholder mapping and best-practice examples of public engagement through facilitated workshops and radio call-ins (ibid.), a systematic approach for meaningful engagement that results in establishing the local relevance of the SDGs is absent in the guide.

The arguments on implementation presented above illustrate how the view from above, which understands SDG localisation as adoption of the SDGs in the form of a vertical alignment of integrated local variations of policy sectors, has been critically examined. Commentators have further approached this view with questions about the “how” (i.e., ownership and roles), and the “what exactly” (i.e., local relevance). Given the tension between the global framework and devolved practice of implementation at the city level, the NUA represents an attempt to provide a political frame – the extent to which the NUA represents an agenda is contested, as Satterthwaite (2016) suggested – and practical guidance, such as the SDSN guide, to support municipal localisation.

While the above debates point to tensions in the institutional space within which the localisation of the monitoring takes place, when compared to the above debate on implementation, there is relatively little discussion regarding the position and practices of municipal stakeholders in the localisation of SDG monitoring, and even less regarding the relation between national and city levels therein. Commentators who do address that relationship appear to look at localisation from the top down and frame it analogous to the principle of coherence in implementation. As actions must add up, so must “monitoring be aggregated” (Gupta and Nilsson, 2017) (p. 280), and “subnational governments that wished to (in line with their own local planning processes) could monitor, data permitting, most outcome-based targets, particularly for vulnerable areas and communities” (Lucci, 2015) (p.3). In this view, the challenge with localisation in monitoring therefore mainly revolves around the degree of disaggregation. Looking at the processes of localisation from above, this literature frames the latter as the selection of targets – asking which ones to select and how to select them – and scale, with target selection responding to municipal policy priorities and processes, and inclusiveness depending on data availability (degree and type of disaggregation). Monitoring is framed as a seemingly smooth translation from implementation, a subsequent activity (not necessarily an inherent part) to the former to feed back about policy progress, and as a function of technological feasibility. The question regarding the extent to which the process of localisation

of monitoring can influence the likelihood of transformation beyond its function of feedback mechanism does not seem to have been asked explicitly.

The other strand of literature on localising SDG monitoring investigates the methodological aspects related to SDG measurement (for example, regarding indicator contextualisation, Brussel *et al.*, 2019, regarding indicator adaptiveness to the local context). The scalar relation between sustainability monitoring frameworks implemented at national level on the one hand, and at city level on the other, remains however relatively unexplored. Yet it is critical because of the organisational (national – city level) tensions in localisation discussed above and the fact that it is national level reporting that informs the 2030 Agenda progress reports submitted to the annual High-Level Political Forum at the global level.

In terms of scalar conflicts, it is important to first understand the extent to which an apparent risk of fragmentation in the SDG measurement landscape exists, and second, the extent to which this implies that the monitoring stakeholders at the different levels are resorting to their existing approaches, thus effectively “measuring past” each other. This could mean transformation in urban SDG monitoring being reduced to a “box-ticking” exercise based on a recycling of existing methodologies. It might also affect cross-level consistency due to fragmentation related to differently themed indicators and datasets being used to measure the same target at the different levels, manifesting in multiple interpretations and inherent scalar trade-offs in the extent to which transformation is likely to occur.

Recent VLR guidance documents from global governance actors reflect the tension between the proposals for transformative local implementation on the one hand, and the challenge with identifying processes for developing a transformative localised monitoring framework on the other. For example, with its European Handbook for SDG VLRs, the European Commission’s Joint Research Council (JRC) takes a transformative view of the localised implementation. Its authors adopt the view of localisation as transformative process as they emphasise that “the value is in the journey as much as in the product since the processes used [for developing a localised 2030 Agenda] help local administrations to strengthen the links with a number of stakeholders and foster cooperation” (p.14). Regarding localised monitoring, this publication – aimed at local authority stakeholders – implicitly refers to the box-ticking/recycling vs. transformation dilemma by asking whether city administrations should “prioritise measurable targets or invest to obtain new data to measure targets that are relevant to achieving SDGs” (ibid.: 17). To address it, the JRC propose an indicator set for European municipalities to adopt, which in their view reflect their criteria for effective localised monitoring, which is temporal and geographical comparability and replicability, combined

with indicators with local relevance. Yet, despite the process view above, beyond the suggestion that initially proposed localised targets and indicators should be reviewed in co-creation sessions with communities, exactly *how* this process can be transformative and the factors therein which might mediate the extent to which inequalities are address or perpetuated, is not discussed. Equally, while acknowledging the political nature of the process, the recommendations following the analysis of 10 VLRs in this document propose to address intra-urban inequalities with disaggregation, and fill “data gaps” with non-traditional data sources, specifically crowdsourcing and “big data”, in collaboration with universities and civil society institutions as data brokers.

Similarly, in its Territorial Approach to the SDGs, the municipal authors of the OECD synthesis report (2020) call for a “multi-stakeholder dialogue with actors from the private sector, civil society, as well as schools and academia” as part of the localisation process, and for civil society to holding governments at all levels accountable for their commitments towards the 2030 Agenda” (p. 34). The authors also adopt a transformative approach, notably by encouraging municipalities “to use the indicators as a tool for stakeholder dialogue” (p.69). They also indicate that municipal government stakeholders of cities that have produced VLRs expressed the need for conceptual principles to help with developing a transformative localised monitoring framework. In its checklist for implementing a territorial approach to the SDGs, and locating inequalities at the subnational scale, the report thus calls for municipalities to use the indicators as a tool for dialogue while measuring progress at city level in policy areas within their decentralised competence. The suggestions in this report clearly are progressive. However, the relation between localised monitoring and transformation and the mechanics behind these negotiations and dialogues are not further specified, which in turn limits the potential use of the proposed checklist beyond a call to action.

United Cities and Local Governments (UCLG, 2019) focused on helping these stakeholders to establish relevance as well as strengthening the role of subnational entities within SDG progress reporting, thus problematising Satterthwaite’s (2018) and Fenton and Gustafsson’s (2017) concerns. In a detailed SDG localisation workshop guide municipal officers are asked to reflect on the role of their local or regional government in the SDG reporting process and propose actions to promote ownership of the SDGs within their administration and to enable meaningful participation in the SDG reporting process. The latter suggestions include alliance-building with stakeholders at the urban, national and international scales. Regarding indicators however, the SDG localisation training workshop guidance appears to be less transformative, as municipal stakeholders are reminded to identify indicator sets which

relate to existing programmes, map them to the global indicator sets and ensure global comparability.

For Ortiz-Moya et al. (2020), effective localised monitoring creates reflective, inclusive processes which underpin “data-driven” reporting and policy making that is coordinated across the scale. In their analysis of VLRs these authors thus focus on stakeholder engagement and scalar coordination with the national SDG review process, calling for extensive stakeholder consultation in both implementation and monitoring, and enhanced vertical collaboration between levels of government. Like the OECD Synthesis report, these suggestions are progressive, but the working paper is limited in regard to helping monitoring stakeholders understand the factors that mediate the extent to which these two aspects of localised monitoring might be effective. These discussions clearly point to the political nature of monitoring framework localisation, beyond mere data disaggregation. The following section therefore looks at literature to understand how localised SDG monitoring could be conceptually linked to transformation.

3.3. SDG monitoring framework localisation as transformation

As argued above, clarity regarding processes to guide transformative localisation of SDG monitoring is limited. This is critical because with stakeholders unable to identify its transformative potential, the effectiveness and impact of SDG monitoring can be called into question. Moreover, it also increases the risk of SDG monitoring becoming just another administrative compliance exercise, devoid of relevance and meaning, and of ultimately eroding people’s trust in sustainability frameworks⁴. For example, the director of Colombia’s national statistics office (NSO), the *Departamento Administrativo Nacional de Estadística (DANE)*, noted during a workshop on city level SDG monitoring⁵, “NSOs should trigger dialogues so that SDG monitoring is not another nightmare of filling in numerous tables but enhances the ability to report on SDG progress”. This implies that the act of monitoring itself might be transformative, if it creates spaces for dialogue. Yet, as indicated in the section 3.2, to date the discussion regarding the transformative potential of SDG monitoring is limited. It is however

⁴ There are similar discussions in the urban resilience literature regarding the development of monitoring and assessment frameworks (see, for example, Coaffee and Lee, 2016).

⁵ This was at the UN-Habitat-led training and methodological discussion workshop for the two Colombian city-level monitoring pilot cities at the Colombian NSO in which I participated as observer (described in further detail in Chapter 4).

needed since it shapes the design of the localised indicator framework, and thus the localised interpretation of urban sustainability and resilience.

Transformation is the core theme in the 2030 Agenda, and it is closely related to the emphasis on participation and inclusion during the negotiations leading up to the 2015 resolution, where “a wider set of processes aimed to include civil society in the discussion” . While transformation can be understood as “fundamental changes in structural, functional, relational, and cognitive aspects of socio-technical-ecological systems that lead to new patterns of interactions and outcomes” (Patterson *et al.*, 2017) (p.2), driven by networks of actors able to bring about a radically different trajectory (Castán Broto *et al.*, 2019), Scoones *et al.* (2020) argue that it is difficult to operationalise, as “it is often not clear what should be transformed, by and for whom, and through what processes” (p.65). In addition, Stevens and Kanie (2016) have pointed to a structural tension within the 2030 Agenda, which is that despite its narrative of inclusiveness, the SDG text does not account for the “power differentials that lie at the heart of inequality” (p.395) and suggest issue framing to overcome this barrier to transformation. Scoones *et al.* (2020) have gone a step further in that direction by proposing a set of process principles for transformative SDG implementation. With their focus on the “fundamentally political and intersubjective nature of sustainability problems” Patterson *et al.* (2017) (p.6) call for actors to *take diverse knowledges seriously*, to embrace the politics of knowledge construction by focusing on “equal processes of collaboration and exchange, exploring diverse visions from different standpoints” (*ibid.*: 70). Given the variety of ways to achieve the SDG targets, these authors further argue for implementation to allow for *plural pathways*, and to *take politics seriously*, requiring a critical awareness regarding the negotiations among worldviews, interests and incumbent power. Extending the debates in the resilience literature, these authors view efforts to bring about transformation as “deeply political and contested because different actors will be affected in different ways and may stand to gain or lose as a result of change” (*ibid.*: 2), with Castán-Broto *et al.* (2019) identifying a need for a political-critical lens when analysing visions of transformation and their plurality across geographies and scales.

What does this mean for SDG monitoring, and how could the latter contribute to transformation? Further conceptual answers regarding the characteristics of SDG monitoring as transformative activity can be found by moving the focus from *transformation* to *transformative capacity*. Wolfram (2016) proposes a framework of *components and sources* of urban transformative capacity. These consist of *agency and forms of interaction* – addressing considerations of inclusiveness, diversity and empowerment; *development processes* – to enable awareness of obduracies, transdisciplinary co-production, and formal and informal spaces for critical

reflection on progress; and *relational dimensions* – implying the need for processes to span across horizontal siloes and vertical scales. Based on a review of empirical evidence on urban transformative capacity, Wolfram et al. (2019) argue that “consistency matters within a given context...but decisive for urban transformative capacity is the knowledge co-production process through which this is achieved (p.445). Echoing Castán-Broto et al. (2019) in the importance the latter assign to the role of “the dynamics of knowledge production and the extent to which there is room to challenge dominant power relations” which mediate transformative capacity (p. 452), Wolfram et al. (2019) further argue that social learning in assessment is a key driver of urban transformative capacity. Here they call for an awareness of *temporality* – “clarity regarding the point in time an assessment is carried out, and what this implies for particular outcomes targeted...” (p. 445).

The centrality of knowledge production for transformative capacity and considerations regarding its characteristics lead to the conceptualisation of SDG monitoring and its localisation as process of knowledge production which complements SDG implementation at different scales of governance. It also resonates with a critical-pedagogical approach in its view of thematic investigation (i.e., thematic knowledge production) as transformative process:

“A meaningful thematic is expressed by people, and a given moment of expression will differ from an earlier moment, if they have changed their perception of the objective facts to which the themes refer. From the investigator’s point of view, the important thing is to detect the starting point at which the people visualize the “given” and to verify whether or not during the process of investigation any transformation has occurred in their way of perceiving reality” (Freire, 1970) (p.107).

Viewing SDG monitoring localisation through this lens and with the 2030 Agenda’s ambition to trigger transformation of “dominant governance approaches to sustainability” (Stevens and Kanie, 2016) in mind, people in this view refers to the SDG monitoring stakeholders, such as the planning officers and civil society leaders at the national and municipal scales mentioned in the introduction, while the process of investigation relates to the creation of a localised monitoring framework around themes indicated by SDG targets. Importantly for an analysis of SDG monitoring localisation such as this, this view also refers to socio-spatial *situationality* as a factor of the “aspirations, motives, and objectives implicit in the meaningful thematics” (Freire, 1970) (p.107). The thematical investigation lens therefore requires a critical awareness of differences in thematical framing across the scales, and of differences in “actor perceptions of impact, meaningfulness, and desirability of transformations” (Wolfram et al., 2019) (p. 440) implicit in the framings, and which mediate the inherent tension in localising the

SDG monitoring framework, that is the tension between *consistency and alignment* on the one hand, and meaningfulness and *relevance*, on the other.

The conceptual summary (see figure 4) emerging from the literature then is that the localisation of SDG monitoring as transformation refers to the extent to which a change in the elements of transformative capacity (such as the ones proposed by the authors further above) – triggered by the process of SDG monitoring localisation as space for dialogue and reflection – is likely to result in reframed narratives and actor constellations which lead to a new trajectory towards socio-spatial and environmental equity in localised implementation. This conceptual proposal also calls for an awareness of the situational and temporal factor-driven aspirations and motivations implicit in the localised thematical framing.

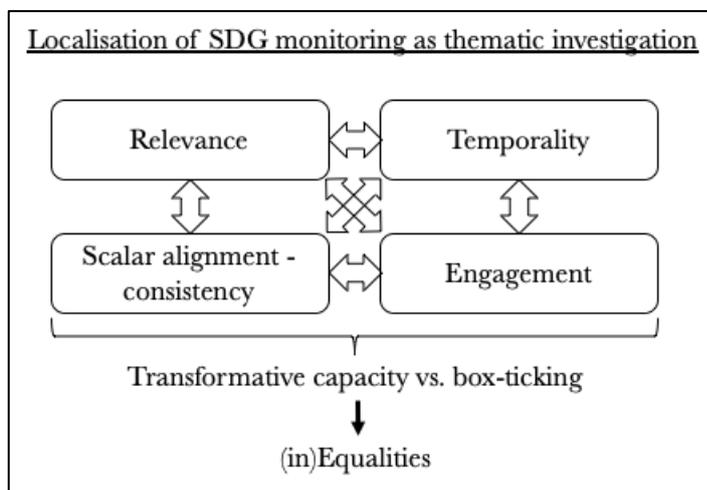


Figure 4: SDG monitoring framework localisation as thematic investigation

The framing of SDG monitoring localisation as the localisation of thematic devices for transformative knowledge creation leads to another conceptual discussion, which relates to considerations regarding the universal applicability of urban resilience and sustainability measurement frameworks. As the following section will illustrate, these discussions were driven by questions regarding the extent to which the elements of the SDG monitoring framework are likely to reinforce ideas, conceptualisations and practices from the global North, and thus in their current form limit the potential for transformation in other contexts.

3.4. SDG monitoring localisation in the global South

The most tangible entry point to the discussion regarding the global North-global South tension in risk, resilience and development monitoring is the data which is used for measurement. Pointing to the estimate that over two thirds of the urban residents in the global South have inadequate access to urban services, Pipa and Conroy (2020) express concern that

the current understanding of the nature and extent of urban poverty in the global South is extremely limited. For these authors, the reliance on standard datasets such as the Demographic and Health Surveys (DHS) and census data, and the limited availability of local data, or datasets which can be geographically disaggregated is the key challenge, heightening the risk that “the poor will not just be left behind, [but that] they will be left out altogether” (ibid.: 285). To encourage transformative processes, Pipa and Conroy (2020) call for a *Global Partnership of Local Development Data*, comprised of government stakeholders, civil society, start-ups and investors to “uncover and analyze local data focused on the poorest and most vulnerable” (ibid.: 285). Such an initiative for generating and administering local data is undoubtedly instrumental for “ground-truthed” monitoring, and numerous local authorities already work with private actors for data sharing, for example, in the case of public transport providers and some ride sharing apps. *The Data Revolution for Sustainable Development* calls on monitoring stakeholders to quantitatively bridge data gaps and leverage on newly emerging data from “new technologies such as mobile phones and the ‘internet of things’, and from other sources, such as qualitative data, citizen-generated data and perceptions data” for sustainable development (IAEG-Data-Revolution, 2014) (p. 6). An increasing number of NSOs, including DANE (the Colombian NSO) have started to see their role moving from data generators to data brokers and certifiers, and the Committee for the Coordination of Statistical Activities (CCSA) has called for a *Global Data Convention* as a global agreement on non-conventionally statistically produced data collection and use (CCSA, 2020). Data sharing is undoubtedly instrumental for localisation. However, the use of private sector data, and adoption of its related spatialities, definitions and categorisations might still require critical analysis regarding its transformative capacity for those historically left behind.

A transdisciplinary look across critical geography, legal ethnography and science and technology studies adds valuable insights to this discussion, specifically regarding questions of geopolitics, of the politics inherent in data practices and, relatedly, of coloniality inherent in the indicators in their function as knowledge devices. Regarding the first, they remind us that the entities to whom the *Data Revolution* refers as new sources for enhanced inclusivity of sustainable development data, such as universities, private companies and NGOs, tend to be conceptually oriented by the global North (Prince, 2019) (the question regarding the invisibility of data from non-economic transactions is not mentioned). Prince (2019) implies that if adopted with solely the conventional criteria of data quality, the statistical practices guiding the epistemological focus of monitoring might still be unsuitable if replicated in global South contexts, and thus might perpetuate inequalities, even after the *Data Revolution*.

Taking an ethnographic approach for an investigation into indicators of global human rights, gender violence and sex trafficking and the indicators' policy impacts Engle Merry (2016) applied a genealogical method. Following an indicator's development path and socio-political dynamics which drive its financing, its wider adoption and stabilisation, this author points to factors and impacts of obduracy which prevent transformation. Calling it *expertise inertia*, Engle Merry illustrated this phenomenon in indicator development with an example from UN expert group meetings on indicator development. There, Engle Merry observed that "those with local knowledge of the surveyed populations rarely participate in indicator construction" (p.215) while global North methodologies tend to be replicated in the global South due to limited experience with indicator development there (likely because of better access to resources which allow for building up prior expertise in the global North), thus leading to the adoption of the methodological and conceptual blueprints from the global North. Thus, in terms of the focus of this research, i.e., the extent to which the localisation of monitoring might contribute to triggering transformation Engle Merry did not appear to be optimistic. For this author these implicitly political processes in indicator development prevent the inclusion of conceptualisations and methodologies based on local knowledge, especially if they come from actors with conventionally less economic and socio-political power. Resonating with Prince's (2019) *geography of methods*, this view implies that a recreation of global North indicator conceptualisations and methodologies in global South contexts is likely to be driven by inherent geo-political power dynamics, and ultimately inadvertently reproduces global northern concepts, which are unable to adequately represent the reality in marginalised urban neighbourhoods in the global South.

Porto de Albuquerque et al. (2013) explained this practice with the implicit assumption of the *diffusion model*, where techno-scientific artefacts – and more broadly, knowledge devices such as monitoring frameworks and their conceptual bases – are conceived of as independent to the social world and can be clinically transferred from where they were invented by merely adapting its features to the local environment. Given the socio-technically entangled nature of knowledge production, this tension turns into an ontological discussion, since the knowledge devices developed in global Northern contexts relate to "different worlds or realities, not just different interpretations of reality" (da Costa Marques, 2014). Importantly for this investigation on the localisation of sustainable monitoring frameworks, Porto de Albuquerque et al. (2013) argued that "when the diffusion model is treated as an ontological premise, the technoscientific knowledge and artefacts employed as part of development initiatives tend to be conceived and dealt with in a way that relegates to the background (or stifles debate about) important issues

that reflect the reality of developing countries – such as local practices, constraints, social conditions, forms of being, and local knowledge” (p.5).

This assumption is a significant barrier to transformation, especially when aiming to reach those furthest behind. Referring to the practices of top-down (re-)production of concepts, Engle Merry further called “the process of measurement [which] tends to produce the phenomenon it claims to measure” (p.12) the *knowledge effect* of indicators. To consciously address and work with this phenomenon in indicator development, the author argues that “it is necessary to attend to the microprocesses through which surveys are created, categories defined, phenomena named, translations enacted. The microprocesses are, in turn, shaped by the actors, institutions, funding, and forms of expertise at play” (p.6). Engle Merry’s observations of the *knowledge effect* resonate with Hacking’s (2006) *making up people*. Implicitly pointing to the transformative potential of indicators Hacking suggests that classifications “interact with [people], and change them. And since they are changed, they are not quite the same kind of people as before...I call this the ‘looping effect’. Sometimes, our sciences create kinds of people that in a certain sense did not exist before. I call this ‘making up people’.” (ibid. np).

According to Porto de Albuquerque et al. (2013), when applied to the global South (and especially marginalised communities living in “informal”, self-constructed neighbourhoods), this process also leaves hidden whatever is outside the template that constructs the northern reality, as “the visible part of technoscientific knowledge, the part that is explicitly spread around the rest of the world in the developing-colonizing process by means of the diffusion model, is like the tip of an iceberg ... resulting from a complex construction process, in which the “formal” classification categories and classified “informal” practices are co-constituted.” (pp. 6/19). Thus, in Hacking’s words, this amounts to making up northern people in the South and invisibilising the southern constituents.

With the *engines of discovery* – consisting of counting, quantifying, creating norms, correlation, taking action, and scientification, normalisation, bureaucratisation, and resistance – Hacking already provided a systematic (yet still arguably apolitical) conceptualisation of the *microprocesses* which Engle Merry (2016) investigated from a legal ethnographic point of view in international indicator development. Adopting a more explicitly Foucauldian view, Kitchin and Lauriault (2014) suggested that these processes take place in the arena of data assemblages. These consist of eleven apparatuses ranging from implicit and non-codified *systems of thought to practices/ways of doing, political economy* and organisational structures, to tangible *materialities and infrastructures*. In their critical reflection on urban indicators and dashboards Kitchin et al. (2015)

thus claimed that indicator frameworks “are bundles of contingent and relational processes that ... do not simply reflect the world, but actively produce it, ... expressing a normative notion about what should be measured, for what reasons, and what they should tell us” (p.16ff). Although the authors do not explicitly distinguish between the politics inherent in the data and the processes inherent in indicator framework creation, they suggest that indicators are selected due to political or economic agendas, or “selecting because it exists or omitting because it does not” (p.18). Kitchin et al. (2015) close the performative loop for governance with the indicator frameworks viewed “as active, ideologically loaded engineered devices...becoming embedded in the thought, practices, and institutions of users and seeping into actions...to normalise a way of thinking about and performing governance” (ibid.). Hacking’s (2006) *looping effect* emerges again at this point and clearly illustrates the transformative capacity of indicator framework localisation.

Kitchin et al. (2015) brought heavy charges against the conventional technocratic and data-driven development of urban indicator frameworks. These include a restricted view of the city’s multidimensional and interdependent challenges and the assumption of global validity, which relates to the modeller’s dilemma and comments on scale in monitoring frameworks in Chapter 2, and the limited consideration of history, thus a path dependence of themes. In Engle Merry’s (2016) research, the simplified indicator narrative has increased political awareness but ignores the “larger set of conditions that produce the suffering that compels victims to become vulnerable...”, and which vary from place to place (p.140), in turn limiting the scope for intervention to reactive measures. This echoes Weichselgartner and Kelman’s (2014) opinion that “actors that cannot be captured with available data through measurable indicators, such as power relations, are often neglected, and this can lead to administrative-operational interventions that do not fully factor in other relevant determinants of resilience” (p.257). To address this dilemma Engle Merry (2016) proposed engaging a wide range of stakeholders from early on in the indicator development, qualitative research to translate between global and local meanings, and clear indications regarding the frameworks’ shortcomings in their proxies, data availability, generalisations for comparability and limitations regarding structural knowledge. Kitchin et al. (2015) further highlighted the challenges city officials face, and that they may indeed already be well aware of these discussions, while limited municipal budgets mandate pragmatism to apply existing methodologies and dataset. They acknowledged the utility of urban indicator frameworks but also call for the stakeholders responsible for indicator development to “recognize their positionality,...to document data lineage and metadata” as

well as the indicator frameworks' performing role in "actively framing and producing the world" (p.24)."

Opening up the data practices through active and meaningful engagement with marginalised communities thus might enhance the transformative potential of localised monitoring frameworks. The following subsection firstly considers the role of participatory knowledge creation for transformative localisation, and then discusses the monitoring frameworks' role as knowledge devices in a post-colonial context to reflect on the application of conceptual and methodological measurement blueprints of resilience and development in the global South.

3.5. Democratisation of monitoring for transformative localisation?

Sections 3.1 and 3.2 discussed the tensions in the macro-politics which frame localisation in general and at city level in particular, and section 3.3 presented SDG indicator localisation as a thematic exercise of developing a localised device for knowledge creation. Section 3.4 discussed the micro-level socio-technical factors that mediate the conceptual and methodological products of this exercise. Here the discussion turned to debates in science and technology studies and commentators from other critical disciplines to draw out the political character of indicator framework development and data generation, which risks inadvertently replicating specific views of resilience and sustainability, thus perpetuating inequalities. This issue is particularly critical for historically marginalised urban communities (and thus the Leave No One Behind mandate) since the views tend to be framed from the global North and based on conventional practices of data generation with limited involvement of those being measured. With their promise of countering these effects by giving voice, this sub-section reflects on the transformative potential of participatory data practices.

Analogous to the organisational broadening in resilience theory, and parallel to the ideal of technologically enhanced inclusivity from the Data Revolution, municipalities increasingly encourage citizen involvement in urban monitoring. Participation of non-experts in measurement has a long history in citizen science, particularly in the provision of volunteered geographic information (VGI). Haklay (2013) defined citizen science as "scientific activities in which non-professional scientists voluntarily participate in data collection, analysis and dissemination of a scientific project" (p. 106). With the explicit aim of "highlighting the power relationships that exist within social processes such as urban planning" (p.115) this author provided a typology of the levels of participation which range from crowdsourcing and citizens

acting as sensors, to collaborative science where citizens as non-(formally certified)-experts and scientists collaborate in problem definition, data collection and analysis. At the top end of Haklay's (2013) scale the "lay persons" contribution to knowledge production is seen as equal to that of the "expert", and the author points out that this equality "requires a different epistemological understanding of the process, in which it is accepted that the production of scientific insights is open to any participant while maintaining scientific standards and practices" (p.119). Thinking about Haklay's citizen science typology in terms of the indicator localisation and critical data studies discussions in sub-section 3.4, one might hypothesise that the participatory modes further up the scale might reduce the risk of creating knowledge according to pre-defined templates and thus of *making up people* in the localised SDG monitoring frameworks. In Fraisl et al.'s (2020) review of citizen science initiatives' current and future potential for SDG indicator monitoring, citizen engagement appears to largely remain at the crowdsourcing level, to fill data gaps of conventional statistical practices, thus mainly to increase temporal and spatial granularity. The extent to which citizen involvement enhances local interpretations and the transformative potential of indicator localisation still appears less explored. The authors of that review however do point to the citizen science initiatives for "monitoring the monitoring process" (p. 1746) with one example of an initiative leading to an adjustment of official measurement definitions, thus contributing to thematic granularity, which Fritz et al. (2019) identified as one of the added values of citizen engagement in SDG monitoring. These analyses still appear to take a largely instrumental and apolitical view of knowledge production, which might be related to their global positionality and audience at the national institutional levels. With citizen sciences opening up spaces for bottom-up dialogue the limited attention to citizen sciences initiatives' potential for meaningful thematic engagement might represent a missed opportunity for transformative localisation, especially if the risk of *making up global northern and invisibilising southern people* with the localised frameworks in the global South remains unmitigated.

Indications regarding the extent to which citizen participation in these processes of knowledge production is likely to empower communities to meaningfully bring in their interpretations of resilience and sustainability in measurement practices might be found in case studies. In a recent citizen science project regarding weather-related community knowledge of causes and effects of rainfall in Bangladesh Bremer et al. (2019) went a step further in both the engagement of local residents and the analysis regarding the impact on governance processes. In a co-productive approach, the residents defined the research focus, the indicators, and the selection of the indicators they wanted to measure. Remarkably, that research also explored

the “citizen scientists” expectations of the project and perceived impact on *human* (individual), *social*, *resources and technological*, *political*, and *institutional capital*, and found that the participants perceived an improvement of human and social capital, moderate impact on technological and moderate to low impact on political and institutional capital, and only in cases where the “citizen scientists” worked in local institutions or politics. For this discussion this means that in that particular study increased engagement with the aim to create “locally meaningful indicators” (ibid.: 249) contributed to the self-empowerment and conscientisation of this marginalised community. Yet, evidence of this kind of transformative impact still appeared to be limited in Bremer et al.’s study (2019), as innovative as it was.

This represents a particular challenge for localising monitoring in cities in the global South with marginalised neighbourhoods since their self-constructed nature has resulted in a spectrum of understandings that measurement frameworks and assumptions based on “frames of references of better-off social groups, ‘colonizers’ usually stemming from the West/the global North” as Porto de Albuquerque and de Almeida (2020) suggest, are unable to capture. An example is the conceptual contrast between the multiplicity of discourses and relations to water as critical infrastructure in one of Medellín’s marginalised *barrios* with the monism (i.e., the concept of centrally provided *drinking water* as the *only* definition) of the dominant legal discourse and global narratives. The latter glosses over variations in water practices related to differences in “needs, weather conditions, conceptions of water and well-being, as well as possibilities of accessing it” (Botero-Mesa and Roca-Servat, 2019) (p.12). This resonates with Fitzgibbons and Mitchell’s (2019) use of Anguelovski et al.’s (2016) *Acts of Omission* and *Commission* inherent in 31 City Resilience Strategies. They find that despite the 100 RC framework’s emphasis on participation and co-creation, most municipalities did not appear to engage with marginalised residents in the process of strategy definition, and thus, their associated localised monitoring and evaluation frameworks are unlikely to do so. They argue that in several instances this practice is likely to negatively affect disempowered communities (an Act of Commission) or not account for their needs (an Act of Omission).

Porto de Albuquerque and Almeida (2020) thus suggest that for the democratisation of data and measurement practices to be truly empowering (as opposed to instrumental and culturally invasive), a dialogue is necessary which allows citizens to critically reflect on the theme which is being measured in their ontological terms. For these authors this critical dialogue can only happen if localisation, and the democratisation of knowledge creation in a wider sense, by itself is critical regarding the modes of engagement and asks for the extent to

which they encourage reflective and empowered interpretation and reframing, especially of those conventionally marginalised.

The three empirical chapters analyse the various tensions which mediate the transformative capacity of the localisation exercise discussed in this chapter, ranging from the macro-politics to the inherent politics in the data practices and modes of engagement, at three different scalar angles. These refer to the global framework's vulnerability to inequalities, the national and municipally localised framework, with the third empirical research adopting a dialogical thematic investigative approach with the communities, to identify thematic points of departure for an empowering engagement in urban indicator framework localisation. The following chapter presents the methodological basis and methods applied in this research.

Chapter 4. Approach and Methods

4.1. Introduction

The literature review in the preceding chapters illustrated the multiple factors which mediate the extent to which the cross-scale translation of a global urban sustainability and resilience indicator framework might be inclusive, representative and transformative. It was argued that resilience has been framed as transformative approach to address the unequal allocation of risk and that equity concerns have become increasingly important in debates and global policy initiatives. The latter aim to address risk by viewing it through its relation to differentials in vulnerabilities and potentialities resulting from inequities in development, yet an implementation gap between debate and actual transformation appears to be as wide as ever. With the Leave No One Behind mandate and the call to Reach Those Furthest Behind First, the 2030 Agenda rolled out globally in the form of the SDGs where the UN member states explicitly agreed to focus on these challenges. The discussions presented in Chapter 2 further described how scholars and grey literature have conceptualised the mechanisms between risk and development in the form of measurement frameworks and the socio-political factors which result in a multiple, that is different interpretations of urban resilience and sustainability across scales.

Chapter 3 unpacked the scalar tensions which underpin this multiple in measurement, proposed a framing of indicator localisation as process of localisation of a thematic device for transformative knowledge creation, and discussed how uncritical export, or imposition (for example due to pre-defined evaluation criteria for development projects) of non-contextualised concepts might result in blind spots regarding factors of vulnerability and risk creation. This would limit relevance and thus reduce opportunities to build on existing strengths in urban communities with a history of marginalisation in the global South. In combination, chapters 1 to 3 pointed to the overlapping gaps in literature, specifically regarding the resilience and sustainability multiple and its drivers on the one hand, and the “mode of localisation” of urban resilience and sustainability frameworks on the other, which frame this research (also see figure 1 in chapter 1).

To develop an understanding of the critical points which mediate the multiple understandings and the extent to which the resulting indicator frameworks are transformative, this investigation focused on the outcomes and the processes of translations across the various scales (see figure 5 below for the analytical concept). Thus, as detailed in section 4.2 below, the

localisation of the SDG 11 monitoring framework was chosen as case study because it is an urban sustainability and resilience measurement framework that is implemented across scales with – in theory and in line with the principles of goal-setting governance – a high degree of freedom regarding interpretation at each level. With the research question regarding the extent to which global urban resilience and sustainable development frameworks are transformative when applied across scales, the analysis applied Wolfram’s (2016) components and sources of urban transformative capacity as primary lens (see figure 5). Here the focus of the investigation was on the extent to which the localised understanding of resilience and sustainability was both driven by and manifested (thus the upwards arrow on the right) in a change in the components of urban transformative capacity. Viewing SDG 11 indicator framework localisation as cross-scale thematic investigation and construction of a knowledge device regarding urban resilience and sustainability enabled a dual approach for the analysis of the institutional framings and community understandings. For the institutional framings (focus of chapters 5 and 6) (left side of figure 5) the lens for the analysis of the change and its drivers of the components of transformative capacity were the extent to which the localised measurement frameworks consider inequalities, and the driving factors – identified in section 3.3 – might mediate the character of the localised framework at each level. As section 4.3 will show, this was assessed with data from documentary analysis – for the localised interpretation, and semi-structured interviewing and participant observation – for an insight into the driving factors which mediate the multiple (which relates to the bottom two boxes at of figure 5). For the analysis of community interpretations (investigated in chapter 7), the analytical lens referred to the communities’ modes and themes of mobilisation and the discourses regarding risk, resilience and sustainability (detailed in section 4.5), as a manifestation of the community governance processes relating to the risk-development nexus. This in turn provided the community level comparator for identifying the scalar multiple in relation to the institutional (global/national/municipal level) framings and the potential cross scale trade-offs.

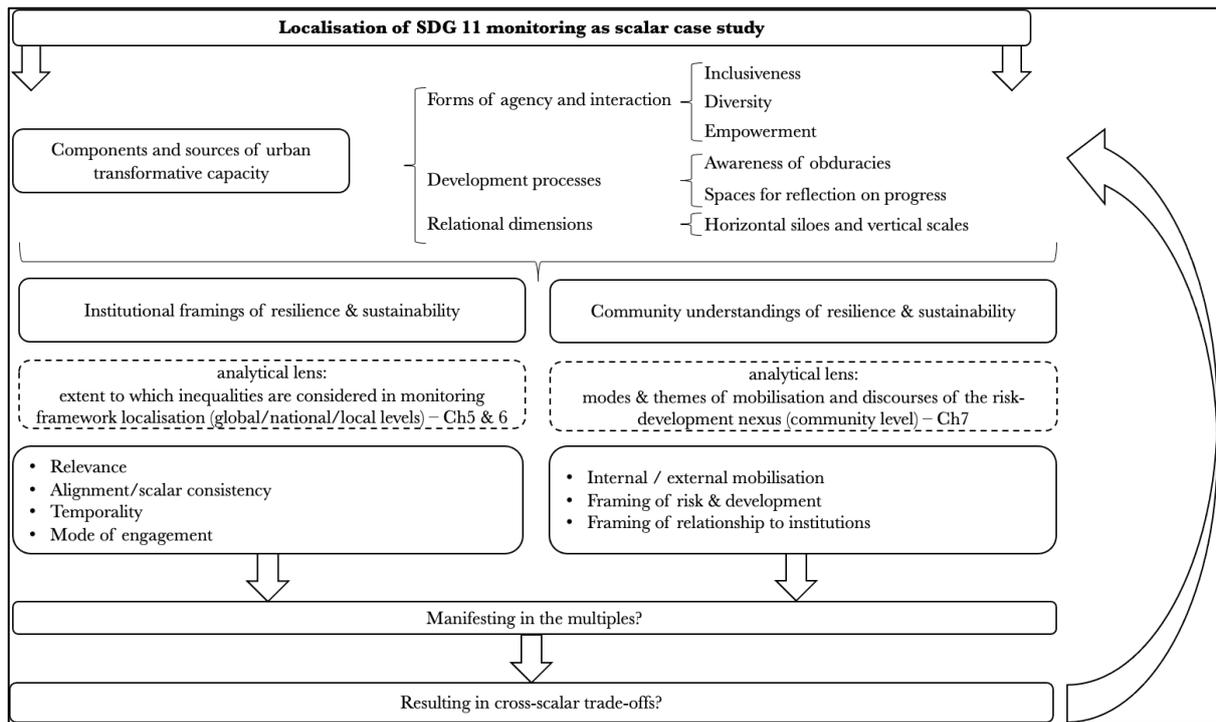


Figure 5: The analytical concept framing the methodological approach

Related to the dual focus of the research mentioned above, the iterative nature of the research process is another methodological implication of adopting a thematic investigation approach, which views the local interpretation SDG 11 as process of knowledge production (see section 3.3). It also relates to the dialogic notion of “using the method as heuristic device” (Juarez-Bourke and Vilsmaier, 2020) (p. 35), and refers to the iteration between inductive and deductive processes in this research. More specifically, the deductive investigation of the outcomes of localisation at the institutional level was followed by an inductive process to develop theoretical insights regarding the drivers and trade-offs of the multiple across the scale based on institutional and community views.

Chapter 1 has also briefly described the case study context of Medellín, with the city being one of the eight global pilot cities for SDG 11 monitoring indicator development at city level. The choice of Medellín as a “backdrop” for the case study also benefited from the Colombian National Statistics office (NSO) being active (thus reflective) in the global methodological discussions regarding the SDG indicator framework. Beyond these considerations which indicate a conceptual suitability, pragmatic considerations, such as my involvement in UN-Habitat SDG 11 methodological discussions and workshops and the UKRI GCRF project URBE Latam played a role in the thematical and geographical choices for the case study.

4.2. Case study approach

Section 4.1 indicated that this research adopted the approach of a thematic investigation with a case study of the implementation of a monitoring framework – the SDG 11 monitoring framework – across the scale. To draw out the drivers of the multiple interpretations across the scale, this approach required a study design which allowed a detailed analysis from multiple points of view and draws on different forms of data (Mills, Durepos and Wiebe, 2012). The methodological aim was a balanced (or rather, as balanced as possible) analysis of the factors, particularly the stakeholders and their socio-spatial situationality implicit in the thematics (see section 3.3) which determine the transformative potential of the localised interpretations of SDG 11 at the various levels (as indicated in the analytical concept in figure 5). Taking an iterative inductive/deductive iterative approach, the aim of this research was to uncover critical points along the scalar process of localisation, which means that rather than generalisation (which might be applicable for follow-on studies), the focus was on gaining detailed insights that would explain the tension between the view of the global monitoring framework as the sum of its parts and the intra-scalar conflicts identified in the literature. The aim to investigate and unpack the critical points of localisation implied a research focus on the institutional and community stakeholders and their interactions with fine-grained data which contains their implicit (e.g., in policy documents) or explicit voices. With an urban indicator framework and the multiple concepts it represents across scales as the focus of this investigation, a case study was the most suitable research design since it

“...is an in-depth exploration from multiple perspectives of the complexity and uniqueness of a particular project, policy, institution, programme, or system in a real-life context...with the primary purpose [being] to generate an in-depth understanding of a specific topic.” (Simons, 2009) (p. 21)

With the localisation of the SDG 11 monitoring framework being a continuous process, an important particularity of this research was the overlap and simultaneous presence of the various scales. Thus, with the case study being the SDG 11 indicator framework I adopted a cross-sectional focus since I was interested in the scalar (as opposed to temporal) moments of translation. In other words, I observed the moments of translation at different scales at specific points of time through a selection of methodological tools. This scalar approach was made possible by the particularities of my exposure to this process, which to a large part was due to my collaboration with UN-Habitat’s Global Urban Observatory (the GUO; described in more detail in section 4.5.1). Regarding methodological tools utilised in the case study design, I

combined qualitative methodologies where specifically, I selected three analytical tools for this research to explicitly develop a thematic approach with an increasing scale of grounding as research strategy, which broadly (because they overlap) mirrored the scalar character of the study from the global to the community level.

As section 4.5.2 describes in detail, documentary analysis represented a primary data source at the global, national and municipal levels of the research. In this thematic investigation approach, institutional documents were viewed as artefacts of interpretations regarding the themes inherent in SDG 11, including the extent to which different forms of inequalities are or should be considered. As is described in further detail below, the documents ranged from publicly accessible 2030 Agenda-related policy documents, to technical training documents stored on openly accessible Google Drive folders, and national and municipal internal government worksheets used for thematically matching the SDG 11 indicator with existing datasets and administrative records which were obtained from the interview partners at these levels.

The second data source were interviews in semi-structured form. The initial documentary analysis and participant observation at the global level informed the definition of themes to discuss with the national and municipal monitoring stakeholders in the interviews. The semi-structured nature of the interviews allowed me to follow-up and request the interview partners to expand if an issue appeared relevant for the analysis. While the documents represent static outputs, at the institutional level, the interviews thus served to provide further detail of the localisation as process. At the community level, the interviews were used for the identification of community governance processes (detailed in section 4.6). A critical issue here was representation, especially at the community level, since I relied on community leaders as interview partners and informants. For me, this potential risk of underrepresenting the more vulnerable residents in the communities was offset by their breadth and depth of knowledge about the neighbourhood history, challenges and strengths as well as their evident engagement and concern for the wellbeing of the community of which they are part.

Thirdly, participant observation at the global and national level complemented the other two data collection tools by gaining an insight into the interactions among the wider institutional stakeholders and their discussions regarding SDG 11 indicator localisation. While only indirectly informing the research, my participation at community meetings and activities regarding issues of importance to them provided insights into their dynamics in the sense of the "backstage culture", that is the rich world behind the interviews, illustrating the "behaviours,

intentions, situations, and events as understood by one's informants", as Kawulich (2005) (p.2) suggested.

The remaining sections of this chapter provide a brief theoretical discussion of the tools applied (section 4.3). This is followed by a detailed description of the data gathering process (4.4), and of the data analysis for the community level analysis (4.5) (the methodological approaches for the global and national/municipal analyses are described in detail in the empirical chapters 5 and 6), and the chapter closes with reflections on the critical methodological issues during the study (4.6).

4.3. Methodological tools of the case study approach

4.3.1. Document analysis

Considering the aim of identifying the extent to which inequalities are likely to be accounted for in indicator frameworks localisation, the purpose of this particular method seems well defined. It is required to make inherent decisions and tensions in the design of the indicator frameworks visible. Although not going as far as including buildings or other non-written and codified material in the concept of "text", as Rapley and Gees (2018) find in the post-structural and post-modern turn in academia, here the definition of document comprises written material in general (thus including excel worksheets, as subsection 4.5.2 describes). The definition is closely aligned to Bowen's (2009) institutional and organisational documents which include reports, application forms, and survey data amongst others, with the research purpose of "providing background and context, additional questions to be asked, supplementary data, a means of tracking change and development, and verification of findings" (p.30). As chapters 5 and 6 will show, since this study is organised along scales, by addressing the research questions, the analysis of global, national and municipal documents has resulted in additional questions which are subsequently addressed with the other methodological tools.

Critical issues in document analysis primarily refer to the credibility of the source and access (Bowen, 2009; Yin, 2017), such as low retrievability, biased selectivity and reporting bias. While the first has not affected the study, rather to the contrary, participant observation and interviews have led to access to the documents, the latter two do not apply because of the thematic role these documents play in the study. In that sense they represent artefacts of SDG 11 localisation more than statements about reality, since, for example, the research does not evaluate cities or countries' progress towards the SDGs. Biased selectivity is mitigated since

these documents were supplied by the representatives of the respective institution directly (in the case of UN-Habitat training documents and methodological guidance, and Colombia's NSO and municipal excel worksheets), or were sourced from a selection of webpages, in the case of the Voluntary Local Reviews, or there was no likelihood for bias in selection, as in the national and municipal government policies. Subsection 4.4.2 describes the methodology for document analysis in more detail.

4.3.2. Semi-structured interviewing

Semi-structured interviewing is a widely employed tool in qualitative research, if not the most used tool. It is therefore easy to automatically apply it, which makes a reflection regarding its utility for the respective research even more important. As subsection 4.4.3 describes in detail, during the field research, the interviews aimed at understanding processes, of indicator localisation at the institutional levels, and of community risk and development at the neighbourhood level. Given these two broad themes, semi-structured interviews which allowed for flexibility within the thematical frames was the most adequate mode here, as opposed to the structured and thus more rigid and the unstructured and entirely conversational form. Beyond these three modes, Roulston and Choi (2018) interestingly distinguish between approaches to interviews to which they might be applied. Of these approaches it is perhaps useful to specifically mention the hermeneutical and ethnographic approaches, since in most cases the level trust was high enough to apply a combination of these two. According to these authors, in the hermeneutic approach to interviewing

“researchers and participants as co-inquirers engage in a shared dialog that evolves through questions and responses. The dialog focuses on reflections of both researchers and participants as they share ideas and reflect together” (p. 236)

and in the ethnographic approach where

“the purpose of interviewing is to explore the meanings that people ascribe to actions and events in their cultural worlds, expressed in their own language. To conduct ethnographic interviews, researchers need to conduct ongoing analyses of data generated via field notes of observations, participate in research settings, and conduct multiple interviews with informants over extended periods of time...making repeated contacts for extended observation and multiple interviews” (ibid.)

These two approaches resonate with Kristensen and Ravn's (2015) observation that qualitative research is moving away from a positivistic and extractive view of interviewing and data “collection” and “discovery” to “a perception of data as something that is produced

through the dynamic and active interaction between researchers and research ‘objects’” (p. 734).

Literature identifies several issues which might affect the representativeness of the interview as a data source. A key concern is in the recruitment process of interview partners, of how to ensure that the selection of the sample is representative? Lamenting the lack of attention to the recruitment process in qualitative methods textbooks, Kristensen and Ravn (2015) suggest, amongst other factors, that mediators and the researchers’ positionality and situatedness can have significant impacts on the interview partner recruitment process. They argued that potential interview partners respond more positively if contacted through a mediator (which is a matter of trust), while they also argue that because of their own bias of selection mediators can “directly influence the material and, hence, the knowledge produced” (ibid: 732). Echoing Kristensen and Ravn’s (2015) reference to the interviewer effects on interview partners’ responses during an interview, these authors also called for attention to the impact of researchers’ positionality, such as their gender, nationality and social class on recruitment. This consideration might be of particular importance in cross-cultural interviewing, and is an issue of which I as white, male, from a European university was particularly aware of, as my positionality may have positively affected the willingness to meet (although the ability to speak the language and cultural familiarity played an important role, as discussed in subsection 4.4.3. and section 4.6.).

4.3.3. Participant Observation

The above two tools are based on the verbal, codified generation of data. Participant observation, which allows a researcher to observe the reality “from the inside” (Yin, 2017), complements these two. Yin (2017) defines participant observation as mode of observation where the researcher “assumes a variety of roles within a case study situation” and suggests that “in urban neighbourhoods, for instance, these roles may range from having casual social interactions with various residents to undertaking specific functional activities within the neighbourhood...and is related to the ability to gain access to events or groups that are otherwise inaccessible to scientific investigation” (p.94).

This methodological tool is useful for identifying the nonverbal and implicit behavioural clues, thus for observing processes since it allows to determine how people interact with each other, and how much time is spent on different tasks, activities, and discussions (Kawulich, 2005). Kawulich (2005) also suggests that participant observation can increase the validity of

the study since it “may help the researcher have a better understanding of the context and phenomenon under observation” (np). Bryman adds that participant observation is also more likely to result in the discovery of unexpected issues or themes (2016).

Similar to Kristensen and Ravn’s (2015) observations regarding obtaining agreements for interviews, Kawulich (2015) however, also reminds us that researchers from the outside are not necessarily always entirely part of the community life (in the case of community research) and that access might depend on factors of positionality. In this sense, Kawulich (2015) perceives the risk of bias and encourages the researcher to consider how their positionality might have an impact on their observation, analysis and interpretation. Relatedly, for Yin (2018) one of the major problems related to participant observation is that it might produce bias as the researcher “might become a supporter of the group or organisation being studied” (p.96). This tension is an important consideration since it relates to the extent to which research is objective, and has also emerged during my field research. Lastly, Yin also warns that depending on the situation, the researcher’s attention might lean towards the participant rather than the observer role, which means that observational data might be omitted.

The following section describes the process of data gathering for the case study.

4.4. Data gathering

4.4.1. Contextualisation and overview

The sequence of preliminary contacts shaped the scalar nature of this research from early on. The first contact for this research and which subsequently contributed to shaping the focus of this research was with UN-Habitat’s Global Urban Observatory (GUO), which emerged from my involvement in the University of Warwick project National Institute for Health Research (NIHR) Global Health Research Unit on Improving Health in Slums (of which one of my supervisors is Co-I). UN-Habitat is the custodian agency for SDG 11, which means that it is the UN-agency with primary responsibility for policy and indicator framework development for this Goal, and the GUO is the functional unit responsible for SDG 11 and wider urban indicator methodology development, technical training workshops with National Statistics Offices (NSOs) and municipalities and preparing the SDG 11 global progress report for the UN secretary’s annual report with inputs from the Member States. Based on this initial contact, GUO invited me to participate in a writing workshop in Nairobi (UN-Habitat headquarters) to contribute to the preparation of the 2018 SDG 11 synthesis report to be

presented at the annual High Level Political Forum (HLPF) that year, together with delegates from other UN-agencies and regional offices, and other external experts with a stake in SDG 11. This is where I obtained the SDG 11-related documents used for the analysis in Chapter 5 and observed global level methodological discussions while contributing to the SDG 11 Synthesis report, which provides updates on SDG 11 monitoring methodology and global progress on the indicators.

Later that year the GUO invited me to the training workshop in Abuja for methodological harmonisation for SDG 11 indicator reporting with NSO delegates from nine African countries. While contributing to the workshop report I was also able to observe discussions which would inform views regarding scalar methodological tensions. With Medellín and Bucaramanga being one of eight global pilot cities for city-level SDG 11 reporting, the GUO organised a workshop at the offices of the Colombian NSO (the Departamento Administrativo Nacional de Estadística, DANE) in 2019. I also contributed to the workshop report there and made contacts with the national and Medellín municipal officers responsible for SDG localisation whom I subsequently interviewed for Chapter 6.

Once in Colombia, a Warwick partner university (Institución Universitaria Colegio Mayor de Antioquia) invited me to a community risk management workshop as well as another workshop on the co-construction of territory, where I established contact with the community leaders from the El Pacífico and Moravia neighbourhoods. Another contact with the same university led to the invitation to present SDG 11 to community leaders in a series of workshops on human rights across Medellín's neighbourhoods, which is where I established the contact with the community leaders from Comuna 13-San Javier for the semi-structured community-level interviews. Interviews with community leaders from across these three neighbourhoods formed the basis of findings presented in Chapter 7.

I spent April to August in 2019 in Colombia, most of which I spent in Medellín, although I regularly travelled to Bogotá. In the beginning I spent time establishing the contacts and reframing the research based on the initial discussions with the community leaders I had met at the workshops. With the 2030 Agenda still being somewhat conceptually removed from daily realities of people not directly working in sustainability governance and related professions, it was important to reframe the research approach to establish the thematic link between SDG 11 and its indicators and the community experiences. In that sense, this localisation of the research itself reflects the challenges with establishing relevance of the 2030 Agenda. It was also one of the aims of the workshops with the communities across Medellín, and from conversations I understood that in many cases even then community leaders did not

feel that the SDG framework or concepts such as “resilience” or “sustainability” was relevant to them and their communities. These views that were gathered at the initial meetings with the community leaders thus shaped the overall approach of the research as a thematic investigation.

The rest of this section describes how I went about the data gathering process across scales and its purpose for this investigation.

4.4.2. Localisation policy documentation at the global, national and municipal levels

Institutional documents at the global, national and municipal levels represented an important and primary source of data. As part of this thematic investigation on the extent to which localisation accounts for inequalities, institutional documents such as the UN-Habitat methodological guidance documents and workshop training material and official documents relating to SDG 11 implementation and monitoring represented codified artefacts of the institutional conceptualisations of inequalities in themes relating to SDG 11.

At the global level, I obtained these documents from my collaboration with UN-Habitat. In preparation of the writing workshop for the SDG 11 HLPF synthesis report the GUO provided me with the *SDG 11 Metadata* document which described the methodology with guidance for NSOs to implement SDG 11 monitoring and reporting. This document thus represented the SDG 11 indicator “manual” and included discussions regarding potential future methods and proposals for data generation with the purpose to widen conceptual representation (for example regarding convenience of access to public transport, to include indications of affordability and safety amongst others) and disaggregation. The *SDG 11 Metadata* document was complemented by *Step-by-Step Training modules on indicator computation* presentations the GUO use for training workshops for national and municipal stakeholders. I used these presentations for the analysis in Chapter 5 since these technical guidelines provided a detailed indication regarding the extent to which stakeholders are encouraged to account for inequalities when localising the SDG 11 indicator framework.

The third global level document I used for the document analysis to evaluate the extent to which global level monitoring is likely to account for spatial intersecting inequalities was the *UN-Habitat SDG 11 High Level Political Synthesis Report* to which the participants (which included me) at the Nairobi workshop contributed. In contrast to the *Metadata* document, this report included the latest methodological discussions among the Inter-agency and Expert Working Group for the SDGs (IAEG SDGs) regarding indicator target formulations and measurement methodologies, as well as general indications regarding global progress towards the respective

SDG 11 target. Except for the Synthesis Report, which was published on the UN-Habitat webpage after the UN High Level Political Forum 2018, I accessed the documents from a Google drive shared by the GUO, for the participants of the respective workshops to download (though not publicly advertised or listed on the UN-Habitat webpage). The detailed methodological approach for the analysis of these documents is described in Chapter 5, section 5.3.

The national and municipal level analyses (for subsections 6.3.1 and 6.3.2) in Chapter 6 are based on the localised indicator frameworks found in the respective government policies and reports. These consist of the Voluntary Local Review documents (VLRs) where cities and subnational areas report on their SDG progress, accessed from the European Commission, the Institute for Global Environmental Strategies and the UN Department for Social and Economic Affairs websites, which were used for the *horizontal dimension* analysis (subsection 6.3.1).

The national level policy document for localisation (the *CONPES 3918*, CONPES henceforth), is described in detail in subsection 6.3.2). I learnt about this key document and its role for SDG national level localisation during the preliminary conversations with the NSO officers who indicated that as a document issued by the National Planning Department (the *DNP*), the guidelines it proposes apply across government levels.

For the analysis of the indicator framework at the national level in section 6.3.2 I used an excel worksheet which one of the interview partners at the Colombian NSO provided. This *CONPES 3918 indicator data availability matrix* (Matriz disponibilidad de información indicadores CONPES 3918) is the NSO's worksheet for planning the global to national translation of the indicators aligned with the CONPES document and identifies the candidate datasets which would be sourced from either the NSO's own product portfolio or from other central government ministries. It contains 27 columns to describe the datasets and their sources. The criteria on which I focused for the analysis were the general theme in relation to the SDG 11 target (e.g., for SDG 11.1 housing adequacy, localised with quantitative and qualitative criteria of national level housing deficit), the data source, such as the census – a NSO product, or the national survey for demography and health produced by the Ministry for Health, the data units (such as absolute numbers of people, dwellings, percentages, areas), and the degree of disaggregation, the type of data generation (sensor, survey, administrative record). The worksheet included other criteria, such as the accreditation for NSO use and comments regarding its suitability, such as requests to the central government agency owning the dataset to change its baseline year.

Documents used for the analysis at the municipal level consisted of the municipal 2030 Agenda (Agenda Medellín 2030, publicly accessible on the municipality's homepage), and the municipal equivalent to the NSO indicator data worksheet (provided by one of the interview partners). As described in section 6.3.2., the municipal 2030 Agenda provided the data for the analysis of the policy narrative. Analogous to the national level, the municipal SDG indicator worksheet, provided by the municipal planning officer in charge of the SDG indicator localisation, contained the data for the analysis of the indicator data practices at that level. This worksheet juxtaposes the SDG indicators to the candidate SDG indicator datasets, with the additional criterion regarding its national level alignment with the CONPES document and additional indicators which are thematically related to the main SDG indicator. An example for the latter additional criterion at the municipal level would be in target SDG 11.1, which aligned with the CONPES requirement of the housing deficit as main tracer indicator for that target, and the addition of a housing demand indicator as additional municipal indicator. In general, the SDG indicator localisation worksheets illustrated the differences in the emphasis regarding the criteria for indicator selection, such as the "NSO accreditation" at the national level, and the possibility of an additional indicator at the municipal level.

4.4.3. Semi-structured interviews

As mentioned above, the purpose of conducting the research interviews depended on the governance level. The thematic investigative framing shaped the approach to the interviews, which is why I adopted a semi-structured design for the interviews at all levels. This flexible approach allowed me to adapt the conversation and prompt if required while it was important to provide the interview partners with as much freedom as possible to reflect on the themes of the interviews. Interviews with national and municipal stakeholders aimed at understanding the process and its criteria of localisation, and the relation between the different institutional stakeholders which might have an impact on the localised indicator framework design. The interviews at the community level focused on the history of mobilising for risk and development and their risk and development narratives.

The period of the interviews was the time of the field research in Colombia, between late March and mid-July 2019. I had originally planned to return to the UK after one month but extended several times since it took time to build the relationships and the network of contacts from scratch at the three levels researched in Colombia (communities, municipal, national). This intensive presence in Medellín also allowed me to agree to invitations to

meetings and seminar and other events on short notice (sometimes even on the same day). It also allowed me to schedule follow up interviews and adapt to the interview partners' schedules. The reputation of the "person who can talk about and is interested in SDG 11 and the SDGs in general" which I had gained after the first couple of months especially in the broader university /community-activist domain led to presentations at university seminars and community meetings which in turn resulted in further community contacts. It also provided me with a way to "pay back" by (hopefully) contributing to the academic debates and community discussions (at the show host's request I even participated in a chat show at a local neighbourhood TV station to talk about the 2030 Agenda and urban sustainability in general).

As indicated in subsection 4.4.1, I adopted the snowball sampling technique for selecting interview partners. Initial contact with NSO staff and some of the municipal staff was made during the UN-Habitat technical workshops, while I met the community leaders at project workshops organised by the Institución Universitaria Colegio Mayor de Antioquia (Colmayor) as well as the SDG workshops organised by the Universidad Autónoma Latinoamericana (UNAUCLA) whose law department had contacted me to talk about SDG 11 at their human rights themed workshops with community leaders across the 16 *comunas* (the UK borough equivalent) of Medellín.

In total I interviewed 25 people in person, consisting of community leaders, municipal government staff, NSO staff, and a former UN-Habitat Colombia staff member involved in city level SDG monitoring. The interviews with the institutional stakeholders took place in restaurants and cafés close to their offices on their requests, or in one case, just after a UN-Habitat workshop. The interviews with the community members took place in the neighbourhoods at various occasions. As described in section 4.4.4, I visited the three neighbourhoods several times a week to join community activities and seminars and interviewed the community leaders after these events in cafés if they were available. In the case of Comuna 13-San Javier one of the key interviews was done during a three hours' risk and resilience-themed walk through the neighbourhood. The length of the interviews thus varied. Interviews with the government officers lasted up to an hour, and up to two hours with the community leaders. The longer duration of the latter was due to a different interview approach, which in the case of the government officers was focused on the process of SDG 11 indicator localisation and their views on it, while with the community leaders the semi-structured interviews addressed mobilisation and discourses around the concepts of risk, development and resilience, with the idea of not presenting any pre-established concept but let the leaders interpret these concepts based on their experiences.

My perception of the relation with the interview partners at the government levels was that of a “critical friend” – an idea from public policy literature (Rallis and Rossman, 2000), that blurs the borders between the act of research and those being researched. Here, the traditional power relationship between researcher and the researched is made more equitable, with each recognising the contribution the other can make to the research process. In this case I was a foreign (thus perceived neutral, because unlikely to have any political agenda) researcher from a non-Colombian university with an interest in their processes related to SDG localisation. I did not perceive a language or any other form of barrier due to me not being Colombian nor a native Spanish speaker (I am fluent in Spanish with a Colombian accent). My perception of the relation with the community leaders and the communities in general was one of an ally and friend from a European university who would be able to share their stories on a wider platform. In the case of El Pacífico and Moravia the community leaders had worked with Colombian and European researchers before. What I perceived distinguished my approach as researcher in these communities was the involvement in community activities and meetings, especially in Moravia and Comuna 13-San Javier, as is described in subsection 4.4.4. Section 4.6 further discusses the insider/outsider question during this research.

Since I had spoken to most interview partners when requesting the meetings and explained the topics of the discussion, I again summarised the theme and purpose of the research and the topics of discussion when starting (see the interview schedules below). While I had a general template of trigger questions and common themes for each level, I adapted the interviews to each person. I also requested permission to record the interviews on my mobile phone (which I felt is less intrusive than a digital voice recorder) – to which all interview partners agreed and explained that the interviews would be anonymised. At no point did the interview partners ask to be off record, as they appeared to feel at ease with the topic of the research and their views. This does not mean that the interviews were without political content – rather to the contrary in the case of the community leaders who wanted to make their voice heard.

Interview schedule for the institutional stakeholders

The aim of the interviews with the institutional stakeholders, that is the NSO and municipal officers, was to obtain evidence regarding the design process of the SDG 11 indicator framework at the respective level, and the extent to which intra-urban inequalities are or will be considered. The trigger questions were as follows:

- What is your institution’s role in SDG 11 monitoring?

- How is the SDG 11 indicator framework localised at the respective level (national or municipal)? What is the regulatory and legal context?
- What is your relation to UN-Habitat regarding SDG 11 monitoring (in the case of the NSOs)? To what extent do you contribute to the design of the global indicator framework?
- What is your relation to the NSO regarding SDG 11 monitoring (in the case of the Medellín planning department)?
- To what extent do you work with other government agencies at the same level regarding indicator definition and monitoring?
- What are your criteria for choosing a dataset for SDG 11 monitoring?
- What have been and are your methodological challenges with localisation? If necessary, prompt: How have they been and are they addressed?
- To what extent do the localised indicators account for inequalities?
- What do you think about the tension between global alignment and relevance (here I tended to use the example of SDG 11.2.1 – convenience of access to transport, measured with 500m distance to the next public transport stop, but it might not be relevant nor account for inequalities in different socio-spatial contexts)?

Interview schedule for the community leaders

For the interviews in the community, I explained that I am interested in how risk, resilience and development are being measured in cities, and the extent to which the views and experiences of communities, such as theirs (in a neutral sense, i.e., not introducing the concepts of marginality or informality without the interview partners mentioning them), are represented in the measurement frameworks.

The questions relating to the governance processes I was interested in exploring were as follows:

- Trigger questions for episodes of community mobilisation:
 - How long have you lived here? What is your focus of activity within this neighbourhood?
 - Please tell me about the general history of this neighbourhood
 - How is the community organised?
 - What were the main challenges regarding any kinds of risk throughout its history and how did the community address them?

- Did the community seek or have any assistance from non-community actors? If necessary, prompt: How did the relations to these actors develop?

With the above set of questions, I was specifically looking for evidence regarding community self-organisation and community engagement with actors other than the community leaders and the community action boards (the *Junta de Acción Comunal*) for risk reduction and development, especially of community infrastructure.

- Trigger questions for community discourses:
 - Would you say that this is a resilient community? It was never necessary to prompt why/why not during the field research as the community leaders would always elaborate.
 - What are your thoughts about future development in this neighbourhood?
 - What distinguishes this neighbourhood from others?
 - What are the current risk factors and development challenges in this neighbourhood?
 - What is the role of the municipal government in this community? To what extent does the municipality assist with developing and reduce risk in this neighbourhood now?

Since the interviews were open-ended, I would always wait until the interview partners appeared to feel that they have mentioned everything they wanted to say regarding the theme of the questions, and I would also look at my notes and interview schedule for that person to ensure that we would have covered all the aspects of interest. After the interview we would tend to continue to have a chat or especially in the case of the institutional interview partners, they would head back to their offices. All the interview partners indicated that they were available for follow-up questions if I would have any. In the case of the community leaders my interactions with them were frequent, which allowed me to ask any follow-up questions, and in both many of the Colombia and Medellín-institutional interview partners and the community leaders I stayed in contact via WhatsApp even after leaving the country and continued to pose follow up questions where required, to which they kindly responded. With some interviews of a duration of around two hours (especially with the community leaders), the recordings were transcribed into English at the key moments of the interview which directly related to the trigger question. The interviews thus resulted in notes from the interview, notes of key comments, and more extensive quotes, which would be included in the thesis.

4.4.4. Participant Observation

Ethnography in the form of participant observation was the third methodological pillar of this research. Field research included my role as participating observer at the global level with UN-Habitat, and at the community level as described in the following paragraphs.

Participant observation on global/national level SDG 11 indicator governance

As indicated in subsection 4.4.1, UN-Habitat invited me to participate at the three technical workshops which were related to the SDG 11 indicator monitoring methodology. There I acted as participant observer, since I contributed to the workshops and co-authored their reports. Since I was offered to participate in these week-long workshops, I took the opportunity to regard them as field research at the global level discussions regarding SDG 11 indicator development and localisation. Participating in these workshops was also useful for shaping the research at its different stages.

Section 4.4.1 indicates that the first workshop in late April 2018 had the purpose of co-writing the SDG 11 Synthesis Report for the High-Level Political Forum about the latest methodological developments in the SDG 11 indicators and reporting on the global trends in each. This workshop, organised and hosted by UN-Habitat's Global Urban Observatory in Nairobi, included delegates from other UN agencies with expertise in one or more SDG 11 indicator themes, from global regional UN Offices with knowledge about the countries' statistical capacities and overall trends, and from universities (Warwick and UCL) and one urban think-tank (United Cities and Local Governments, UCLG). My interest as a participant observer here were the interactions between the delegates as they represented the various institutions at the global level. The stakeholder discussions from this workshop significantly shaped the research and provided me with deep first-hand insights regarding the indicator governance processes at that level, as well as UN-Habitat's role in them.

The UN-Habitat Abuja Technical Harmonisation workshop in October 2018 with the representatives from NSOs from nine African countries and the technical trainers from the Organisation for Economic Cooperation and Development (OECD) and the European Commission (EC) represented an opportunity to observe the alignment and tensions between the global (arguably Western) methodological and technical framework and national level localisation. My focus in these workshops thus was on the roles of the participants, the extent

to which the discussions between the trainers and the NSO officers unveiled scalar and socio-political tensions. I also contributed to the report writing of this workshop.

The third UN-Habitat workshop in which I actively participated and where I co-authored the report was the Colombian pilot cities technical workshop with the national and municipal level monitoring stakeholders, where participants were encouraged to develop action plans for city level (rather than national level) monitoring for SDG 11. In addition to making the first contacts with the Colombian NSO and Medellín municipal officers in charge of SDG indicator localisation I was able to observe the discussions regarding the alignment between global and national level methodologies there and the extent of the pilot cities' (Medellín and Bucaramanga) "data readiness" to report in line with the global methodology.

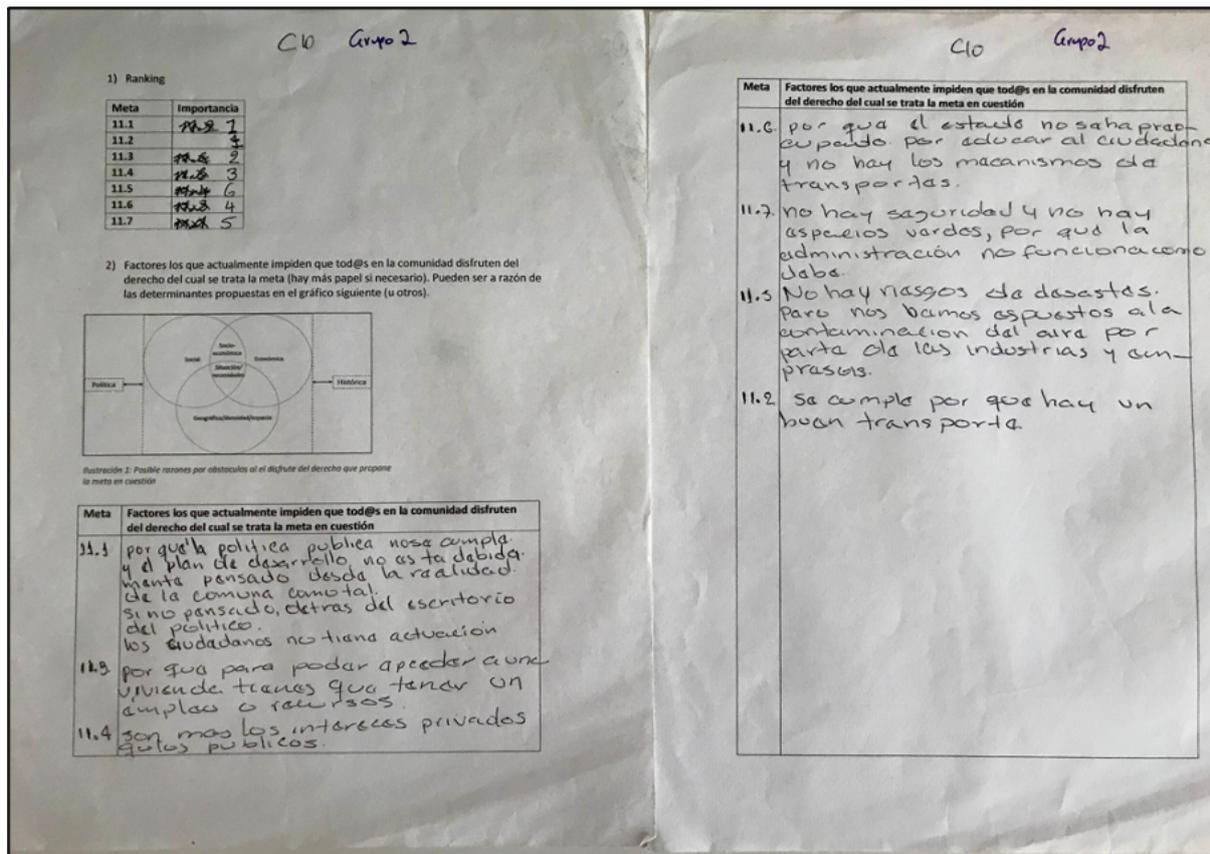
The observations from the three workshops framed my questions at the national level in Colombia and fed into the discussion regarding the proposal of moving towards a process view of indicator localisation.

Participant observation on community risk-development governance

Participant observation at the community level had two aspects which align with dialogic thematic approach to investigation, as indicated in the introduction to this chapter. The opportunity to do so emerged from my extended stay in Medellín and the resulting ability to agree to participate and present in workshops with community leaders.

As touched upon in subsection 4.4.3, a shared contact at ColMayor UNAULA's law department invited me to present on the SDG 11 indicators during a series of seminars as part of a Human Rights project with community leaders. I agreed since it provided me with both the opportunity to present the theme of SDG 11 to community leaders, thus raise awareness and encourage discussion and reflection, while establishing contact with community leaders for the semi-structured interviews at a future date. To familiarise the participants with the themes of SDG 11 I prepared a short presentation (in Spanish), followed by a group activity to identify the issues their respective neighbourhoods experience in relation to the various SDG 11 target themes. The picture of one of the forms used for this group activity shows (Picture 1, below) one of them completed by one of the community leaders. After the presentation I left the slides with the SDG 11 targets on the screen, or in cases where there was no projector in the classroom or community centre – the post-it notes on the blackboard and asked the participants to rank the importance of the SDG 11 targets in terms of the needs of their neighbourhood (section 1 in the form in the picture) and then provide a narrative of the issues (section 2 in the form).

This served the double purpose of awareness raising about the SDGs, as required by the UNAULA project, and reflection in a dialogical sense, to generate a discussion on SDG 11 during the workshop itself, and for the thematic investigation in preparation of the semi-structured interviews and with the community leaders with whom I would have established contact because of my participation in these workshops. Presenting was thus part of the thematic investigative research approach as it allowed me to present on the topic, make contacts, then discuss and reflect with the communities on the theme of SDG 11.



Picture 1: Community SDG 11 target ranking and narrative form

A second aspect to participant observation at the community level was my engagement in community meetings. While the overall investigative purpose was the same, i.e., to observe the discourses and mobilisation around the themes of resilience, risk and development, the degree of my involvement differed between the three communities. The most extensive involvement was in Comuna 13-San Javier where I participated in community leader meetings and a community-organised seminar regarding *habitat and risk*. In Moravia, I participated in three of the weekly meetings and several community activities organised by *Moravia Resiste*, which is a community group consisting of long-time as well as the young generation of community leaders which emerged to mobilise by raising awareness and informing the residents about the planned demolition and neighbourhood renewal of large parts of this

centrally located neighbourhood (Chapter 7 describes this group in more detail). In El Pacífico I participated in two community meetings with the residents where the community risk management plan, developed with ColMayor, was launched and awareness regarding risk factors raised. Since I was aware of the importance of collective mutual help and community-led infrastructure work (the *convite*; this is also described in more detail in Chapter 7) I joined one of these activities where we cleared rubble on the slope on top of the neighbourhood, to enhance the flow of water and reduce landslide risk during the rainy season. I also felt that actively contributing to community activities, although not always directly resulting in data for the research itself, was an important part of research which is guided by dialogic principles – which applies to all three communities.

4.5. Data analysis

This section focuses on the approach for the data analysis for Chapter 7. The approach to the documentary analysis at the global level is detailed in Chapter 5, which examines the global indicator framework methodology regarding the extent to which it is likely that it triggers localisation which accounts for socio-spatial inequalities. Chapter 6 has taken a mixed methods approach with a scoring system, complemented by interviews to explain the factors which drive the differences in transformative capacity in SDG 11 monitoring localisation. The approaches to data analysis are placed in these respective chapters since they refer to the monitoring frameworks that are described there.

For Chapter 7, the conceptual background for how marginalised communities living in self-constructed neighbourhoods have developed *their* approaches to understand their own risk and planning possibilities as indicated in the aims and objectives is based on the conceptualisation of community governance processes “...to refer to the modes and practices of the mobilisation and organisation of collective action...with a focus on the power that communities can exercise in order to negotiate, or in some cases resist, the imposition of certain policies and practices, and to achieve policy outcomes that suit their needs.” (Coaffee, Porto de Albuquerque and Pitidis, 2021) (p.552).

The coding scheme for the data from the community interviews Chapter 7 is based on ideas about how urban governance transforms, as proposed by Coaffee and Healey (2003) which focused upon uncovering the drivers that lead particular governance episodes to mainstream and sustain change alongside embedded power relations. Specifically, they

proposed a focus on Networks and Coalitions and Selection of Stakeholders, Discourses and Practices to track transformations in urban governance.

Viewing localisation as exercise of thematic dialogic knowledge production (see Chapter 3) I adapted Coaffee and Healey's transformation of governance processes framework for the purpose of analysing community governance processes (see table 1 below). In doing so it was important to remember that the focus was on the *communities'* framings and understandings, which is why, beyond the general concept of my research, I did not provide any definitions beforehand or deduced concepts from the interviews. Indeed, as Chapter 7 shows, the concept of risk and thus, risk management and reduction and resilience, changes throughout the history of these communities with a history of marginalisation. The analytical framework for this chapter might thus be viewed as a "holding container" for evidence of governance processes from the community leaders' voices. Across the three neighbourhoods shared themes (presented in Chapter 7, and further related to the localisation of the SDG 11 indicator framework) would emerge.

As table 1 shows in the dimension column, I focused on two processes inherent in Coaffee and Healey's framework of governance processes, which are mobilisation (comprising these authors' *networks and alliances*, *stakeholder selection* and *practices* dimensions) and discourses. Thinking of equity, the *mobilisation* dimension contains evidence related to power and access (to urban services etc.) differentials. Here I was looking for evidence related to intra-community organisation and mobilisation of government (vertical) or non-governmental and other actors (horizontal). For coding, data from the interviews was included in this dimension if it contained evidence/described episodes of collective community activities when mentioned in the context of risk or development, and activities where horizontal or vertical external actors were mobilised. The *discourses* dimension contains the communities' current framings of resilience, risk and development, and government legitimacy. The latter is included here since legitimacy relates to representativeness and relevance, which is important if the indicator localisation is to be inclusive and empowering for communities with histories of marginalisation. The focus of governance processes in this dimension is on how risk and development, and the relation to the formal authorities are framed. For coding, evidence from community voices entered here in response to questions such as: what the current risks are facing this community? and related comments, and anything that provided an insight into the community's current relation with the municipality and its agencies, in relation to risk and development. Given the relatively small number of interviews (25) I manually entered the translated phrases from the transcripts into

the relevant box in the table rather than using bespoke software like NVivo that is more appropriate for larger (50+) set of interview data.

Dimension	Governance processes	Coding for governance processes ("include if evidence for...")
Mobilisation: power & access differentials regarding resilience, risk & development	<ul style="list-style-type: none"> • Community self-organisation: how and why? • Community engagement (or conflict) across the scale and community external: with or in conflict with whom? 	<ul style="list-style-type: none"> • Collective activities at community level to address issues of risk and of development • Community activities with, in parallel or against the municipality and other external actors
Discourses: view of resilience, risk & development, and of vertical governance relations	<ul style="list-style-type: none"> • Community framing of risk and development challenges: how framed? • Community framing of institutional legitimacy and relations 	<ul style="list-style-type: none"> • Different types of risk and/or development themes addressed in community narratives • Narratives on the view of the municipal government

Table 1: Analysing the community risk-development governance processes

The interviews with the community leaders of all three neighbourhoods were done during several meetings, with at least one of them being a risk and development themed walk through the neighbourhood. It is important to mention that I did not present this analytical framework to the interview partners, to avoid the risk of inadvertently introducing a bias that would be geared towards this framing in their replies.

4.6. Methodological reflections

4.6.1. The cross-scale methodological approach

With the aim of understanding the extent to which global urban resilience and sustainability monitoring frameworks are inclusive and representative in the context of urban inequalities, and the extent to which these might be addressed, this research adopted a case study approach. The case study lens through which this was analysed is the localisation of the SDG 11 indicator frameworks as a single lens across scales to identify the multiple interpretations across the scalar layers. The scalar nature of this research required a

combination of three methodological tools for data generation which overlapped across the four levels (see Table 2 below).

Level	Document analysis	Semi-structured interviewing	Participant observation
Global	x		x
National	x	x	x
Municipal	x	x	
Neighbourhood		x	x

Table 2: Methodological tools and data collection at the various levels

At the global level, the purpose of the documentary analysis of the methodological guidance documents and training workshop presentations (see 4.4.2) was to identify the extent to which they account for various types of inequalities and different understandings, particularly of marginalised urban residents. At this level, the key interest was the global measurement stakeholders’ (UN-Habitat and the Inter-agency and Expert Group on SDG Indicators) approach to address the tension between global comparability and the mandate to Leave No One Behind – leading to conclusions regarding the impact on the transformative capacity elements at this level (see subsection 3.3).

The analysis of government documents in the form of the SDG monitoring frameworks at the national and municipal levels focused on their interpretations of the themes related to urban resilience and sustainability and the extent to which these – as the localised interpretations of the global methodology for measuring urban sustainability and resilience – are likely to enhance the elements of transformative capacity. As indicated in section 6.2, the latter analysis was operationalised with the diversity of sources and the proposed mode of engagement for data generation, horizontally among policy silos and vertically between institutional and community levels. This was complemented by the analysis of the indicator localisation planning worksheets at these two levels to obtain an insight into the drivers of the multiple in the form of institutional criteria for the inclusion of a dataset into the localised indicator methodology and extent of interactions regarding SDG indicator methodology with the respective national/municipal agencies and other data generating entities in government and civil society (as so-called data owners) in the process of designing the localised indicator sets. The elements of transformative capacity would be enhanced, for example if the process of localisation led to a higher degree of inclusiveness, diversity and/or empowerment (part of the forms of agency and interaction element of transformative capacity – see figure 5). The outcome

is the localised understanding of the resilience and sustainability multiple, which is mediated by the drivers inherent in the design process.

The semi-structured interviews with the national and municipal institutional stakeholders aimed to explore the motivations and challenges during the process of designing the localised indicator at the respective level – thus providing further data to develop an insight into the drivers and trade-offs of the cross-scalar multiple and to address the research question. At the neighbourhood level, the semi-structured interviews were applied to illuminate the nature of the elements of transformative capacity implicit in the community histories of mobilisation and discourses about the risk-development nexus, for comparison with the governmental framings and their drivers, thus pointing to the scalar trade-offs but also entry points for enhancing the transformative capacity of the localised indicator framework.

Participant observation at the community level contributed with data about the community discourses regarding the risk-development nexus and their interpretation of SDG 11, while it provided me with the opportunity to start a dialogue on that SDG which would then be followed up in the semi-structured interviews (as indicated in subsections 4.4.3 and 4.4.4). Participant observation at community activities in addition to the SDG workshops was also key for developing an understanding of the interactions with other stakeholders, such as local researchers, and to contextualise and validate the semi-structured interviews with the community leaders, thus again pointing to the elements of transformative capacity implicit in the community understandings of resilience and sustainability. At the UN-Habitat-led methodological workshops with national stakeholders, participant observation and collaboration in report writing about the discussions led to insights regarding the process of global-to-national level translations of the indicator framework, the institutional drivers of the multiple interpretations and the impact on the elements of transformative capacity (see section 3.3.) here. As indicated in 4.4.4, observing the interactions and discussions among these institutional stakeholders was particularly useful for framing the semi-structured interviews and gaining initial insights into their operational-socio-political context which determines their localised interpretations of the SDG 11 monitoring framework. The following subsection concludes the methodological considerations with reflections on my positionality, which enabled me to employ the above methods across the scale.

4.6.2. Reflections on positionality in the scalar case study

Clearly, the nature of a case study research is such that it is not generalisable nor exactly replicable. Since I was in a fortunate position (by being in the right place(s) at the right time) I had unique access to documents and people at the different levels and I was able to stay long enough in the country and city which provided the “case study backdrop” at the national and municipal levels. This research also benefited from my unique positionality in relation to the case study, which led to the best of both worlds (a situation of which I was always aware) and which allowed me to move across all levels with ease. Firstly, as a researcher I was aware that I am perceived as relatively neutral and apolitical (which is not a unique position). Secondly, arriving as part of the UN-Habitat expert group in Colombia while speaking Spanish fluently and being socio-culturally familiar with Colombia immediately opened doors to the national and municipal levels while still being perceived as critical friend without a political agenda. Thirdly, due to my involvement in the UKRI GCRF project URBE Latam (Understanding Risks and Building Enhanced Capabilities in Latin American cities – during the field research still at proposal stage but with local university contacts at ColMayor in Medellín) snowballing for community contacts was extremely easy. With the project work ongoing one year after the main field research, I was also able to revisit Medellín and meet the community leaders again.

I also made personal friendships at the national, municipal and community level. For the purpose of this research, I was able to follow up with questions at a later stage, and more generally, it enabled me to truly take a friendly, yet honest and reflective position and to understand both the government and community positions, which are often opposed. We also continue to plan future research collaborations at both levels.

The following three chapters are the empirical chapters, starting with Chapter 5, which investigates the global SDG 11 indicator framework regarding its capacity to account for inequalities. Chapter 6 looks at the global to national and global to municipal translation of the SDG 11 indicator framework, with a three-dimensional (horizontal, vertical and meta) analysis. This is followed by a focus on the community level in Chapter 7, and a discussion in Chapter 8. Chapter 9 with the presents the major findings and contributions to theory, and ends with the limitations and suggestions for future research.

Chapter 5. The global picture

“It’s precisely because we are all equal by nature that we must all be unequal by circumstances.’ Equality remains the only reason for inequality.” (Rancière, 1991) (p. 88).

5.1. Introduction

With this thesis adopting a multi-scalar approach, this first empirical chapter investigates the SDG 11 monitoring framework at the global level. As indicated in the beginning of chapter 4, the main concern of the investigation of the multiple at the global level (this chapter), and the national and municipal (chapter 6) level are the institutional framings of resilience and sustainability, as expressed in the elements of transformative capacity within the methodological approach to SDG 11 monitoring at the respective level (see figure 5 in chapter 4). The analytical lens is the extent to which inequalities are considered in the SDG 11 monitoring framework, with section 5.3 presenting the detailed methodological approach to address this question in this global level chapter. With this being the first empirical chapter, the following paragraphs of this introductory section provide an overview of the SDG 11 indicator framework as well as the trigger questions regarding the extent to which the indicator set and its related methodology might allow inequalities to be perpetuated. Such considerations are instrumental for the overall study because it relates to the issue of inherent regressive multiples in the form of interpretations of resilience and sustainability with limited ability to promote the components and sources of urban transformative capacity.

There is a longstanding (western) scholarly discussion on intra-urban inequalities, which goes back at least 2500 years, arguably starting with Plato (Glaeser, Resseger and Tobio, 2008). Yet an inter-governmentally coordinated commitment to establish monitoring systems to assess the multidimensional aspects of urbanisation was created for the first time only as part of the 2030 Agenda. Thus, what makes SDG 11 (see Table 3 below with the targets and indicators) particularly relevant for a cross-scalar investigation of the multiple is that it is the only Goal which requires localisation at the subnational (city) scale.

With cities representing increased density of human settlements – and thus of (in)equalities – in space, to be representative, the SDG 11 monitoring framework needs to be sensitive to the role of inequalities at the intra-city scale, i.e., between neighbourhoods. The subnational and spatial focus of SDG 11 adds a further layer of complexity to keeping the 2030 Agenda pledge “to leave no one behind” and “to reach the furthest behind first”. Unequal

development among neighbourhoods within the same municipality poses a particular challenge to the monitoring process because city dwellers' experiences of the issues which SDG 11 aims to address (e.g., by measuring access to critical urban infrastructure) can vary significantly and are mediated by neighbourhood-specific socio-spatial factors – raising the question regarding the extent to which the institutional framings of resilience and sustainability represent those furthest behind.

In directly addressing the research question regarding the extent to which the representativeness of the current SDG 11 monitoring framework can be affected by intra-urban inequalities, this chapter will assess and reconceptualise the current monitoring guidelines for localisation, in particular, the extent to which (and under which circumstances) current localisation guidelines are “robust” against socio-spatial inequalities. Awareness regarding these areas of methodological vulnerability and their relation to the urban context is important for national and municipal stakeholders deciding how to approach localisation conceptually and methodologically. By questioning “which views are inscribed in a certain indicator?”, the chapter addresses the resilience multiple and critically de-constructs the SDG goals, targets and indicators.

Targets	Current Indicators
SDG Target 11.1 By 2030, ensure access for all to adequate, safe and affordable housing and basic services and upgrade slums	11.1.1 Proportion of urban population living in slums, informal settlements or inadequate housing. [Tier I]
SDG Target 11.2 By 2030, provide access to safe, affordable, accessible and sustainable transport systems for all, improving road safety, notably by expanding public transport, with special attention to the needs of those in vulnerable situations, women, children, persons with disabilities and older persons.	11.2.1 Proportion of population that has convenient access to public transport, by sex, age and persons with disabilities. [Tier II]
SDG Target 11.3 By 2030, enhance inclusive and sustainable urbanization and capacity for participatory, integrated and sustainable human settlement planning and management in all countries.	11.3.1 Ratio of land consumption rate to population growth rate [Tier II] 11.3.2 Proportion of cities with a direct participation structure of civil society in urban planning and management that operate regularly and democratically [Tier III]
SDG Target 11.4 Strengthen efforts to protect and safeguard the world's cultural and natural heritage	11.4.1 Total expenditure (public and private) per capita spent on the preservation, protection and conservation of all cultural and natural heritage, by type of heritage (cultural, natural, mixed and World Heritage Centre designation), level of government (national, regional and local/municipal), type of expenditure (operating expenditure/investment) and type of private funding (donations in kind, private non-profit sector and sponsorship). [Tier III]
SDG Target 11.5 By 2030, significantly reduce the number of deaths and the number of people affected and substantially decrease the direct economic losses relative to global gross domestic product caused by disasters, including water-related disasters, with a focus on protecting the poor and people in vulnerable situations	11.5.1 Number of deaths, missing persons and directly affected persons attributed to disasters per 100,000 population [Tier II] 11.5.2 Direct disaster economic loss in relation to global GDP, damage to critical infrastructure and number of disruptions to basic services, attributed to disasters [Tier I]
SDG Target 11.6 By 2030, reduce the adverse per capita environmental impact of cities, including by paying special attention to air quality and municipal and other waste management	11.6.1 Proportion of urban solid waste regularly collected and with adequate final discharge out of total urban solid waste generated, by cities. [Tier II] 11.6.2 Annual mean levels of fine particulate matter (e.g. PM2.5 and PM10) in cities (population weighted). [Tier I]
SDG Target 11.7 By 2030, provide universal access to safe, inclusive and accessible, green and public spaces, in particular for women and children, older persons and persons with disabilities	11.7.1 Average share of the built-up area of cities that is open space for public use for all, by sex, age and persons with disabilities. [Tier III] 11.7.2 Proportion of persons victim of physical or sexual harassment, by sex, age, disability status and place of occurrence, in the previous 12 months. [Tier III]
SDG Target 11.a Support positive economic, social and environmental links between urban, peri-urban and rural areas by strengthening national and regional development planning.	11.a.1 Proportion of population living in cities that implement urban and regional development plans integrating population projections and resource needs, by size of city [Tier III]
SDG Target 11.b By 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.	11.b.1 Number of countries that adopt and implement national disaster in line with the Sendai Framework for Disaster Risk Reduction 2015-2030a. [Tier I] 11.b.2 Proportion of local governments that adopt and implement local disaster risk reduction strategies in line with national disaster risk reduction strategies [Tier II]
SDG Target 11.c Support least developed countries, including through financial and technical assistance, in building sustainable and resilient buildings utilizing local materials.	11.c.1 Proportion of financial support to the least developed countries that is allocated to the construction and retrofitting of sustainable, resilient and resource-efficient buildings utilizing local materials. [Tier III]

Table 3: SDG 11 targets and indicators (UN-Habitat, 2018b)

How then might inequalities affect the representativeness of the global SDG 11 monitoring framework? A lack of conceptual precision in the target definitions can be conducive to localisation – it may indeed be intentional – as it opens the framework up to local interpretations as goal-setting governance would suggest. However, conceptual openness to interpretation and uncritical operationalisation of the targets can also lead to regressive outcomes, as the concepts could be used to mobilise in favour of undifferentiated conceptualisations of equality and non-contextualised planning approaches, which can increase vulnerability. This may especially be the case in cities with high spatial intersecting inequalities, where intra-urban interpretations of the target definitions may be more diverse. Thus, in the relatively short period since 2015, a lively discussion among commentators from several academic disciplines and institutional backgrounds regarding the potential of the SDGs as a

development framework has emerged. This trend is promising, especially given the claim that critical scholarly engagement with the previous Millennium Development Goals (MDGs) framework was limited (Liverman, 2018b).

Within this context, the chapter is structured as follows: Section 5.2 discusses the theoretical background that motivated the research question. It starts with the latest scholarly discussions regarding the SDGs and describes the tensions that can be identified therein. This is followed by a theorisation of inequalities. Drawing on an analysis of SDG monitoring guidance and statements from those charged with establishing the monitoring system, section 5.3 proposes a framework for describing the mechanics that mediate the representativeness of the SDG monitoring framework regarding inequalities in general and places it into the SDG 11 context in particular. It also operationalises the conceptual framework with a methodology that is applied to selected (on the basis of their immediacy regarding the quality of life of urban residents) SDG 11 indicators in the analysis (Section 5.4). Section 5.5 discusses the outcomes and provides three key recommendations in response to the research question in this chapter, followed by the conclusions in section 5.6.

5.2. Critical issues for global monitoring

5.2.1. Tensions inherent to the SDGs

The debate regarding the SDGs' potential for equitable and inclusive development that "leaves no one behind" points to a tension inherent to the framework. On the one hand, commentators argue that the non-binding and open nature of the goals and targets enables bottom-up interpretation and alignment among the horizontal and vertical levels of stakeholders involved in their localisation (Global Taskforce of Local and Regional Governments, 2016; Biermann, Kanie and Kim, 2017). In this view, the potential for collaboration between civil society, government and the private sector to localise SDGs promises a just, equitable and context-relevant global-to-local translation of the SDG targets. Freedom regarding the local interpretation of the targets would not least result in enhanced sensitivity to co-benefits and trade-offs.

On the other hand, more cautious voices argue that a lack of specificity reduces accountability (Liverman, 2018a). At worst, this would result in the SDGs being blind to underpinning structural issues of political economy, thereby "saving the world without transforming it" (p. 203). Kaika (2017) made a similar point in arguing that the four pillars of

SDG 11 (inclusiveness, safety, resilience and sustainability) “can only be allocated/handed down: From those in power to those in need” (p. 98) and do not address the root causes of social and environmental development challenges. Her view is that development should be driven by self-empowered communities acting as co-decision-makers who “establish new hows when it comes to making communities safe, resilient, sustainable or included” (ibid.). This echoes Rancière’s critical interpretation of intellectual emancipation, which by definition becomes a hierarchical “way of organising the eternal minority” if placed into an institutional context (1999) (p. 34).

Scholars are also concerned about the need for aggregation to inform the indicators (see Gupta and Nilsson (2017) in Chapter 3), as it dilutes the visibility of variations in inequalities. The (not uncontroversial; see for example Liverman (2018a) ability to compare national indicator rankings may be a prerequisite for a globally deployed development framework. However, referring to the statistical problem of ecological fallacy, a number of authors have pointed out that aggregated views may gloss over the needs of the most marginalised and vulnerable by celebrating average improvement at the national or city level (Sexsmith and McMichael, 2015; Moseley, 2018). Similar arguments have been applied to indicators with quantitatively defined parameters, such as a financial (e.g., extreme poverty; US\$1.90 a day) or a distance-based access measure (see SDG indicator 11.2.1: access to public transport). This kind of standardised approach facilitates the “multi-stakeholder peer reviews of national progress ‘based upon globally-harmonized formats’” Hajer et al. (2015) suggested as an effort to mobilise public and private sector “agents of change towards sustainable development” (pp. 1657,1658). Critical authors argue that such one-dimensional indicators struggle to reflect the complexity of lived realities, overlooking, as Liverman (2018a) argues, the less quantifiable and often context-specific social needs. The author therefore called for multi-dimensional or even community-defined measures to complement the financial criterion of poverty (ibid.). Scholars have also called for similar approaches in other sectors, such as sanitation, as the meaning of what constitutes “improved access” varies according to the spatial context and to other factors including gender, cultural, educational, and environmental considerations (Ezeh *et al.*, 2017; D’Alessandro and Zulu, 2016).

In the face of these challenges at the target and indicator levels, some argue that technology-enabled disaggregated data (e.g., social media or remote sensing) promise to improve the SDG indicators’ representativeness (Biermann, Kanie and Kim, 2017; Kharrazi, Qin and Zhang, 2016; Patole, 2018). However, the critical response is that these technologies often only increase the efficiency of harvesting data that is subsequently allocated into the pre-

determined concepts, while citizens' contributions are limited to a range between passive data extraction and community consultation for choosing among a "set menu" of development options (Kaika, 2017) (p.96), as opposed to "smart technologies that are democratic" (Sennett and Clos, 2018) (p.163). In addition to these conceptual observations, other commentators have also pointed to operational challenges related to these techniques, such as algorithmic bias (see, for example, Acolin and Kim (2017) on remote sensing informal settlements) and the digital divide, especially the gap in mobile broadband use between "developed" and "developing" countries (Heeks, 2017). The latter limits the applicability of geo-tagged social media data in contexts with lower levels of mobile broadband ownership. Such critical work, therefore, emphasises the need for contextual knowledge that is produced collaboratively and participatorily to detect location-specific and complex social needs, which is of particular importance for marginalised communities (Sexsmith and McMichael, 2015; Zinkernagel, Evans and Neij, 2018).

Based on the aforementioned observations, the inherent tensions in the SDGs can be summarised in Table 4 – that poses fundamental questions as to whether they represent a framework with transformative opportunities or whether the potential of regressive threats prevails – depend on their ability to account for various forms of inequalities. These will be discussed in the following subsection. The relation between inequalities and the SDG monitoring framework will be presented in the conceptual framework in Section 5.3.

SDG framework dimensions	Transformative opportunities	Regressive threats
Goal and target definitions	<ul style="list-style-type: none"> • Openness to bottom-up interpretation • Potential for translation to the local context 	<ul style="list-style-type: none"> • Vagueness • Lack of accountability
Indicator parameters and methodology	<ul style="list-style-type: none"> • Global comparability due to harmonised formats • Ability to track progress over time 	<ul style="list-style-type: none"> • Narrow, excluding local variation • Ignoring less quantifiable factors • Ecological fallacies mask the reality of specific population groups
New data sources (data from emerging technology-enabled methods)	<ul style="list-style-type: none"> • Enhanced and efficient disaggregation that enables more granular monitoring • Identification of interlinkages and trade-offs 	<ul style="list-style-type: none"> • Top-down, extractive data production that is based on centralised assumptions • Exclusion of marginalised communities • Digital divide perpetuates blind spots

Table 4: Summary table: inherent tensions within the SDG framework

5.2.2. Inequalities

In the study of development, inequalities have been conceptualised from several angles. The traditional framing of development indicators is based on income. If the level of well-being differs across income groups, they are referred to as vertical inequalities (Kabeer, 2016). Horizontal inequalities cut across the economic categories and are related to social discrimination. These are based on group characteristics such as gender, race, ethnicity, or legal and migration status (Kabeer and Santos, 2017; Tonkiss, 2018). Intersecting inequalities combine both horizontal and vertical characteristics. They are viewed as intensification (rather than grid) of two or more types of social, economic and demographic inequalities which exacerbate each other (ibid.), regressively increasing barriers to development, and leading to persistent unequal development trajectories among different groups in society (Kabeer and Santos, 2017).

Spatial inequalities are differences in development associated with place-based characteristics, such as remoteness, high density or poor municipal infrastructure provision, and often coincide with the above-described intersecting inequalities (ibid.). This results in further intensification because although a spatially equal city with intersecting inequalities is hypothetically possible (Cassiers and Kesteloot, 2012), in practice the groups who experience

spatial and intersecting inequalities simultaneously are the ones who tend to be most persistently and furthest left behind (Tonkiss, 2018). In development monitoring terms, this means that even though an indicator shows overall improvement, progress may still be slower for specific groups in (already) disadvantaged locations (Kabeer and Santos, 2017).

With their ability to open up and to enable active, and arguably more democratic (see Chapter 3), contributions to hitherto closed systems of knowledge (Sassen, 2013) Information and Communications Technologies (ICTs) are viewed as a levelling force (Heeks, Graham and Kleine, 2018). Various forms of digital inequalities, however, prevent the development potential of the ICTs to be realised fully. Notably, many have argued that ICTs further intensify existing inequalities, specifically due to the digital divide which limits access and effective use of ICT, such as ownership of hardware and software, connectivity, as well as lack of digital literacy and skills (Sassen, 2016; Heeks, Graham and Kleine, 2018). The latter result in secondary disparities between those who can contribute with data (e.g., through microblogging in social media), and those who are consumers or even entirely absent from the digital domain. Digital inequalities therefore often not only mirror but reinforce other forms of inequalities (Robinson *et al.*, 2015).

An example of challenges arising from the above-described forms of inequalities is mobility in Medellín (this relates to SDG indicator 11.2.1, which measures convenience in access to public transport, and is investigated in the analytical section further below). Although investments into the public transport systems resulted in reduced travel times at city level (Guislain, 2015), lower-income residents (vertical inequality) who live in the neighbourhoods that are located in the historically less accessible and more hazardous hills of the city (spatial inequality) still appear to be less mobile than people living in other areas as many struggle to pay for using the aerial cable car – and this particularly applies to female residents (horizontal inequality) (Heinrichs and Bernet, 2014). They, therefore, continue to be dependent on the informally provided buses which are less reliable, take longer to make their way through the narrow roads up the hills and present a higher risk to personal safety for women (*ibid.*). Illustrating the regressive impact of the combination of intersecting and spatial intra-urban inequalities, a spatio-temporal analysis of mobility of different social classes in Medellín indicates that the city's poorer residents face lower transport efficiency, i.e., they spend more time in transit for shorter distances than the wealthier sections who travel farther (Lotero *et al.*, 2016). This example shows that the combination of intersecting and spatial intra-urban inequalities results in differences in experiences among residents from different neighbourhoods of a city.

The understanding regarding the extent to which inequality exists depends on the often conflicting and hierarchically provided (as Rancière, 1991, argued) conceptualisations of equality. Thus, according to Stone who conceptualised different interpretations of equality, “equality often means inequality and equal treatment often means unequal treatment” (Stone, 2012) (p. 41). For this author, the factors that determine conceptualisations of equality include the importance given to the various stakeholders, the definition of the policy item that is being distributed and measured, and the type of parameter used for classifying the degree of access⁶. The latter two refer to Stone’s “items” dimension, which concerns decisions regarding the definitional boundaries of the item or service in question, and the extent to which the value of the latter should be customised to reflect differences in needs. For the indicator 11.2.1 example, the following questions may need to be considered (non-exhaustive examples):

- Regarding the “recipients”: How is the base resident population categorised, which may include intersectional and spatial criteria; e.g., is it only the residents of “formal” and permanent structures or also the “informal” settlements; is it the resident population living within the administrative boundary of the city, or does it also comprise residents living in the wider commuting area?
- Regarding the “item boundary”: How is public transport defined? Should it include taxis or moto-taxis, or escalators (in the case of Medellín, for example)?
- Regarding the “item value”: How is “convenience” in access to public transport defined? Different policy stakeholders allocate a different value (e.g., differential importance of distance, affordability, safety etc.).

Based on this understanding of the different types of inequalities, the following relates them to the opportunities and threats in the SDG framework that were identified in subsection 5.2.1.

5.2.3. Inequalities in SDG 11 monitoring

This section presents a framework for understanding the relation between inequalities and SDG monitoring, as noted above, and subsequently applies it to SDG 11 (see figure 6 below). This framework is also based on the observation that the interpretation of the targets, the formulation of the parameters and the generation and selection of data is mediated by conflicting conceptualisations of equality, which results in the different types of inequalities

⁶ Stone also proposes a “processes of distribution” dimension, which in SDG terms relates to policy implementation. Considering this chapter’s focus on SDG monitoring only Stone’s “recipients” and “item” dimensions are mentioned here.

being “built into” the SDG monitoring framework (top horizontal arrow from left to right). This in turn mediates the monitoring frameworks’ ability to account for the inequalities and therefore determines its representativeness (bottom horizontal arrow from right to left).

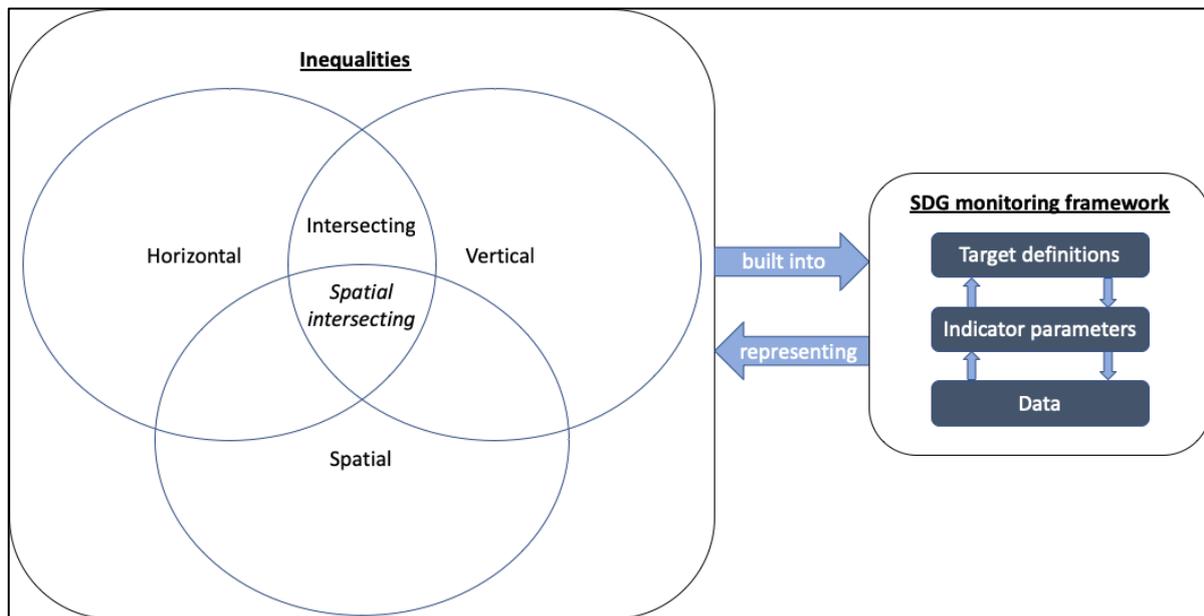


Figure 6: Conceptualising the interaction between inequalities and the SDG monitoring framework

This relationship is not static in time as the framing of SDG monitoring dimensions may be adapted according to changes in the nature of inequalities. Similarly, the SDG framework dimensions also interact dynamically, as for example emerging data practices may result in a revision of indicator parameters and target definitions (see the vertical arrows in the monitoring framework box on the right). Figure 6 also implies a proposal to extend Kabeer and Santos’ (2017) concept of intersecting inequalities to emphasise the combined challenges of intersecting and spatial inequalities in the form of “spatial intersecting inequalities.”

The question regarding the extent to which inequalities could affect the representativeness of the SDG 11 indicators needs to be discussed in the context of the SDG indicator tier classification which is based on the indicators’ conceptual clarity and data availability. Tier III indicators are defined as indicators “with no internationally agreed established methodology or standards” (UN-Habitat, 2018a) (p. 4). A closer look suggests that this official definition refers to differences in conceptualisations of the respective indicator, such as what constitutes public open space (indicator 11.7.1) or sexual harassment (11.7.2), amongst others. Other reasons for an indicator to be classified as Tier III is the lack of an agreed methodology for data collection and for calculating the indicator. Indicators in Tier II have defined parameters and established calculation methods, but limited data availability in most UN member states. Tier I indicators have both – concepts that have been adopted and

operationalised by the UN's Inter-Agency Expert Group on SDGs, and recent and periodically sourced data that is available from national statistical systems for at least half of the member states (*ibid.*).

Some Tier I and II indicators are based on concepts which are at least as broad as the above-mentioned Tier III examples, and which also may vary across socio-spatial contexts. City dwellers' definitions of convenience in access to public transport (11.2.1) or essential health services (3.8.1 – included here because it represents a basic urban infrastructure), for example, may vary according to horizontal, vertical, spatial and intersecting inequalities within the city. However, these indicator concepts are measured with comparatively narrowly defined parameters – a distance measure in the case of 11.2.1, and a set of 14 tracer indicators on healthcare provision for 3.8.1.

Regarding data, Howard et al. (2017) reminded us that inclusive development depends on the knowledge of marginalised groups being embedded in the data. Their statement resonates with Sassen's view that “every neighbourhood has knowledge about the city that is different from the knowledge of the centre, of the city government, of its elites and experts” (Sassen, 2013) (np). Echoing the discussion on citizen science in Chapter 3, Howard et al. (2017) suggest that monitoring systems that do not reflect the “complex realities of people living at the margins of society” (Howard, Lopez-Franco and Wheeler, 2017) (p. 1) risk reinforcing the multiple forms of inequalities. In the conventional data practices on which National Statistics Offices largely draw for SDG monitoring, such as census or household surveys this may be related to sampling frames being based on the formal constituents of a city, resulting in poor representativeness in cities where informal processes in housing, transport and other critical urban services play an important role of daily life (Klopp and Petretta, 2017). Moreover, other surveys, which may be more inclusive and more frequent, such as the Demographic and Health Survey (DHS) Program or the Multiple Indicator Cluster Surveys (MICS), have a specific thematic area and thus may have limited value for indicators outside their focus.

Monitoring challenges related to spatial inequalities may also be due to practical issues, for example in the case of physical barriers to access to conduct the survey, or outdated censuses – especially in so-called informal settlements, many of which (though by far not all) have a high proportion of transitory population. Undercounting the most vulnerable in the city may also be related to political reasons and “socially constructed census tracts” (Liverman, 2018b) (p. 177), as well as underreporting due to fear of stigmatisation which may bias household survey replies from respondents from marginalised urban communities (Howard, Lopez-Franco and Wheeler, 2017; Lucci, Bhatkal and Khan, 2016). Lucci et al. (2016) also highlighted the

problem of household surveys with sample sizes that are often too small (e.g., only distinguishing between urban/rural) to capture the development outcomes of the most marginalised urban residents as well as the lack of granularity, both of which compound the problem of ecological fallacy.

Echoing notions of the digital divide, Howard et al. (2017) also warned against the assumption that data from digital repositories (e.g., social network data or Big Data) increase the visibility of marginalised communities and representativeness “if the way digital data is produced is exclusionary” (p. 2), as it depends on “who controls the new systems and determines what knowledge they produce, who has access to the data, who interprets them, and of course, what they are used to achieve” (Klopp and Petretta, 2017) (p. 96). This, therefore, calls for participatory and open data practices which are both top-down and bottom-up, for the data to accurately reflect the multi-dimensional complexities of the lives of marginalised communities.

5.3. Methodological approach: identifying inequalities in global SDG 11 monitoring

As indicated in Chapter 4, the sub-research question underpinning this chapter – to what extent could the representativeness of the SDG 11 indicator and data framework be affected by spatial and intersecting intra-urban inequalities? – is based not only on existing scholarship but on a review of documentary evidence regarding the provisions to account for inequalities in the methodological and data proposals for monitoring SDG 11. These publicly available documents are addressed to Member State monitoring practitioners, which include National Statistics Offices, city government, academia and civil society organisations:

- The SDG 11 *metadata document* (UN-Habitat, 2018a) comprises the main methodological issues and challenges, the proposed methodologies and data sources for measuring the SDG 11 indicators;
- the SDG 11 Synthesis Report (UN-Habitat, 2018b) was prepared for the 2018 United Nations High Level Political Forum, which reviewed the latest global trends as well as methodological advances for monitoring SDG 11; and
- documentation used for training the National Statistics Offices and other stakeholders involved in monitoring in the Member States, such as the latest versions of the SDG 11 training manuals, including data collection checklists.

Adhering to the indicator sequence of SDG 11, the targets and indicators were categorised according to the degree to which they accounted for intra-urban inequalities in the target definition, the indicator definition and parameters, and the data sources and production

methods to inform the indicator. The analysis focused on those indicators whose development outcomes *directly* affect the quality of life of urban residents and where intra-city variations are likely to occur in cities with high levels of inequalities. These are 11.1.1 (proportion of people living in slums, informal settlements and inadequate housing), 11.2.1 (convenient access to public transport), 11.5.1 (number of deaths, missing persons and directly affected persons attributed to disasters), 11.6.1 (urban waste collected), 11.6.2 (annual mean levels of particulate matter), 11.7.1 (share of built-up area that is open space for public use for all), and 11.7.2 (proportion of persons victim of physical or sexual harassment). The other SDG 11 indicators either refer to administrative and financial interventions and denominators, or, only indirectly affect the residents' experienced quality of life. All the indicators mentioned above were analysed, but for the sake of brevity Section 5.4 will only provide an extended analytical description for a sample of four indicators (one of each Tier, with Tier III represented by the two 11.7 indicators). A summary table at the end of the analysis (table 6) comprises all seven indicators.

The level of salience of intra-urban inequalities is assessed according to the following criteria:

1. For the target definition: Level of reference to inequalities: Universal (for example, “equal access” or “access for all”), targeted, mentioning specific vulnerable groups, or no reference; the question here is: “To which extent does the target definition refer to the potential existence of urban inequalities?”
2. For the indicator: Disaggregation requirement indicating sensitivity to vertical, horizontal and spatial intra-urban inequalities. Here, the question addressed is: “Do the indicator definition and parameter disaggregation requirements reflect sensitivity to the three types of intra-urban inequalities?”
3. For the data sources and production methods: Proposed degree of participation, ability to capture marginalised urban communities (currently and ideal case/future data sources and production methods, depending on institutional and technological capacities); referring to the observations regarding data in section 5.4, I asked, “are the proposed current, future and ideal data sources and production methods able to bring intra-urban inequalities into the picture?”.

These criteria represent an increasing scale of operationalisation in SDG 11 monitoring. In practice, implementation gaps (see figure 7) may emerge in the form of a conceptual implementation gap, for example where the target definition accounts for inequalities, but the indicator relies on narrowly defined parameters. There may also be a

practical implementation gap, for example where parameters aim to capture intra-urban inequalities, but data practices do not yet exist to provide the required level of disaggregation. With an accepted monitoring methodology and data sources, only Tier I indicators may have both types. For Tier II indicators the analysis looked for conceptual implementation gaps and the *potential* of practical implementation gaps based on the *proposed* data sources, while the “inequality vulnerability assessments” of the two Tier III indicators were based on the theoretical discussions and proposals in the guidance documents for the monitoring stakeholders. It is possible that in some cases these implementation gaps are interdependent.

The categorisation thus also reflects the indicator Tier status by including the minimum/current and ideal case/future proposals regarding methodology and data, which allows for variations in local technological and institutional capacities. Figure 7 summarises the methodological approach in this chapter.

Operationalisation	SDG 11 monitoring element	Criteria	} Conceptual implementation gap? } Practical implementation gap?
	Target definition	<ul style="list-style-type: none"> • “Equal” / “access for all” etc. 	
	Indicator parameters and methodology	<ul style="list-style-type: none"> • Aspects of inequality covered – indicating sensitivity to intra-urban inequalities (vertical, horizontal, spatial) 	
	Data sources and production methods	<ul style="list-style-type: none"> • Data disaggregation – ability to make intra-urban inequalities visible • Proposed degree of citizen participation • Sources’ and production practices’ ability to capture marginalised urban communities 	

Figure 7: The methodological approach

For a systematic analysis, the methodological approach has been advanced with the following questions in mind, which are applied to each indicator, as shown in the operationalised methodological approach in Table 5.

(A) Target definition	1. Does it refer to inequality?
(B) Indicator parameter(s)	1. Does it propose to assess various forms of inequality? 2. Does it propose intra-urban spatial differentiation?
(C) Data sources and production methods	1. Are the proposed data sources and production methods capable of reflecting multiple forms of inequality?
(D) Current	
(E) Ideal/future	2. Do the proposals suggest data disaggregated at the neighbourhood level?

Table 5: The operationalised methodological approach

5.4. Analysis

With the methodological approach defined and operationalised, four indicators were selected for an extended analysis: 11.1.1 (proportion of people living in slums, informal settlements and inadequate housing) (Tier I), 11.2.1 (convenient access to public transport) (Tier II) and the two 11.7 indicators; 11.7.1 – share of built-up area that is open space for public use for all; 11.7.2 – proportion of persons victim of physical or sexual harassment) (both Tier III). These are presented in the following.

5.4.1. Target 11.1/Indicator 11.1.1 (Tier I)

Progress towards Target 11.1: By 2030, ensure access for all to adequate, safe and affordable housing and basic services and upgrade slums is measured by indicator 11.1.1 – the proportion of urban population living in slums, informal settlements or inadequate housing. As this target, by definition, deals with intra-urban inequality, its representativeness can only be affected by practical implementation gaps.

Referring to housing deprivation in the form of “slums,” “informal settlements” and “inadequate housing,” this indicator reflects the relative nature of intra-urban inequalities regarding housing by operationalising the target along parameters for urban service accessibility, the character of the building structure, tenure, spatial context, affordability and cultural adequacy. The possibility of intersecting inequalities, therefore, appears to be accounted for in the parameters of this indicator.

The metadata SDG 11 methodological guidance document specifically refers to spatial inequalities by calling for disaggregated data at the intra-urban level. Intersecting inequalities are also addressed with household level data on gender, ethnicity, income and disability (*ibid.*). There, however, appears to be a practical implementation gap to inform housing adequacy (especially regarding affordability, accessibility and cultural adequacy). The SDG 11 Synthesis Report indicates that there is currently limited technical capability to collect data in this regard.

The main data sources and practices currently proposed in the training documentation refer to census data, Demographic and Health Surveys, and Multiple Indicator Cluster Surveys, as suggested in the training material. Representativeness regarding potential intra-urban inequalities, therefore, depends on the inclusivity of the census and thematic relevance of the complementary surveys (see replies to C1 and C2 in Table 6).

Future data production methods to which the SDG 11 Synthesis Report refers, such as the combination of satellite imagery analysis in combination with participatory slum mapping [42], are likely to enhance the indicators' ability to reflect bottom-up perceptions of multiple forms of inequality. Table 6 shows the assessment of indicator 11.1.1 in response to the corresponding questions listed in the operationalised methodological approach above.

5.4.2. Target 11.2/Indicator 11.2.1 (Tier II)

Target 11.2. aims to, “by 2030, provide access to safe, affordable, accessible and sustainable transport systems for all, improving road safety, notably by expanding public transport, with special attention to the needs of those in vulnerable situations, women, children, persons with disabilities and older persons” (UN-Habitat, 2018a) (p. 21). It calls for equity in access to transport, specifically refers to forms of intersecting inequalities (such as gender, often intensified by spatial inequality, resulting in a positive assessment for question A1 in Table 6) and is measured by the “proportion of population that has convenient access to public transport, by sex, age and persons with disabilities” (ibid). Convenience in access to transport currently is assessed with a distance parameter (no more than 500 metres walking distance from a frequently visited reference point, such as a home, a place of employment, market or other commercial centres). Although distance is a spatial factor, it does not reflect spatial intra-urban inequalities, as the adequate distance may vary according to the density and other structural characteristics of a neighbourhood (see corresponding responses to question B1 and B2).

In its current version, this indicator is vulnerable to various forms of inequality, which is due to both a conceptual and practical implementation gap. As already mentioned as an example in section 5.3, the distance parameter limits the representativeness of “convenience in access” in cities with multiple forms of intra-urban inequalities. Acknowledging this vulnerability, the SDG 11 Synthesis Report points to the challenges of spatial intersecting inequalities in urban mobility. Both metadata and SDG 11 Synthesis Report emphasise the need for further methodological refinement regarding the parameter for “convenient access” and relatedly, the technological capacity to produce data for informing it.

In terms of data, the current parameter relies on geospatial data for the location of public transport stops and population served, drawn from conventional sources, such as the city administration or service providers, or open data, such as OpenStreetMap. The potential of the data sources currently proposed in the guidance material for national stakeholders to generate representative data, therefore, depends on the inclusivity of the data practices for

generating the data (response to C1). With the aim to establish buffer service areas, the indicator's focus is by definition intra-urban (C2). The positive assessments for D1 and D2 reflect the methodological proposals for enhancing representativeness regarding spatial intersecting inequalities. Extending the item's boundary in Stone's terms (Stone, 2012), might include origin-destination surveys to measure convenience in access to opportunities (as opposed to transport stops), the inclusion of informal transport systems in monitoring, as well as open-source trip planning platforms, which can increase the visibility of transport needs of marginalised communities.

5.4.3. Target 11.7/Indicator 11.7.1 (Tier III) and Indicator 11.7.2 (Tier III)

Target 11.7 directly refers to aspects of horizontal (in)equality by aiming to “provide universal access to safe, inclusive and accessible, green and public spaces, in particular for women and children, older persons and persons with disabilities, by 2030” (UN-Habitat, 2018a) (p. 70) (see A1 in Table 6). Indicator 11.7.1, measuring the “average share of the built-up area of cities that is open space for public use for all, by sex, age and persons with disabilities” (ibid.) operationalises this aim for monitoring by calling for data which is disaggregated along demographic attributes. Depending on the inclusiveness of the data sources, this enhances the indicator's sensitivity to horizontal inequalities regarding access to open space (B1). The parameter definition (B2) does not refer to spatial and vertical inequalities, despite the SDG 11 Synthesis Report's suggestion that use of public space for leisure is higher for urban residents with lower incomes.

The data practices proposed for informing this indicator consist of satellite imagery digitisation, complemented with ground-truthing as well as community-based maps to establish ownership (public or private) and complement non-existent or outdated municipal inventory lists of public spaces. The ideal data practices proposed for this Tier III indicator are thus likely to capture inequality-related differences in access and interpretations of public space across neighbourhoods (D1 and D2). Where implemented, this indicator is therefore likely to accurately represent potential inequalities regarding access to public space in cities.

Indicator 11.7.2 (Tier III) measures the “safe access” aspect of target 11.7 by monitoring the “proportion of persons victim of physical or sexual harassment, by sex, age, disability status and place of occurrence, in the previous 12 months” (UN-Habitat, 2018a) (p. 81). While the indicator definition accounts for the possibility of horizontal inequalities, the documents mention that there is uncertainty regarding a universal agreement on the definition of “sexual

harassment”. “Place of occurrence” in the indicator definition represents a non-spatial typology (home, workplace, street). The indicator, therefore, does not account for spatial inequalities in its current version (see replies to B1 and B2 in Table 6).

The likelihood that physical and sexual violence is underreported due to gender inequality is compounded by the lack of disaggregated data, which currently mostly only report the type of crime, and consistent reporting methods (some countries have dedicated surveys, while others provide a specific module in the Demographic and Health Surveys (see replies to C1 and C2 in Table 6).

Future data practices mentioned in the SDG 11 guidance documents include participatory geo-spatial methods. It can therefore be expected that the practical implementation gap regarding the availability of data which can make visible horizontal, as well as intra-urban spatial intersecting inequalities, can be reduced (see replies to D1/D2).

5.5. Discussion

The seven SDG 11 indicators and their related targets that were selected for the analysis of the SDG 11 monitoring framework’s ability to account for intra-urban inequalities (four of which were presented in extended form) are characterised by the immediacy of their focus areas. These areas (i.e., housing, access to public transport, the impact of disasters, municipal solid waste, air pollution, access to green and public spaces and personal safety) directly affect how people experience daily life in their neighbourhoods. The analysis suggests that these indicators vary in their ability to similarly account for the possibility of urban residents equally able to realise their rights to access or protection, which are at the core of SDG 11.

While four out of the five target definitions analysed provide some consideration regarding vertical or horizontal inequalities, the possibility of spatial inequalities does not feature at the target level. Moreover, half of the targets assessed emphasise the possibility of specific horizontal inequalities, yet the relation between target definition and indicator parameters regarding vertical and horizontal inequalities is not always direct. This suggests that there are conceptual implementation gaps – especially in the Tier II indicators that were analysed (see 11.2.1, 11.5.1, 11.6.1). Crucially, except for 11.1.1 (which by definition measures spatial intra-urban inequalities), the significance of the intra-urban spatial context does not appear to be considered in the indicator parameters. This is especially important when considering that the SDG 11 Synthesis Report points to the impacts of intra-urban spatial inequalities in several indicators (11.1.1, 11.6.1, 11.6.2 and 11.7.1).

The degree to which the representativeness regarding intra-urban inequalities of the two Tier I indicators is affected by practical implementation gaps is debatable, as indicator 11.1.1 currently relies on conventional sources, and 11.6.2 does not consider any types of intra-urban equalities in the first place. With most of the Tier II indicators currently proposing the use of conventional, centrally administered data sources as the basis for monitoring, in addition to the use of top-down defined concepts there is a potential of undercounting informality and intersecting inequalities due to systematically biased sampling frames.

The conceptual and methodological openness of the two Tier III indicators analysed provides an opportunity for enhanced representativeness. Their challenges relate to the lack of existing conventional datasets and the need for emerging data practices that are able to result into disaggregated data at group level and thus provide spatial detail at neighbourhood level, incorporating local meaning of green and public space (11.7.1) and victims' perceptions of experiences and risk of physical and sexual violence (as opposed to top-down defined concepts).

Much of the indicators' robustness against the risk of perpetuating intra-urban inequalities therefore currently depends on the inclusiveness of the data practices used to inform them. Encouragingly, the guidance documents acknowledge the need for intra-urban differentiation regarding the multiple forms of inequalities, since the "ideal/future case scenario" of most of the indicators calls for data which is disaggregated at the intra-urban level.

Given the SDGs' mandate to "leave no-one behind" and "reach those furthest behind first," the global SDG 11 monitoring framework would benefit from a more prominent position and emphasis of intra-urban inequalities at the conceptual/definitional level across all targets and indicators. This would be essential for closing the conceptual implementation gaps in the short term and create awareness of the former among monitoring stakeholders.

In the medium term, a methodological approach to "recalibrate" the city-level indicators to describe the degree of intra-urban variances regarding the outcomes of the respective SDG 11 indicator, especially in cities with a high degree of inequalities (such as cities with marginalised neighbourhoods), may be worth of further investigation. In the long term, the practical implementation gaps may be closed with the emergence of methodologies and data practices which allow for intra-urban perspectives and differences in experiences.

Question	11.1.1 (Tier I)	11.2.1 (Tier II)	11.5.1 (Tier II)	11.6.1 (Tier II)	11.6.2 (Tier I)	11.7.1 (Tier III)	11.7.2 (Tier III)
(A1) Target definition: Does it refer to inequality?	Universal	Both universal and targeted	Targeted	No reference to inequalities	See 11.6.1	Targeted	See 11.7.1
(B1) Indicator parameter(s): Does it propose to assess various forms of inequality?	Yes	No	No	11.6.1a: Service demand—vertical and horizontal possible 11.6.1b: Supply no	No	Yes—horizontal	Yes—horizontal
(B2) Indicator parameter(s): Does it propose intra-urban spatial differentiation?	Yes	No (set distance criterion)	No (people affected—non-spatial context)	No (non-spatial demand and supply criteria)	No	No (city-level)	No (non-spatial categorisation of place)
(C1) Current data sources and production methods: Are the proposed data sources and production methods capable of reflecting multiple forms of inequality?	Depends on inclusivity of data practices	Depends on inclusivity of data practices	Depends on inclusivity of data practices	11.6.1a: Depends on inclusivity 11.6.1b: Supply no	No	Not defined	Depends on inclusivity of data practices
(C2) Current data sources and production methods: Do the proposals suggest data disaggregated at the neighbourhood level?	Depends on inclusivity of data practices	Yes	Depends on inclusivity of data practices	11.6.1a: Depends on inclusivity 11.6.1b: Supply no	No	Not defined	Depends on inclusivity of data practices
(D1) Ideal/future data sources and production methods: Are the proposed data sources and production methods capable of reflecting multiple forms of inequality?	Yes	Yes	Not defined	None mentioned	No	Yes	Yes
(D2) Ideal/future data sources and production methods: Do the proposals suggest data disaggregated at the neighbourhood level?	Yes	Yes	Mixed	None mentioned	No	Yes	Yes

Table 6: Analysis summary table

5.6. Conclusions

Using a combination of conceptual arguments from existing scholarship, analysis of SDG monitoring guidance and interviews with those involved in advancing global policies, this chapter has investigated the ability of the SDG monitoring framework to function equitably and has provided a conceptual toolbox for assessing the SDG 11 monitoring system regarding inequalities. Such a toolbox can further be regarded as a basis for evaluating emerging conceptual and methodological refinements of monitoring systems as well as the fitness-for-use of emerging data generation methods – such as public participatory geospatial methods and citizen-generated data practices – particularly regarding their “vulnerability” to inequalities.

Importantly, this chapter has started to unpack the resilience and sustainability multiple from the top down, and the analysis shows the implementation gap in action (see Chapter 1). In the SDG 11 monitoring framework the latter specifically takes the form of the conceptual and practical implementation gaps, which mediate the extent to which localisation is transformative. The tension inherent in these pressure points also relates to the unsolvable resilience modeller’s dilemma discussed in Chapter 2, and the discussion presented ideas for strategies to deal with it. Thus, in reference to the dimensions of monitoring localisation proposed in the literature review, the aim of the monitoring function to make visible spatial variability (international comparability) in sustainability and resilience is achieved – which is the primary purpose at this scale, yet what its mobilisation exactly means for transformation – its relevance – depends on the implicit assumptions as Hák et al. (2016) suggested. It does mean that the SDG 11 monitoring framework is somewhat stuck in the middle and facing a trade-off between global comparison, local implementation, and relevance.

More specifically, the conceptual implementation gap this analysis has identified at the global level – between indicator target definitions, which at the minimum refer to inequalities in some form, and the indicator parameters, which are limited in their ability to account for inequalities – suggests that a multiple in the interpretation of the global SDG 11 monitoring framework has emerged. As indicated in the discussion section above, to enhance the monitoring framework’s transformative capacity, for example, in the form of higher degrees of inclusiveness and diversity in the *Forms of Agency and Interaction* component of transformative capacity, the parameters might need to be aligned with the target definitions. This in turn might prepare the ground for closing the practical implementation gap with more inclusive and locally meaningful datasets, especially in cities with high intra-urban socio-spatial inequalities. The current reliance on conventional datasets in the global level interpretation of SDG 11 in turn

indicates that the extent to which the components and sources of urban transformative capacity are enhanced will depend on the approach to localisation regarding dataset methodology at the national and municipal scales, which is the focus of the following chapter. Chapter 6 investigates the processes of localisation from the global to the national and sub-national (municipal) level to understand the mechanisms of translation of the multiple framings of sustainability and resilience and explore the extent to which these might perpetuate existing inequalities or trigger changes in the components and sources of urban transformative capacity.

Chapter 6. Transformation or box-ticking? SDG 11 monitoring in Colombia and Medellín

6.1. Introduction

6.1.1. Chapter context and structure

The analysis in Chapter 5 identified the conceptual and practical implementation gaps in the global level SDG 11 monitoring framework where multiples are likely to emerge, and which mediate the transformative capacity of monitoring practices further down the governance scale. The question thus arises of how effective is the localisation of the SDG targets and indicators into monitoring frameworks at national and city levels? With the chapters of this thesis following the scalar sequence of localisation in goal-setting governance, this chapter addresses this question with an investigation of localisation at the national and municipal scale as well as the identification of implicit institutional factors which shape the character of the locally produced frameworks. This chapter thus investigates the manifestations of the multiple at these two scales, their political-institutional drivers, and reflects on these choices in terms of their impact on the components and sources of urban transformative capacity (see figure 5).

Within this context, this chapter contains two parts. The first is a systematic horizontal comparison of localised SDG 11 monitoring frameworks at municipal level. This was done with an analysis of Voluntary Local Review (VLRs) reports from a range of cities, where municipalities inform of their progress towards the SDGs and which represent the municipal administrations' methodological, thematical and political choices of indicators as a manifestation of the multiple. This horizontal comparative analysis provides an insight into the extent to which differences exist between municipalities globally in their interpretation of resilience and sustainability for SDG 11 reporting, their conceptual and technical ability to account for intra-urban socio-spatial inequalities and the transformative capacity of the localised monitoring framework. With an analysis of policy documents and methodological worksheets from the Colombian NSO (*Departamento Administrativo Nacional de Estadística, DANE*) and the Medellín municipal planning office obtained during field research, the second part of the chapter approaches the above question vertically by following the translation from the global to the national (Colombia), and from the national to the municipal (Medellín) scale. The interviews at both national and municipal levels with officers in charge of SDG localisation uncover the institutional factors which shape this process, and thus drive the multiple at the

two scales, thus provide preliminary indications regarding challenges and opportunities for enhancing the transformative capacity of monitoring localisation. Specifically, this chapter will propose a conceptual framework to analyse the localisation of SDG monitoring at city level, in response to calls for meta-analyses of planning processes that question their transformative potential, especially regarding socio-spatial justice. It thus represents a call to action at the national and municipal levels to inform new conceptual models of SDG localisation in ways that make it meaningful for citizens and strengthen urban transformative capacity rather than just a score card system of bureaucratic box-ticking.

6.1.2. Contextualising localised reporting

In line with the 2030 Agenda which calls on member states to "conduct regular and inclusive reviews of progress at the national and sub-national levels, which are country-led and country-driven", national governments report their progress towards the SDGs to the annual UN High Level Political Forum (HLPF) on Sustainable Development – as the “orchestrator” for follow-up (Bernstein, 2017) – in the form the Voluntary National Reviews (VNRs). Up to 2020 68 member states have submitted a VNR, for which the respective National Statistics Offices provide the data. Given the UN’s organisational structure, the VNRs represent the only official reports on SDG progress. Municipalities have started to present VLRs in 2018 and by mid 2020 over 22 VLRs had been prepared. The exact number is contested since no unified agreed format exists and various organisations which list them on their websites, such as the European Commission, the Institute for Global Environmental Strategies and the UN Department for Social and Economic Affairs (UNDESA) count them differently, although the VNR format is being increasingly adopted. For UNDESA (nd) the value of the VLRs is in that they “help to reinforce vertical coherence and complement and contribute to the national Voluntary National Reviews of SDG implementation.”

In Colombia, the localisation of the 2030 Agenda at national level was led by the National Council for Economic and Social Policy (CONPES in its Spanish acronym). Chaired by the National Planning Department, and consisting of officials from the range of central government departments, amongst other documents the CONPES produces are cross-sector policy-making guidance with a validity beyond the administrative cycle in which they endorsed. One of these documents is the Strategy for the SDG Implementation in Colombia (the *CONPES 3918*) (CONPES, 2018), which was issued early 2018, the same year the country presented its second Voluntary National Review. This document therefore represents Colombia’s official

approach to localising SDG monitoring at national level. Relatedly, in 2016 Medellín, the municipal planning department has issued a local 2030 Agenda (the Agenda Medellín 2030) (DAP, 2016) and developed an SDG indicator framework, although the definition of the datasets for municipal monitoring was still in progress at the time of the field research in 2019-20.

This chapter uses VLRs prepared by the municipalities globally, and the Colombian (national) and Medellín (municipal) SDG 11 frameworks as documented evidence of the localisation process. The fact that cities produce their own progress reports in parallel to the VNRs is undoubtedly a sign of their importance in an increasingly urban planet. Importantly for this thesis, it also is a manifestation of the inherent tensions of localisation. As noted in Chapter 3, these specifically refer to the scalar tension of progress reporting (measurement) at national level on the one hand and municipal level implementation on the other, and the methodological tension where participation is encouraged to promote equity in implementation, while the role of citizen engagement for a meaningful localisation of monitoring to account for the various types of inequality remains unexplored in methodological guidance. Already pointing to the political nature of localisation beyond disaggregation, the combination of these two tensions has an impact on the formulation of the municipal monitoring frameworks as the municipalities might interpret the SDG themes differently and draw on different municipal level data sets for their VLRs than the national level VNRs.

6.2. Approaching the localisation of monitoring

Following the tensions regarding the equitability of SDG 11 monitoring identified in the literature and the global view case study, and considering the conceptual lens of localisation as thematic investigation of transformative capacity in monitoring and its elements (relevance, continuity, scalar alignment-consistency, and engagement) developed in Chapter 3, the overall aims of this chapter are to: 1) identify the extent to which the localised manifestations of the SDG 11 themes in monitoring are likely to be transformative and 2) obtain an insight into the factors mediating differences in these thematic interpretations. The approach adopted to unpack these questions presents an analysis of SDG 11 monitoring framework localisation in three dimensions (see figure 8 below). The first dimension is horizontal, asking how municipalities which submitted VLRs have localised SDG 11 monitoring. The second analysis is vertical. With the case studies of Colombia and Medellín, it asks how the global framework translates across the global-to-national-to-municipal scales. Based on interviews with

monitoring officers at the national and municipal scales, the third analytical dimension relates to the meta-level, which explores the likely institutional-political factors that drive the approach to SDG 11 indicator localisation. The following sub-sections describe the detailed assessment methodology deployed for each dimension.

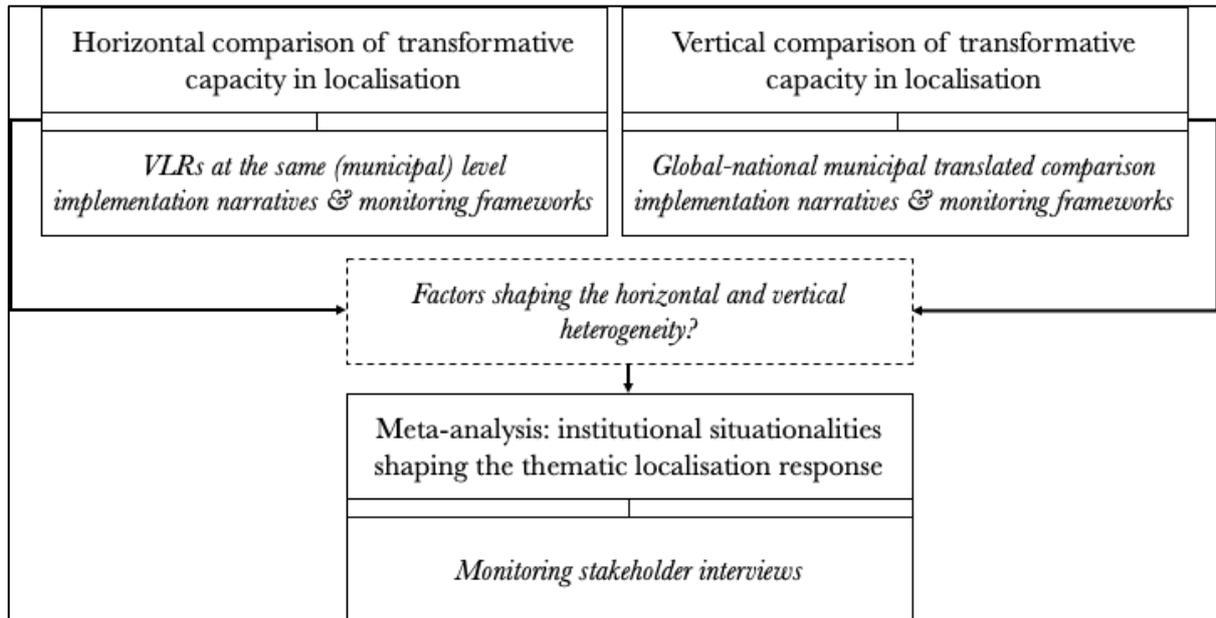


Figure 8: The analytical approach and sequence of the of subsections in the analysis

6.2.1. Horizontal dimension: differences in transformative localisation among cities

The question for the analysis at the horizontal dimension is regarding differences in transformative localisation among cities. With the VLRs representing artefacts of a thematic dialogue concerning transformation, this analysis compared the transformative capacity of the proposed implementation narrative with the localised monitoring framework. The first step in this approach analysed the discursive framing of SDG 11-related implementation in the VLR documents and compared these with the proposed indicators for localised monitoring regarding the extent to which they account for intersecting spatial inequalities. Thus, if localised implementation aims to be transformative, we can expect the policy narrative of the VLRs to explicitly refer to socio-spatial inequalities and provide proposals of how to create a meaningful dialogue between government and non-government stakeholders at different levels. The two questions in this step were:

- Regarding the policy narrative: To which extent does the VLR, in its SDG implementation narrative frame socio-spatial inequalities for SDG 11 (e.g., differentials related to disaster

risk, access to transport etc.)? The range of options for evaluating the narratives related to n/a (no reference to specific inequalities); one-dimensional; intersecting inequalities; and spatial intersecting inequalities.

- Regarding the implementation engagement strategy: To which extent does the localisation document in its implementation narrative explicitly refer to horizontal-institutional and vertical-civil society and citizen stakeholder engagement in localisation? The range of possibilities here is 1: notification (i.e., no engagement); 2: consultation (i.e., passive engagement); and 3: dialogue / co-creation.

The second step of the horizontal analysis is an assessment of the transformative capacity of the localised SDG 11 monitoring frameworks. Here the questions referred to the extent to which the proposed localised indicator sets were able to make spatial intersecting inequalities visible. The analysis focused on the following elements of the localised monitoring framework:

- Types of proposed disaggregation (socio-economic, demographic, spatial) of the indicator.
- Stakeholder engagement in monitoring: the extent to which different horizontal and vertical stakeholders are engaged in monitoring. Representing the diversity of knowledges, these questions are answered with the types of data generation methods proposed in the VLRs, on a range from conventional (survey and institutional records), census, sensor or alternative methods, such as citizen-generated or even stakeholder co-created datasets for the purpose of measuring the SDGs – which would be analogous to a role as co-creators in SDG implementation.
- Thematic diversity: the extent of engagement with SDG 11 – measured with the number of indicators selected out of the 15 SDG 11 indicators.

The third step in this dimension is an overall grading of the localised narratives' and monitoring frameworks' transformative capacities from the first and second steps of the horizontal analysis. Here, the following criteria were applied:

- Regarding the localised policy narrative, (the results from the first step): *limited*, if no reference to inequalities and/or no indication regarding stakeholder engagement; *aspirational*, if it refers to one-dimensional inequalities and/or proposes to consult with wider horizontal and vertical stakeholders in the role of advisors; *transformative*, if it refers to intersecting or spatial intersecting inequalities and/or proposes to involve stakeholders in the localisation process in a co-creative manner.

- Regarding the indicator framework (the results from the second step) the criteria were: *limited* if there was no indication regarding disaggregation and/or only conventional data generation with limited engagement in monitoring and/or less than seven of the 15 global indicators thematically addressed; *aspirational* if the indicator framework referred to simple disaggregation, by adopting a single dimension of inequality, such as income; and/or if a combination between conventional and new, citizen-generated data sources was proposed; and/or if between eight and 11 of the 15 global indicators were addressed; *transformational* if multiple disaggregation was applied; and/or the inclusion of stakeholder co-created datasets proposed; and/or between 12 and 15 of the global SDG 11 indicators thematically addressed.

The final step in the horizontal dimension analysis compares the transformative capacity of localised SDG narrative with the monitoring framework. The transformative capacity of the localised monitoring framework was ranked as follows:

- *Indicator framework unlikely to lead to transformation*: the analysis points to limited transformation as a result of the localisation process and thus has limited transformative capacity;
- *Transformation if indicator framework re-interpreted*: the policy narrative is at least *aspirational* and therefore can lead to a reframing of the localised indicator framework;
- *Indicator framework likely to support transformative localisation narrative*: the localised SDG 11 indicator framework is either aspirational or transformative and thus can support the transformative capacity of the localised policy narrative.

6.2.2. Vertical dimension: differences in transformative potential across scales

Addressing the question of how the global framework translates across scales, the vertical analysis compared the national (Colombia) and municipal (Medellín) SDG 11 indicator frameworks to the global SDG 11 monitoring framework, target by target. Although the analysis used three numerical options (-1; 0; 1) for scoring the elements of the monitoring framework (parameter theme; disaggregation; data source/data generation), these are not meant to represent a quantitative evaluation. Using these three options as qualitative scoring symbols, the methodological proposal was used to obtain comparative average qualitative scores of transformative capacity in localised SDG 11 monitoring across governance scales.

The analysis listed the national and municipal SDG 11 indicators side-by-side and scored the monitoring framework by target. The scoring is as follows:

- Regarding the extent to which the parameters are likely to make inequalities visible: -1 = non-transformative proxy; 0 = equal to global framework; 1 = indicates local relevance and / or likely better able to account for inequalities than the global framework;

From a standpoint of transformative capacity, and considering the Leave No One Behind mandate, it is important to point out that the analysis of the effectiveness of SDG localisation asks to which extent the localised framework – even when accounting for the need to adapt a global monitoring framework to reflect national or municipal priorities and development needs – *better* addresses inequalities and increases the likelihood of bringing the views of the marginalised to the table. This means that, in addition to disaggregation, for it to be effective from the “demand side” view, i.e. for the global-level governance stakeholders such as the political and civil society delegates at the High-Level Political Forum who use this information to assess progress towards the 2030 Agenda, the localised framework should either add local relevance that specifically accounts for those furthest behind (which would be a transformative alignment), or be thematically congruent with the globally proposed indicators. Indicator parameters which fulfil none of these two criteria could be regarded as “box-ticking” proxies.

- Regarding disaggregation: -1 = none; 0 = one-dimensional (e.g., economic); 1 = intersecting.
- Regarding data source / data generation: -1 = if it refers to “conventional” data from the NSO or municipal planning office; 0 = if the localised framework proposes to obtain data from institutional stakeholders at the same scale of governance; 1 = alternative sources which might be generated by vertical sources, such as citizen generated data, even if “extractively” volunteered.

The second step in this scalar analysis is to obtain to average localised indicator score by dividing the sum of the scores of the three monitoring framework elements (parameter, disaggregation, data source) to obtain an indication of the overall transformative capacity of each SDG 11 target indicator at the national and municipal level, in comparison to the globally proposed monitoring framework. With the three indicator elements, this leads to a qualitative range between -1 (least likely to be transformative) and 1 (more likely to be transformative) in comparison to the global SDG 11 monitoring framework. With the scoring average providing a differentiated indication of the indicator framework’s transformative capacity for each target, monitoring stakeholders might thus be able to decide if and how to replace a parameter, enhance disaggregation or increase the degree of participation in data generation. As the section on the meta-dimension illustrates, these decisions take place within a socio-political

context and trade-offs that determine the extent to which a methodological improvement is feasible exist. This scoring system thus represents an indication regarding the overall quality of the localised indicator framework for the respective target, and acts as a function to prioritise efforts for methodological improvements. A target indicator with a total score of -1 for example might need urgent methodological review or at least re-orientation towards the global indicator framework (towards a score of 0), while a score of 0.33 might trigger a closer look to identify the indicator element (the parameter, disaggregation, method of data generation) which might be improved, and a reconsideration regarding its socio-political and/or technical feasibility. The vertical analysis thus focuses on the tension between the alignment with the global framework and local (national or municipal) meaningfulness and relevance as indication of the extent to which localisation, as thematical investigation exercise, has been transformative and provides an indication regarding the respective target indicator's need for review.

6.2.3. Meta dimension: the institutional drivers of differences in the transformative capacity in localisation

Drawing on national and municipal monitoring stakeholder interviews and SDG localisation-related documents at the national and municipal levels, this section investigates the socio-political factors which have shaped localisation, specifically regarding the four factors which mediate the transformative capacity of monitoring localisation (relevance, temporality, scalar alignment/consistency, engagement) (see figure 4 of the conceptual framework in section 3.3 in Chapter 3) both from global to national and global/national to municipal level. The latter scalar consideration addresses questions regarding the national – municipal tensions in SDG localisation discussed in Chapter 3.

6.3. Analysis

6.3.1. Horizontal dimension

For the VLR analysis the reports were selected if they included SDG 11, and then downloaded from the European Commission's VLR repository (EC, 2020) and the Institute for

Global Environmental Strategies’ VLR Lab’s repository (IGES, 2020)⁷. The final VLRs selected for the analysis are the following:

City / subnational entity	Year
Basque Country	2018
Bristol	2019
Jaén	2019
La Paz	2019
Los Angeles	2019
Mannheim	2019
New York City	2018
Santana de Parnaíba	2019
Taipei	2019
Toyama	2018

Table 7: The VLRs with an SDG 11 section selected for the analysis

The structure of the rest of the VLR analysis section in this chapter is analogous to the sequence of the methodological approach. It focuses on the characteristics of the VLRs as artefacts of localised SDG monitoring, and the extent to which they might be conducive to transformation.

The VLR narratives

The majority of the VLRs analysed have localised the “leave no one behind” mandate with a broad reference to inequalities, although only a few appear to explicitly consider spatial intersecting inequalities. The municipalities that do so in their VLRs (New York City; La Paz; Los Angeles) refer to it in various contexts (see the *Inequalities* column in table 7). The municipality of La Paz in its VLR specifically refers to the multiple aspects of urban marginality (accessibility, basic service provision, and risk reduction, amongst others), while the New York City VLR quotes Local Law 174, which calls for policies to be assessed “on the basis of, at a minimum, gender, race, income, and sexual orientation, and any other relevant population

⁷ This resulted in fifteen reports, which in turn were narrowed down to ten which included an indicator framework in some form – thus undertook a localised version of SDG progress reporting – while the other five can be considered strategic proposals regarding the overall approach for SDG indicator localisation.

characteristics that may be identified by the mayor” (p.18). The other cities refer to one-dimensional conceptualisations of (in)equalities, such as gender and ethnic equality (Mannheim; Santana de Parnaíba) or frame the leave no one behind mandate in terms of age, as is the case with the municipality of Toyama, that points to its population’s older demographic profile when thinking about equity.

The transformative potential that drives the extent to which inequalities are being considered narratively in the VLRs appear to be framed through the lens of pre-existing policy priorities, and not necessarily a result of the localisation exercise. While this means that municipalities such as La Paz and New York City might be better able to account for inequalities by default and thus appear to take a more transformative approach, differences in outcomes as a result of spatially intersecting inequalities remain invisible, or one-dimensional in others. To what extent might stakeholder engagement in the SDG-related policy localisation offset this vulnerability?

The analysis of proposed stakeholder engagement in localisation (see the Implementation engagement column in table 8) suggests that by providing stakeholders with a higher degree of authority, or at least an increased intensity of engagement with stakeholders during the localisation process, some municipalities (e.g., Mannheim) might be able to enhance the transformative potential of their localised SDG policy. Others, such as the municipality of Jaén, whose VLR indicates limited consideration to outcome differentials that are due to spatial intersecting inequalities, do not appear to offset this limitation with an enhanced possibility of dialogue, leading to an altogether limited transformative potential presented in the policy approach to localisation in their VLR. New York City’s localisation strategy appears to be on the other side of the spectrum, as the political/legal sensitivity to inequalities identified above is enhanced by participatory processes.

Table 8 shows in the *Narrative* column that four out of the ten VLRs suggest a transformative approach to localisation, three are aspirational since they identify at least one dimension of inequality, and the other three indicate limited (or at least do not mention) sensitivity to inequalities and need of various forms of stakeholder engagement in the process of localisation. The following subsection investigates the question of how the proposed indicator frameworks compare to the narratives of the approach to SDG policy localisation.

The VLR indicator frameworks

The analysis of the VLR narratives suggests that most municipalities promise to implement localised SDG 11 policies which, at a minimum aspire to be sensitive to the experiences of groups of constituents with characteristics they relate to potential inequalities. This part of the analysis investigated the indicators and measurement practices related to these discourses.

The analysis indicated that this is a challenge for municipalities, as the vast majority of indicator sets that measure progress towards that goal have limited ability to make inequalities visible and to bring diverse knowledges into equal dialogue. This suggests that the transformative capacity of the localised SDG 11 monitoring frameworks is still somewhat limited.

As table 9 indicates in the *Transformative potential* column, of the VLRs that were analysed regarding SDG 11 localisation, only those of La Paz, Los Angeles and New York City have methodological provisions in monitoring to respond to their transformatively-framed agendas in this regard. This is mostly due to the degree of disaggregation for the indicators proposed to measure local progress towards SDG 11 (see the *Disaggregation* column in table 8). The VLRs of La Paz and New York City, for example, account for social and spatial inequalities in their localisation of monitoring through the likelihood of their residents of having convenient access to transport. La Paz measures the average time spent in public transport and the investment in public transport infrastructure disaggregated by neighbourhood, and New York City the number of jobs accessible to the “average” residents within 45 minutes of transit. In the examples of these two cities, their disaggregated view implies that the localised monitoring approach has a higher transformative capacity than the global framework, for example regarding SDG indicator 11.2.1 which uses a distance parameter (500m) to measure convenience in access to public transport. As examples of spatial disaggregation, the municipality of La Paz also responds to indicator 11.1.1 with the spatial distribution of housing types across neighbourhoods, which implies a socio-economic dimension. Combined with spatial data on the investment in public transport infrastructure, access to public transport, as measured by SDG 11.2.1, there is (yet unrealised) potential for an even higher transformative capacity in localised monitoring. Similar considerations might apply to Los Angeles and New York City, which provide unemployment data disaggregated by neighbourhood (Los Angeles), and the access to the number of jobs within a 45-minute radius in public transport as well as disparity of emissions across neighbourhoods (New York City).

While the indicator frameworks and datasets available for localised monitoring in these three cities are promising, the majority of indicator frameworks proposed in the VLRs still show a limited consideration of inequalities in practice, despite the narratives and stakeholder engagement in localisation, such as dialogue workshops and stakeholder validations. Housing affordability, for example, is a key indicator proposed by many VLRs for SDG indicator 11.1.1 (adequate housing), as is the average area of greenspace per capita, but the VLRs do not yet propose a disaggregation to account for spatial intersecting inequalities. Other localised indicators are loosely associated to SDGs, for example, car ownership per 1000 inhabitants, or the annual total of structural housing improvements to reduce exposure to geological hazards. Moreover, the use of alternative methods of data generation (see the Data generation column in table 8), which implies that a higher degree of citizen and stakeholder engagement is limited, as most municipalities rely on conventional datasets, such as aggregated sensor, land use or housing market data.

VLR element	Planning narrative in the VLR		Indicator sets		Indicator selection
	Inequalities	Implementation engag't	Disaggregation	Data generation	
City / Criterion					Thematic diversity
Basque Country 2018	n/a	n/a	none	sensor	3/15
Bristol 2019	one-dimensional	n/a	none	institutional and sensor	6/15
Jaén 2019	n/a	n/a	none	institutional and sensor	4/15
La Paz 2019	spatial intersecting	advice/consultation	spatial	institutional and sensor	14/15
Los Angeles 2019	intersecting	advice/consultation	some spatial	institutional and sensor	13/15
Mannheim 2019	one-dimensional	dialogue/co-creation	none	institutional and sensor	not specified
New York City 2018	intersecting	dialogue/co-creation	some social & spatial	institutional, sensor & census	all
Santana/Parnaíba 2019	one-dimensional	n/a	n/a	no indication	not specified
Taipei 2019	n/a	n/a	none	institutional, sensor & census	6/15
Toyama 2018	one-dimensional	advice/consultation	none	no indication	3/15

Table 8: VLR Analysis

The VLRs' transformative capacity

A comparison of the three criteria used for the analysis of the localised indicator frameworks suggests that while data sources are similar in most VLRs (i.e., sensors, census, performance records from various municipal entities, household surveys and themed surveys), there seems to be a correlation between the proposed disaggregation and the number of selected indicators. This might indicate some municipal box-ticking or existing-data-set-driven monitoring at a global scale because it suggests that an indicator might only be included in the VLR if a dataset that relates to it exists. To bring further empirical light into this question, the analysis of Colombia and Medellín at national and municipal level in forthcoming sections provide a comparison of the processes of localisation with the localised monitoring frameworks at national and municipal levels.

Overall, the analysis of the VLRs suggests that the localisation of SDG monitoring has not yet triggered systematic reframing, although in some of the cases the potential in terms of data availability already exists. Table 9 provides a summary in the *Transformative potential* column, allocating the VLRs into three categories: 1) those that apply existing indicators to SDG localisation without a narrative that suggests a potential for building transformative capacity, ranked as *Indicator framework unlikely to lead to transformation*; 2) those that suggest a transformative narrative but whose proposed localised indicator framework still has limited transformative capacity – indicating a potential for re-interpreting their approach to monitoring, categorised as *Transformation likely if indicator framework reinterpreted*; and 3) those which combine a transformative narrative with an selection of indicator frameworks that have the potential to trigger re-framing, ranked as *Indicator framework likely to support the transformative localisation narrative*.

To gain an initial understanding of processes of localisation of monitoring and how they might mediate the character of the localised monitoring framework, the Colombia and Medellín cases in the following sections will first follow the same analytical sequence (analysis of the localisation narrative, followed by the selected localised indicators). Based on documents obtained during fieldwork, SDG 11 workshop recordings and interviews with national and municipal stakeholders, this study will then discuss some of the processes that have shaped the transformative capacity of the localised frameworks. The discussion in this study thus provides methodological entry points for enhancing the effectiveness of localisation.

	Transformative capacity of the localised monitoring framework		
City / Criterion	Narrative	Indicator framework	Transformative potential
Basque Country 2018	limited	limited	Indicator framework unlikely to lead to transformation
Bristol 2019	aspirational	limited	Transformation likely if indicator framework reinterpreted
Jaén 2019	limited	limited	Indicator framework unlikely to lead to transformation
La Paz 2019	transformative	aspirational	Indicator framework likely to support transformative localisation narrative
Los Angeles 2019	transformative	aspirational	Indicator framework likely to support transformative localisation narrative
Mannheim 2019	transformative	limited	Transformation likely if indicator framework reinterpreted
New York City 2018	transformative	aspirational	Indicator framework likely to support transformative localisation narrative
Santana de Parnaíba 2019	aspirational	n/a	Transformation likely if indicator framework reinterpreted
Taipei 2019	limited	limited	Indicator framework unlikely to lead to transformation
Toyama 2018	aspirational	limited	Transformation likely if indicator framework reinterpreted

Table 9: VLR transformative potential assessment table

6.3.2. Vertical dimension

The national localisation narrative: Colombia

As argued above, at the global level, the national governments report progress towards the SDGs. In Colombia, this process is led by the national planning department as coordinating entity, which through the National Council for Social and Economic Policy in 2018 issued a strategy document (the CONPES 3918) that establishes the country's conceptual and methodological approach to SDG monitoring for the three administrative periods between 2018 and 2030. While the Colombian National Statistics Office (DANE) is responsible for providing the data, the CONPES represents Colombia's localisation strategy for SDG monitoring at national level.

In the strategy narrative, the CONPES authors draw on the country's experience with the Millennium Development Goals, arguing that SDG localisation would learn from the challenges of the Millennium Development Goal period. In their view these related to 1) a lack of a publicly accessible national monitoring framework from the start, as "there was no inclusive scheme or mechanism where stakeholders could observe progress towards these goals" (CONPES, 2018) (p.23), 2) limited sub-national disaggregation and limited periodicity of datasets, 3) a lack of sub-national localisation ("...only nine indicators out of the sixty were disaggregated at local level..."; *ibid*), and 4) a weak coordination with non-governmental stakeholders. In Colombia's national SDG localisation narrative, the Leave No One Behind mandate thus is interpreted in terms of inter-regional disparities rather than socio-spatial inequalities. Particular emphasis is however placed on non-governmental stakeholder and civil society engagement and dialogue in the definition of localised policy interventions for implementation. Although it identifies the ministries as the main implementing (or at least financially and programmatically facilitating) actors, the strategy document proposes a range of activities and budgetary provisions to foster a continuous dialogue with and among non-governmental stakeholders to enable civil society ownership of the SDGs. This includes a multi-stakeholder platform, convened by the national SDG Commission (consisting of eight ministries and the National Statistics Office), which will "enable these non-governmental stakeholders to take an active role in SDG implementation and monitoring" (CONPES, 2018) (p. 54). With *dialogue / interaction and promotion of alliances with non-governmental actors (Lineamiento 4: interlocución y promoción de alianzas con actores no gubernamentales)* being one of four strategic action items in Colombia's SDG localisation agenda, the country's government makes a point of its ambition

for impactful engagement in localisation. This ambition was mirrored by DANE's director who, during the UN-Habitat SDG 11 workshop indicated that the agency would adopt a localised monitoring approach by increasing its subnational presence and technical capacities across the country.

Municipal localisation narrative: Medellín

At the municipal level a key policy narrative guiding SDG localisation is the Agenda Medellín 2030 (DAP, 2016). In terms of implementation, this document emphasises that the municipal development strategy is aligned with the SDGs. The municipality frames localisation as the inclusion of “relevant goals which reflect the nature and dynamics of the city...to provide continuity of current strategies, while establishing new ones that contribute to the national commitment to the global treaty” (DAP, 2016) (p.5). Alignment manifests in the association of individual programmes in the municipal development plan with thematically related SDGs. Regarding processes, the Agenda Medellín 2030 suggests that cross-silo and horizontal integration, and an empowered citizenry able to “trace the way towards sustainability” (ibid.) are outcomes of stakeholder engagement in localisation.

Medellín's SDG 11 narrative is more specific regarding stakeholder engagement and socio-spatial inequalities than the national SDG localisation strategy. Here the city's SDG 11 narrative places emphasis on the inclusion of citizens and civil society organisations in planning, and to “account for the communities' challenges and strengths”. The SDG 11-specific strategy echoes the Agenda Medellín 2030 in its call for an empowered civil society as proactive stakeholder in territorial and urban planning. Emphasising equity, the Agenda proposes to focus on integrated neighbourhood upgrading (as opposed to eviction and gentrification), inclusive risk reduction, and the provision of inclusive public urban infrastructure and services. Moreover, implying the need for socio-spatial disaggregation, it calls for particular awareness of the needs of the most vulnerable communities and the factors of multiple neighbourhood deprivation and risks affecting them (DAP, 2016)). The extent to which the nationally and municipally localised indicator frameworks might account for inequalities in comparison to the global SDG 11 framework, and thus support the above narratives, is analysed in the following section.

The vertical indicator analysis: from global to municipal

The analysis of SDG 11 cross-scale translation suggests that both national and municipal SDG indicator frameworks draw on institutionally produced data which may include administrative records but still occurs with limited citizen engagement beyond data provision. Their approach is thus similar to the global framework. However, apart from the “top-down” approach to data generation the main difference in transformative capacities between national and municipal SDG 11 indicator frameworks relate to parameters and disaggregation.

Considering the scoring described in the methodology for each indicator in the national and municipal frameworks, the analysis (see table 10 for an example of the analysis, and table 11 for the summary of the average comparative transformative capacity by target) suggests that overall, the municipally localised framework appears to have a higher transformative capacity when compared to the global SDG 11 indicator framework proposal, particularly due its parameters which are more likely to account for spatial intersecting inequalities. Regarding prioritisation for methodological improvements, the only municipally localised SDG 11 target which might require significant investment appears to be 11.2 (convenient access to public transport), which in its current form is the only target whose indicator appears to have less transformative capacity than the global framework.

The national level localisation of the monitoring framework for SDG 11 in contrast is significantly below the transformative capacity of the global framework. While much of this is due to the lack of disaggregation in the indicators of four out of the seven targets (which in the medium term might be addressed by further technical investment), the conceptual challenge for national localisation in Colombia is also key. This conceptual weakness is due to the currently still limited availability of parameters which at best are equal to the global parameters (for targets 11.6 – adverse environmental impact of cities, and 11.7 – safe access to green and public spaces). Table 10 illustrates this observation with the example of the cross-scale translation of SDG indicator 11.2.1 (proportion of population with convenient access to public transport). Acknowledging the global level indicator’s weaknesses in its ability to account for socio-spatial inequalities discussed in Chapter 5 and applying the comparative average scoring approach (more transformative = 1; equally transformative = 0; less transformative than the globally proposed monitoring framework = -1) as described in section 6.2.2, this analysis shows that the nationally localised indicator in this case has significantly less transformative potential than the global indicator with a score of -0.67. This is because the parameter is limited in its ability to account for the views of those furthest behind and its thematic congruence with the

globally proposed indicator, resulting in a score of -1 (i.e., non-transformative proxy) for its transformative alignment. Moreover, there is no disaggregation (scoring -1 for disaggregation) and the data source refers to administrative records from a national government entity (the Ministry of Transport), which is as transformative as the global framework that relies on conventional data sources, such as household surveys, leading to a score of 0 regarding the transformative capacity of the data source. The resulting evaluation for the nationally localised indicator is -0.67 average of scoring for the three indicator domains (a result of $(-1 + -1 + 0)/3$). Municipal level localised monitoring appears to have slightly more transformative capacity for target 11.2., which is due to the proposal of two indicators in localisation for this target. The first shows limited transformative capacity across all three elements and would have the same qualitative scoring as the national level (-0.67) (numbers of public transport buses with ramps, without disaggregation and data from an agency at the same level of authority), the second indicator proposed for SDG 11.2.1 slightly offsets this scoring with its increased thematic alignment with the globally proposed indicator (user perception), and the types of disaggregation.

Although still short of representing a transformative framework and as already evident in the example, the analysis indicates that the SDG 11 monitoring framework currently applied at municipal level by Medellín has a higher degree of transformative potential than the nationally localised framework and that it is a more effective localisation than if it was derived from the global framework alone, as the overall score of 0.24 in Table 11 further below indicates. Some of this relates to the addition of contextual parameters, notably for indicators which are not addressed by the national level, such as the provision of data on participatory processes for target 11.3 (inclusive and sustainable urbanisation with participatory planning) as well as the inclusion of an indicator which measures exposure (dwellings in areas of non-mitigable risk) for SDG target 11.5. It is also due to the addition of complementary elements which are relevant to the global indicator concept, such as the case of indicator 11.1.1 (proportion of urban population living in slums, informal settlements or inadequate housing), which in the municipal version includes an affordability element (demand for housing). It also relates to the observation that disaggregation of the proposed indicator sets at municipal level is more transformative than the global framework, primarily because of its ability to spatially disaggregate participatory governance for target 11.3 (inclusive urbanisation) and the possibility of spatial disaggregation by neighbourhood for indicator 11.4.1 (expenditure on natural and cultural heritage). Data to inform the municipal SDG 11 monitoring frameworks is drawn from

government entities at the same administrative level (municipal secretariats and other agencies), resulting in a score of 0 (equally transformative as the global level framework).

The targets where the nationally localised indicators set is closest to the transformative capacity of the globally proposed monitoring framework are 11.1 (the national indicator includes an indication of housing need and aspects of service provision, although none relate to affordability), 11.5. (disaster impact), 11.6 (urban environmental impact) and 11.7 (11.7.1 – persons victim of physical or sexual harassment). Indicators for other targets are less transformative, such as 11.2 (access to public transport – as illustrated in the example above), and 11.4 (investment into the protection of cultural and natural heritage), which at the national level are measured with the extent of areas protected. Data sources are national statistics exercises, such as census or household surveys as well as data drawn from administrative records from other national government agencies.

The analysis suggests that the *nationally* localised indicator framework in its current form appears to have limited transformative potential when compared to the global SDG 11 indicator framework while the municipal localisation appears to be slightly more transformative. Based on interviews with NSO and municipal planning officers involved in SDG indicator localisation, the following section investigates the socio-political drivers of decisions regarding trade-offs which drive the difference in localisation approach at the two different scales.

Parameter	Disaggregation	Data source	Evaluation
Global			
Coverage area by the network distance of 500 meters	location (intra-urban), income, age, ethnicity, mode to reach public transport or by type/quality (travel time, safety, accessibility, security, affordability, comfort)	n/a	0 (global comparator)
National			
Number of electric cars (Score: -1)	n/a (Score: -1)	Ministry of Transport (Score: 0)	-0.67 (-2/3)
Municipal			
Proportion of PT buses with ramp (Score: -1)	n/a (Score: -1)	Mobility Secretariat (Score: 0)	-0.67 (-2/3)
Perception public transport quality (Score: 0)	Socio-demographic, spatial (Score: 0)	Household survey (Score: 0)	0 (0/3)
Average municipal parameter score: - 0.5	Average municipal disaggregation score: - 0.5	Average municipal disaggregation score: 0	- 0.33 (-1/3)

Table 10: SDG 11.2. as example of the global-to-national-to-municipal analysis of cross-scale translation

SDG Target	National	Parameters	Disaggregation	Data generation	Municipal	Parameters	Disaggregation	Data generation
11.1	-0.33	-1	0	0	0.33	1	0	0
11.2	-0.67	-1	-1	0	-0.33	-0.50	-0.50	0
11.3	n/a	n/a	n/a	n/a	0.67	1	1	0
11.4	-0.67	-1	-1	0	0.67	1	1	0
11.5	-0.50	-0.50	-1	0	0.33	1	0	0
11.6	-0.33	0	-1	0	0	0	0	0
11.7	0	0	0	0	0	0	0	0
Average	-0.42	-0.58	-0.67	0	0.24	0.50	0.21	0

Table 11: Evaluation of transformative capacity by target

6.3.3. Meta dimension

This section of the analysis investigates the likely drivers of differences in the approach to localising the SDG 11 indicators with the national / municipal case study in Colombia and Medellín. It does so by exploring the elements of the *situationality* (presented in Chapter 3 in the context of the critical pedagogy approach to thematic investigation) based on the history of processes of SDG 11 monitoring at the national and municipal scales which mediate the tensions between alignment and relevance and determine the extent to which the localisation is transformative.

Localisation at the national level – the global-to-national translation

The national SDG 11 reporting network in Colombia revolves around DANE as central operational actor. DANE simultaneously fulfils its role as NSO, responding to data needs regarding the administration's development agenda, and as UN member state agency responsible for brokering data for SDG monitoring at the global level. Thus, in addition to the statistical data quality requirements for the inclusion of datasets from non-NSO sources, national level SDG reporting is on the one hand guided by the CONPES 3918 document and the SDG 11 methodological framework proposed by UN-Habitat, aimed at international comparability, on the other.

As the country's strategy for localising the 2030 Agenda, the CONPES has a validity of three administration periods, covering the administrations between 2014 and 2030. Its implementation section therefore consists of process guidance for incorporating the 2030 Agenda into national planning, and it emphasises sub-national localisation and enhanced dialogue and coordination with non-governmental stakeholders, as described in section 6.3.2. For nationally localised monitoring, the strategy defines two types of indicators, both of which draw on existing datasets which are either produced by the NSO or refer to administrative (mostly ministry) records. The first is a *tracing indicator*, which is the indicator with which national progress towards the respective SDG will be tracked, and which each relate to one SDG target as policy focus for the period of the 2030 Agenda. The tracing indicators were selected by the CONPES planning committee from the existing datasets according to their relevance to the 2014 to 2018 National Development Plan, the availability of historical data, the number of related policy sectors and relative macroeconomic impact, and the indicator's relation to Colombia's other international policy commitments. The stated aim is for the tracer indicators

to act as minimum policy focus for the sub-national localisation and applies to all subsequent governments up to 2030. In the case of SDG 11, the *tracer indicator* is the quantitative housing deficit, proposed as local equivalent for SDG indicator 11.1.1 (proportion of urban population living in slums, informal settlements or inadequate housing).

The second type of indicators refers to a range of *complementary* indicators which are thematically broadly related to the respective goal but not necessarily aligned with an SDG target. While these are framed as measurement tools that reflect local reality, they also appear to be a cause for challenges in localisation. A National Statistics officer interviewed during the field research argued that:

” ...the SDG indicators measured [at national level] are not necessarily those from the global framework...from the 180 indicators defined [in the CONPES] for measuring [the SDGs] at the national level, only 27 correspond to the global framework. The rest are ‘created by the National Planning Department’, do not necessarily have international endorsement, ... many are not of statistical quality, and we have no way of validating the data.”

Their opinion about this discrepancy is echoed by Colombia’s National Audit Office (*Contraloría General*) in their assessment of the CONPES regarding the adequacy (*precisión*) of the national indicators⁸, and the extent to which these address the ambitions proposed by the SDG targets. According to their assessment, the indicators proposed for measurement in the CONPES align with 10.7% of the global targets, while about 54% of the indicators do not directly refer to specific SDG targets (Rodríguez-Sánchez, 2019).

The National Statistics Officer pointed to further institutional and political tensions in localisation, related to the indicators’ alignment with the global framework and continuity, independent of the incumbent administration’s policies:

“The CONPES [3918] was formulated in view of the policy requirements of the past [administration’s] National Development Plan...The most congruent way of going about it [SDG monitoring at national level] would be, now we have the baseline [diagnóstico] of the CONPES which is a commitment that is already there with which we have to comply, but additionally we cannot continue monitoring for the needs of past public policy, and even less if we cannot guarantee that we are reporting to the 2030 Agenda because we are using indicators which are our own and do not relate to the global framework...because at the end, the meetings for preparing the CONPES in the previous administration moved towards ‘autonomous indicators’, and were like asking the individual national entities [such as ministries], ‘how do you want me to measure X, tell me which indicator you

⁸ released after the interviews for this research in 2019

want me to use?”...of course, this is not to say that these are not difficult discussions because there are institutional interests [behind the entities’ proposals for SDG indicators to be included in the CONPES document].”

They also pointed to a degree of methodological tension as a result, as the national entities (i.e. the ministries and other central government agencies) that provide the datasets for SDG monitoring appear to insist on “*only and exclusively [generating and providing data] that’s stipulated in the CONPES...*” while the NSO’s preferred long-term approach to monitoring localisation was to align the national SDG monitoring framework entirely to the methodology proposed at the global level, arguing that “*it seems important that Colombia, being part of the Global SDG Indicator Technical Working Group which sanctions the global methodology, also applies it itself ... I therefore feel that it is important for us to focus on the global SDG [monitoring methodology] ... to guarantee continuity in measuring for the 2030 Agenda*”. In an apparent effort to increase its alignment with the global framework the methodology for the *tracer indicator* for SDG 11 defined in the CONPES document (housing deficit) was revised in 2019 to include some of the parameters for SDG indicator 11.1.1. proposed by UN-Habitat.

Analytical summary of the findings at the national level

The analysis of the translation between global and national scales in this subsection illustrates the institutional responses to the tension inherent in localisation. Within the SDG thematic investigation framework that emerged from the literature in Chapter 3, this particularly refers to the tension between scalar alignment and relevance. On the one hand, the national monitoring stakeholders are required to cater for the global need for cross-scalar alignment and continuity across administrations to 2030, and at the national level, ensure that policy relevance of the monitoring framework reflects current priorities meaningfully both at the national and global scale, on the other.

In this study, the national government proposes to address the above tension by adopting a dual approach with the tracer indicators for scalar alignment and temporal consistency for global level monitoring for each SDG, and the complementary indicators to reflect local policy priorities and relevance. Following the observation of limited transformative capacity in the nationally localised SDG monitoring framework above, interviews with monitoring stakeholders revealed the potential drivers. The localisation process has resulted in a first transformative step by widening the range of (national government level) stakeholders; however, temporal obduracy in the indicators intended to enhance local representativeness (the complementary tracer indicators) reduces scalar alignment for a meaningful translation up and

down the monitoring scale and risks closing future spaces of dialogue. This observation makes visible the gap between monitoring and implementation in Colombian national level localisation. While localised implementation is guided by principles of processes of transformative capacity, such as the calls for inclusive reflexive re-evaluation, redesign of existing policies – as suggested in the CONPES – nationally localised SDG monitoring appears to be a fixed product of the initial process, mediated by the national policy framework at the time of that inter-institutional dialogue at national government level.

In the absence of process criteria for developing localised indicators, the transformative capacity of national level SDG monitoring localisation thus depends on the thematic choice of localised indicators related to the national policy it represents (or represented when the CONPES document was adopted) and the national entity's approach to measuring that indicator. In the case of indicator SDG 11.1.1 this dialogue appears to have led to an improved methodology at the national level (the reviewed housing deficit indicator). The situationality at this level thus manifests in DANE's dual position as national data broker and agency responsible for global level reporting and involvement in discussions aimed at global alignment. With changing policy priorities between administrations (which often also implies a change in the approach to monitoring) and the 2030 Agenda's 15-year reporting period, it also brought the conceptual model's dimension of temporality into the discussion.

Localisation at the municipal level – the global-to-city translation

Municipal SDG monitoring in Medellín is led by the city's planning department, which, according to a municipal planning officer, “*was perfectly able to incorporate the 2030 Agenda-related initiatives into the municipal development plan*” (municipal planning officer, pers. comm. 2019) at the start of the administrative period (2016 to 2019), since the latter coincided with the adoption of the 2030 Agenda resolution late 2015. Similar to the national level, Medellín's process of SDG monitoring localisation was initiated by a technical planning committee who proposed a shortlist of indicators for each SDG target to the thematically relevant municipal secretariats. The selection and operationalisation of the final set of indicators with progress targets to 2030 was defined by these municipal entities as “*they are the ones who in their day-to-day activities are in charge of delivering the SDGs*” (municipal planning officer, pers. comm. 2019). According to this officer this review also aimed at aligning the municipal indicator set with the national SDG framework (the CONPES document), to include 14 of its 16 tracing indicators and 60 of the 158 complementary indicators.

Following the internal review, the municipal planning department consulted with external monitoring stakeholders, such as the private sector and local universities regarding the availability of additional datasets which could be used for SDG monitoring, resulting in the localised SDG indicator set. Citizens and wider civil society stakeholders were informed at launch awareness raising events of the Agenda Medellín 2030 “*to create ownership and trigger initiatives in the spirit of a sustainable Medellín*”, and further SDG campaigns were implemented “*to reach the common citizen*” (ibid.). These initiatives included a survey app (HablaMeD – translating to “speak-to-meD”) to identify citizens’ perceptions regarding the major challenges in their neighbourhood and algorithmically relate them to an SDG target. According to the municipality, this feedback would be included into the municipal development plan of the new (2020 to 2023) administration.

Prompted regarding the discrepancies in cross-scalar translation, the municipal planning officer indicated that SDG monitoring localisation would continue to trigger reflective processes:

“To make measurement more robust and since we don’t see it broken down to regions [sub-national level] we could do an exercise which works in two ways [i.e. for both national and municipal scales]: those indicators we don’t have at municipal scale and those which are not there at the national scale: ... and for those that we don’t have, ask ourselves why – for example because we don’t have this kind of data, or we have it but don’t find it, or we definitely hadn’t considered this”.

They further indicated that the ongoing process of creating a local SDG monitoring strategy which provides continuity for future administrations (the municipal equivalent to the national CONPES document) resulted in dialogues with the municipal secretariats:

“We want to create a COMPES [M for municipal] to align and ensure that the future two / three administrations follow the same route, with progress targets established to 2030, validated by the individual entities.”

Another municipal planning officer echoed this view as:

“We wouldn’t want that next year, when the administration changes, they would again start to think about how they will plan the 2030 Agenda, change the Goals, and that would mean restarting this process every four years. It is therefore important that there is a formal policy document, especially since the Agenda Medellín 2030 is not a product of this administration but of the city since it is a result of a participatory exercise with other sectors, so the future administrations can use this as a reference guide for their development plans.”

Given the importance of SDG 11.1.1 as national tracer indicator for SDG 11, the process of monitoring localisation also resulted in a re-evaluation of the adequacy of datasets used for this indicator in between the irregular census periods:

“The municipality has previously been using the social security benefits database to identify the quantitative and qualitative housing deficit. But this database has a bias, which is that the people in this database are those who experience a deprivation in some themes, and they are the most vulnerable. We also have another dataset, which is the National Large-scale Integrated Household Survey [Gran Encuesta Integral de Hogares], which we analysed, and which resulted in interesting tendencies, and it gets us as close as possible to the census. So, we have been reconsidering the issue because we were not convinced by the data from the SISBEN⁹ database...and I would find it interesting to consider the annual multi-dimensional index of living conditions which is disaggregated by comuna [the UK “borough” equivalent], as it contains themes which are relevant for SDG 11”

Regarding the addition of datasets produced by other non-governmental stakeholders to inform SDG 11 monitoring:

“These [the above] are produced by the administration itself. There is also the Social Progress Index, from the Red Como Vamos¹⁰, which we see as a complement...which together would result in two interesting exercises to help identify where what type of weaknesses are, to set intra-urban targets.

This was echoed by their colleague who confirmed that the introduction of the SDG monitoring framework at the municipal level resulted in a widening of monitoring stakeholders, as the main challenges with data availability¹¹ relate to the themes that:

“We are just starting to measure, which are new themes the city has to date not actively considered and “...for all of those SDG indicators which are new [i.e., not yet measured as part of the existing municipal monitoring system] we identified sources which are not from the municipal planning office itself.”

Localisation of monitoring thus also led to incipient thematical reframing at municipal level.

Regarding cross-scalar alignment, the municipal planning officers emphasised that, albeit loosely, the localisation document issued by the central government is the main tool for coordination. This loose methodological coordination was confirmed by the municipal officer’s understanding that *“...we don’t have a specific relationship with DANE regarding the methodology for SDG monitoring and we realised that the national SDG Agenda didn’t have some of the indicators we wanted to measure”* and *“officially we don’t have a joint process with DANE for SDG monitoring.* In addition to questions of local relevance, a key challenge for an aligned approach across national/municipal scales is technical, since

⁹ The national System for Selecting Beneficiaries of Social Programs

¹⁰ A private sector/university funded survey which compares municipal government performance data to citizen perceptions

¹¹ In addition to the housing deficit

“...the national data sources the national level SDG localisation document proposes cannot be disaggregated to the municipal level, which means that even though it might be the same theme it will not be possible to compare them because they are based on different sampling methodologies and temporalities”.

This challenge has led the municipality to adopt a tracer indicator for SDG 11 which is different to the national approach which uses 11.1.1 (adequate housing). Although housing policy appears to have become even more urgent for the city – it *“is of utmost importance in these moments, as we have a real deficit now”* – the municipal tracer indicator, and thus main indicator for SDG 11 progress reporting in Medellín, is indicator 11.7.1 (public open space). Thus, even though housing is of key municipal policy relevance, and adopting it as tracer indicator would be aligned with the national level approach for SDG 11 progress reporting, methodological differences affect the ability to translate local relevance up the scale.

One of the challenges underpinning localisation of SDG monitoring is the perceived lack of engagement between municipal planning department and the central government entities, notably the national planning department and the national statistics office. In the interviewed planning officers’ view, this leads to cities with better technical capacities, such as Medellín, to localise the SDGs after the CONPES document was issued in 2018, while poorer cities *“might with all certainty not even have heard of the SDGs or the CONPES document, nor know what to do with this [the 2030 Agenda]. This means that five years after the adoption of the SDGs the central government has not started with the localisation, and it will take another five years for localisation across the 1,200 municipalities, which leaves five years for implementation. How effective is it to adopt an Agenda without reviewing the [technical] capacity we have at the lower scales? This means especially the cities, because the country by itself doesn’t do anything [, as it is the cities [who implement]; the critical point of the Agenda is therefore ensuring that there is capacity to adopt it further down the scale...the ones who have more capacity, such as us, are more proactive and propose different things, but 90% of the municipalities are coping with day-to-day issues, and not with the more strategic agendas”*. The tension between cross-scalar alignment and relevance, and its implications for meaningful progress reporting appears to be unresolved and to continue being a challenge for the municipal officers charged with monitoring localisation:

“If there is no direct methodological line between the indicators and how they are being measured, how will we know if the Agenda worked or not ... although we will never have to report our regional SDG indicators to the country level, the measurements will just be for us, we will not have to report to the national statistics office or the national planning department” and:

“I have major doubts regarding the discrepancy between the national and the local [SDG monitoring framework] because we shouldn’t make any effort to generate data which does not contribute to the national framework. Also, we might lose an opportunity if the Region has more data [than the national level], but I

find dealing with these two scales very complex...especially since it is difficult for us at the local level to decide what we should aim to measure now.”

Analytical summary of the findings at the municipal level

These statements illustrate the municipal – national scalar tensions in localisation identified in the literature (Chapter 3) and their implications for municipal planning and statistics officers charged with localising the SDG monitoring framework. Regarding the tension between relevance and scalar alignment, there is some evidence that municipal monitoring stakeholders appear to perceive localisation as an opportunity to extend the range of monitoring stakeholders and to reflect on existing policy themes. Engagement with new monitoring stakeholders primarily refers to the co-definition of indicator sets and their parameters with municipal agencies. The input of the wider institutional (university and civic) landscape was sought at a further stage of the monitoring localisation process, to identify datasets and sources for the previously defined localised indicators. The approaches for collecting citizens’ concerns regarding their neighbourhoods included a feedback app which algorithmically assigned the themes of their statements to an SDG. Considering the inclusion of municipal entities as well as other institutions with a stake in urban monitoring, SDG monitoring localisation therefore appears to have resulted in increased institutional engagement. This process is similar to the national level but although citizen input appears to be mostly “extractive”, in contrast to the former, the municipal level SDG monitoring localisation appears to encourage increased diversity by engaging with external views, i.e., from institutional stakeholders outside the city administration. Considering the importance placed on the awareness of temporality in the assessment of transformative capacity (see Freire, 1970 and Wolfram et al., 2019 in Chapter 3), this carries transformative potential as it decouples SDG monitoring from the policy objectives of the city administration at the time of the definition of the localised framework while enabling continuity. The emphasis on participation is also the interview partners’ key claim for continued validity of the localised monitoring framework, which they hope would be formalised with a municipal COMPES guidance document for future administrations. As indicated further above, the monitoring localisation exercise has also triggered reflective processes regarding the inclusion of new themes in monitoring, and the search for methodologies and data to enhance representativeness (especially for the national SDG 11 tracer indicator).

The main challenge, however, appears to be scalar alignment with the national level SDG monitoring framework as a result of limited engagement with the NSO for SDG monitoring. This challenge also appears to be related to the tension implicit in the need for local relevance and resulted in the adoption of different thematics in most SDG 11 indicators and is exacerbated by inter-scalar methodological discrepancies in data generation and lack of datasets which can be disaggregated to the city level. The interview partners suggest that this lack of engagement between scales might lead to inertia and box-ticking, especially in cities with limited technical capacities, although cities such as Medellín appear to have taken the opportunity to have some initial form of transformation.

6.4. Discussion

How do we locally understand the SDG monitoring framework, and ensure that when reporting progress to the 2030 Agenda, it is capable of catalysing transformation? With the inquiry into the extent to which the localised monitoring frameworks account for inequalities as analytical vehicle for assessing their transformative capacity, the analysis of VLRs and localisation at the national and municipal levels indicates that SDG monitoring localisation has resulted in differences in transformative capacity horizontally among cities and vertically across scales. Based on monitoring stakeholder interviews, the subsequent meta-level analysis illustrated the reasons for this heterogeneity, bringing to light the multi-faceted negotiations between scales – driving the tension between alignment and relevance – and the role of temporalities of administrations and engagement of alternative actors for monitoring – both mediating the tension between methodological continuity and the inclusion of diverse knowledges.

The analysis of the VLRs showed that the majority of VLR narratives emphasise the need to address at least one type of inequality (income in most cases) and list consultation and co-creation with diverse stakeholders as one of the key activities during the development of the local 2030 Agenda. Four out of ten VLRs had a transformative narrative, meaning that they accounted for socio-spatial inequalities and reflecting their claim that diverse stakeholders played a co-productive role in this exercise. Three (identified as aspirational narratives) referred to one type of inequality and engaged with non-municipal government stakeholders in a consultative role.

Except for the VLR narratives with limited transformational capacity, which are complemented by SDG 11 monitoring frameworks of equivalent nature, the degree of

transformative capacity implicit in the policy discourses is not matched by the monitoring frameworks. Local 2030 Agenda narratives categorised as transformative were in most cases mirrored by indicator frameworks which – due to their degree of disaggregation – only account for one-dimensional inequality, and applied conventional, centrally produced datasets with limited participatory input. Similarly, aspirational VLR narratives – which consider one dimension of inequality and/or had included citizens in a consultative role during localisation, are matched with indicator sets of limited transformative capacity. To understand why this might be the case and assess the role of the tensions related to alignment, relevance, and scalar relations as mediating factors of the conceptualisation of the localisation process as thematic investigation which emerged from the literature review in Chapter 3, a cross-scalar analysis investigated the transformative capacity of the nationally and municipally localised SDG 11 frameworks. It suggests that while the localised 2030 Agenda narratives at both scales call for the engagement of a variety of stakeholders in planning and, to some extent, account for inequalities (especially the Medellín 2030 Agenda), the municipally localised SDG 11 indicator framework appears to be more transformative. Interviews with the national and municipal monitoring stakeholders and document analysis suggest that this is due to the municipal SDG 11 framework’s contextual and complementary parameters (relevance) and types of disaggregation (e.g., ability for spatial disaggregation). The scalar analysis also brought to light a discrepancy between indicators at the national and city level for the same SDG targets – an observation which mirrors commentators’ arguments regarding the lack of clarity of the municipalities’ roles in SDG 11 progress reporting and the SDG governance framework in general. The cross scalar comparative average scoring of transformative capacity in localised SDG 11 monitoring further provided specific guidance for national and municipal stakeholders for a prioritisation of methodological improvements of the indicator elements, specifically through a transformative capacity lens (table 11).

Importantly, the interviews with the statistics and planning officers at the national and municipal levels further provided insights regarding the drivers of these resilience and sustainability multiples manifesting in discrepancies in the transformative capacities of the localised SDG 11 monitoring framework. This particularly relates to evidence of negotiations around the dimensions of relevance and alignment, and continuity and engagement. The latter supports the argument that localisation at municipal level is more than the mere disaggregation of uniform and centrally defined indicators, as frequently framed in practice and suggested in the literature. Extending Wolfram et al.’s (2019) call for awareness regarding the timing of an assessment, in the meta-analysis, the framing of localisation as thematic investigation has also

brought to light the critical role of temporality (as a part of situationality) as a driver of the multiple, as it framed the localisation of the monitoring framework and, in turn, mediates its effectiveness in terms of the impact on the components and sources of urban transformative capacity.

While the scalar tension is evident at all levels of translation (i.e., national-global, and municipal-national), at the national level, localisation of SDG 11 monitoring has also led to tensions between continuity, and the integration of new vertical actors and themes. The outcome of the negotiations with implementing central government agencies during the definition of the nationally localised framework (the CONPES document) appears to be obdurate and thus reduces the ability to broaden the diversity of (world)views implicit in monitoring the respective theme of an SDG target, especially from actors further down the scale, thus limiting the localised framework's impact on the relational dimension of urban transformative capacity.

At the municipal scale in Medellín, although led from the top-down, the inclusion of non-municipal government monitoring stakeholders appears to have been possible, resulting in localised indicator sets with an enhanced ability to represent a wider range of experiences and situations of inequality. This is likely to positively affect transformative capacity, particularly regarding the *Relational Dimensions*, by reducing horizontal siloes and bringing vertical scales into dialogue, although still institutionally driven (chambers of commerce and non-governmental data providers). An example is the localised indicator for SDG target 11.1 (adequate housing), which in addition to the parameters defined at the national level also includes an aspect of affordability, informed by “external” (i.e. non-planning department) institutional data, such as construction industry market data and alternative urban data providers in the form of the Red Como Vamos as (at least nominally) government-independent entity of citizen perception data, as indicated in the example with 11.2 in table 10, as well as 11.1 with the possibility of including the social progress index (which includes access to housing in its basic needs category), as suggested by one of the planning officers who were interviewed.

Here, the temporality of the localisation (as opposed to the point of time of the measurement) also seems to have played a role. The development of the local 2030 Agenda coincided with the beginning of the 2016 to 2020 administration and therefore benefitted from the increased potential for institutional reflection and momentum of the planning exercises, such as the ability to draw on a range of actors at that particular point of the administrative period. With the localisation being integrated into the planning process from the beginning, rather than representing an “add-on” later in the administrative period, the likelihood of the

thematic investigation implicit in SDG localisation to enhance the components and sources of transformative capacity is higher, thus increasing local relevance and meaningful alignment with the global framework. In this aspect, the temporality of the localisation of the SDG 11 framework especially shaped the Development Processes component of urban transformative capacity, as it enhanced awareness of obdurances and provided space for reflection on progress at the beginning of the legislative period.

However, while important, the temporality of localisation is not the only factor driving the cross-scalar multiple, as the municipal planning officers highlighted. Technical and financial capacity, especially for smaller municipalities coping with day-to-day activities, and the inter-scalar methodological discrepancies lead to uncertainty regarding meaning – as implicit in the statement that the lack of a clear process to establish “a direct methodological line between indicators and how they are being measured” –results in difficulties with establishing what progress to the Agenda is achieved and thus increases the likelihood of box-ticking, even in larger municipalities such as Medellín. This is evidenced with the adoption of 11.7.1 (open space) as main indicator for SDG 11 progress reporting there, despite challenges with the availability of sufficient adequate housing, as one of the interview partners pointed out. A closer inter-scalar dialogue and structured approach to dealing with the methodological challenges inherent in decentralisation for SDG monitoring localisation, might be a first (yet urgent) step to enable a meaningful translation up and down the scale, or as an interview partner with cross-scalar (global-UN / national-Colombia / local-Bogotá) experience put it: *“the SDG indicator framework needs a governance process; if you don't involve the different stakeholders and the different levels of governance it will never work out”*.

Chapters 5 and 6 investigated the institutional framings of sustainability and resilience and the extent to which the methodological approaches to measuring SDG 11 at the global, national, and municipal levels contribute to transformative capacity. The analysis in chapter 5 suggested that the monitoring framework at the global level risks building in inequalities. Multiples are likely to emerge further down the scale. This is due to the conceptual implementation gap between target and parameter definitions (see Chapter 5) and data disaggregation of conventional datasets, such as the census, being framed as the main methodological solution to represent the views of those socio-spatially further behind. Chapter 6 identified the multiple and assessed its impact on transformative capacity with the analysis of VLRs horizontally across cities globally, and vertically at the national and municipal levels. This analysis brought the higher transformative capacity at the municipal level and the political-institutional drivers for the cross-scalar multiples to light. The following chapter

investigates the community interpretations of sustainability and resilience. As already indicated in Chapter 4, since communities do not explicitly localise SDG 11 at neighbourhood level formally with policies and methodological guidelines (at the time of the field research at least) – as done by the national and municipal stakeholders, here the analytical lens is conceptualised by the communities' modes and themes of mobilisation and of discourses regarding the risk-development nexus, and the way these relate to the components and sources of urban transformative capacity, with SDG 11 as thematic device for engaging with the community leaders.

Chapter 7. Towards a critical localisation of sustainability and resilience monitoring in Medellín

“There is a gap between the way the UN understands SDG 11 and how we as comuna, neighbourhood, community, and individual citizens who inhabit this territory, should understand this Goal” (neighbourhood planning community leader in Comuna 13, Medellín, 2020).

7.1. Introduction: Making “the other Medellín” visible

Colombia is one of the pioneering countries in relation to sustainability and urban resilience frameworks. The country was the first to propose the creation of the Sustainable Development Goals (SDGs) in 2012 (Kanie *et al.*, 2017a), and for many the Colombian city of Medellín has become a textbook example of urban transformation and resilience in the last decade (MedellínResiliente, 2016). In addition to being one of the Rockefeller Foundation’s 100 Resilient Cities, Medellín is also one of the eight global pilot cities UN-Habitat selected as methodological reference points for SDG 11. The community leader’s statement above, however, points to a tension between the lived reality of communities “who are invisibilised and not recognised...labelled as invaders and marginalised” (Villa-Becerra and Ruíz-Botero, 2017) (p.21) and the narrative of Medellín as “Latin America’s technology-driven capital of innovation” (Ng, 2017), globally recognised for its transformation from one of the cities associated with the highest levels of organised crime on the planet, to a “miracle” with “beautiful new buildings, and civilized [sic] public spaces” (Fukuyama and Colby, 2011). A visit to the city, including to neighbourhoods beyond the main tourist attractions quickly indicates that *both* narratives might be right. Indeed, a recent statement by the Red Como Vamos (a non-governmental quality of life survey organisation, translating into *How Are We Doing Network*) confirms that “it is an issue of extremes – on the one hand, a city which excels on the science, technology and innovation investment targets, and another Medellín on the other hand, which does not benefit from these investments” (Vargas, 2020). As in other cities, the creation and development of the neighbourhoods of “the other Medellín”, as residents frequently call it, depends to a large extent on the communities’ ability to mobilise formal and informal governance processes and community self-organisation and knowledge. The communities thus thematically address both risk and development needs, yet informal processes and knowledge remain invisible in the conventional risk monitoring frameworks, which differ from community practices of resilience. As a result, the potential for collaboratively implementing meaningful

and empowered neighbourhood resilience strategies might be overlooked. This represents a missed opportunity for building on these organically emerging processes beyond the usual practice of responsabilisation (see Chapter 1) which tends to structurally outsource disaster risk reduction and mitigation to the most vulnerable constituents and thus risks further marginalisation. This motivation for the research illustrates how conventionally localised monitoring frameworks might reinforce a fragmented and siloed view, blind to the often-informal mechanisms that underpin the interlinkages between risk and development – the risk-development nexus – and between the thematic areas of SDG 11, especially in self-constructed neighbourhoods. Being serious about reaching those furthest behind first requires an understanding of how marginalised yet necessarily self-empowered and self-organised communities – through their practices and discourses which are mediated by their situations of socio-spatial inequity – interpret the SDGs and frame the interlinkages between the thematic areas and the processes by which they address them. This chapter contributes to answering the question – how might localised risk and development monitoring frameworks be modified to enhance their effectiveness regarding relevance (meaning), representativeness and transformative potential?

Regarding contribution, empirical studies have explored the structural mechanisms mediating the relation between marginalisation and vulnerability (see, for example (Gaillard, 2007; Marchezini *et al.*, 2017)). However, a gap exists regarding the vulnerability and resilience factors emerging from socio-spatial marginalisation which frame the community understandings of risk and development, and thus affect the global framework's neighbourhood level relevance and effectiveness. This is an important consideration since a conventional undifferentiated and techno-managerial approach to measuring development tends to operate according to rigid, quantitatively defined parameters which do not consider local variation and intra-urban inequalities, and, in effect hardwire such inequitable processes into future decision making (Chapter 6). Arguably, this reliance on top-down data practices and long-held quantitative modelling tools have produced a range of assessment instruments that provide broad and scalable baseline indicators which might be of interest to policy makers and respond to the need for standardised data which is already available. However, they are currently developed at a level of abstraction that cannot accommodate the locally differentiated, and often cumulative, determinants of risk and resilience that are driven by socio-spatial inequalities. Moreover, to the extent that citizen data collection is used, as discussed in Chapter 3, it often does not pay sufficient attention to the various asymmetries existing in marginalised neighbourhoods (e.g., with regard to education, gender, economic power, and worldviews) and

thus are often limited to a façade of participation that fails to empower citizens effectively. Assessing risk, resilience and development thus requires a critical reflection which links the interaction of people with hazards across time and space to ensure spatial and social justice (Coaffee and Lee, 2016).

Using data from semi-structured interviews and participant observation (as described in Chapter 4), this chapter thus contributes to answering the overall question of the thesis by providing systematic drawing out the community understandings of resilience and sustainability, and – analogous to the analyses at the global, national and municipal levels in chapters 5 and 6 – identify the factors which drive these community framings, thus completing the cross-scalar picture of the resilience and sustainability multiples and their drivers. At the same time as advancing empirical evidence for the link between socio-spatial and institutional-political conditions and resilience outcomes, for which commentators have called (e.g. Cutter, 2016; Coaffee and Lee, 2016), this analysis has helped facilitate more meaningful localisation methodologies and provided insights for effective monitoring localisation in self-constructed neighbourhoods, and ultimately carries some hope for enabling empowering policies that are in dialogue with and responsive to the practices and needs of marginalised communities living in self-constructed neighbourhoods.

7.2. Methodological approach: Identifying risk-development governance from the communities' view

Continuing with the conceptualisation of development and resilience monitoring and its localisation as process of knowledge production for transformation, the research in this part of the thesis has adopted a thematic investigative approach, as discussed in chapter 3 and detailed in chapter 4 – section 4.5. The reasoning for this approach relates to the neighbourhoods' socio-spatial and institutional situation.

For marginalised communities, such as the groups of internally displaced persons (IDPs) who arrived in Medellín between the 1950s and the early 2000s as a result of Colombia's violent conflict, self-construction and mobilisation for obtaining basic urban services, such as housing, water and sanitation, and electricity represent forms of risk reduction and mitigation (resilience), especially in the early stages of settlement. From the municipality's viewpoint however, these self-organised efforts to make unoccupied but government-owned land (*terreno baldío*) habitable, is considered illegal. The argument for a differentiated approach to conceptualising and monitoring sustainable development and resilience in marginalised urban

neighbourhoods can thus be exemplified with the SDG indicator of “adequate housing” (11.1.1). The replacement of self-constructed neighbourhoods with municipally planned housing is often justified by pointing to the conventional criteria for an adequate housing structure (i.e., access to water and sanitation, sufficient living area, durability of the structure, and security of tenure). In the case of IDP communities who built their existence in Medellín’s “informal” neighbourhoods, this discrepancy between localised monitoring and community practices might however also perpetuate the legacy of victimisation and inequality, as well-intended as it may be, not least because it glosses over the processes of self-organisation and mobilisation which characterise communities living in self-constructed neighbourhoods and the framing of risk and development inherent in these bottom-up processes. As a result, the conventional municipal practices for monitoring localisation may have limited sensitivity to these communities’ interpretations of the SDG themes and miss their potentialities and knowledge for resilience-building observed in the case study neighbourhoods. With this research focusing on the politics of the process of localisation, this chapter analyses the *governance processes* (see chapter 4) which frame the themes of risk and development and asks – what are the elements that mediate the governance processes in knowledge production from the communities’ perspective?

Thus, of particular interest are narratives relating to the communities’ mobilisation of knowledge and actors, the institutional relations developed with the municipality in general, and regarding the risk and/or development activity in question, specifically. In the following analysis, these are presented as episodes of internal and external *mobilisation*, and the narratives about risk and/or development and the framing of the relationship to the institutions in this regard – presented as *discourses* (see table 1 in section 4.5). This thematic investigative and ethnographic approach enabled a detailed insight into the complex governance mechanisms driving the entangled yet – from the view of the conventional approaches to monitoring – invisible dynamics between mobilisation, co-construction (of territory), resilience-building and legitimacy. Moreover, the analytical lens adopted here – of episodes of community mobilisation and discourses regarding the risk-development nexus – directly points to the communities’ lived sources of transformative capacity, and feeds into the discussion at the end of this chapter which might be important for the meaningful and transformative localisation of risk and development monitoring frameworks with socio-spatially marginalised yet often self-empowered communities.

7.3. Community governance processes for the risk-development nexus

A community-empowering understanding of the context appears particularly important for localised monitoring in cities with self-constructed neighbourhoods of marginalised groups for two reasons. Firstly, it provides an insight into the extent to which the community experiences risk differentially. Secondly, an illustration of how these communities have dealt with the differential development challenges might also lead to methodological and conceptual entry points for grounding the localisation of resilience and risk monitoring in cities with neighbourhoods which the municipal authority considers informal. Community-empowering in this sense thus refers to making visible the processes the community implicitly applied during their history of self-construction, and subsequently co-creatively identifying conceptualisations for localised indicators of risk and development (the latter is outside the scope of this thesis but subject of a related UKRI GCRF project – URBE Latam). This kind of grounded monitoring approach might lead to increased equity in governance at the risk-development nexus, especially with and for communities living in self-constructed neighbourhoods. The following sub-sections present the three community studies, from El Pacífico, Moravia and Comuna 13 (indicated in the map below). Each study begins by setting the historical and institutional context, before showcasing the specific episodes of *mobilisation* and the distinct *discourses* that emerged in the neighbourhood.

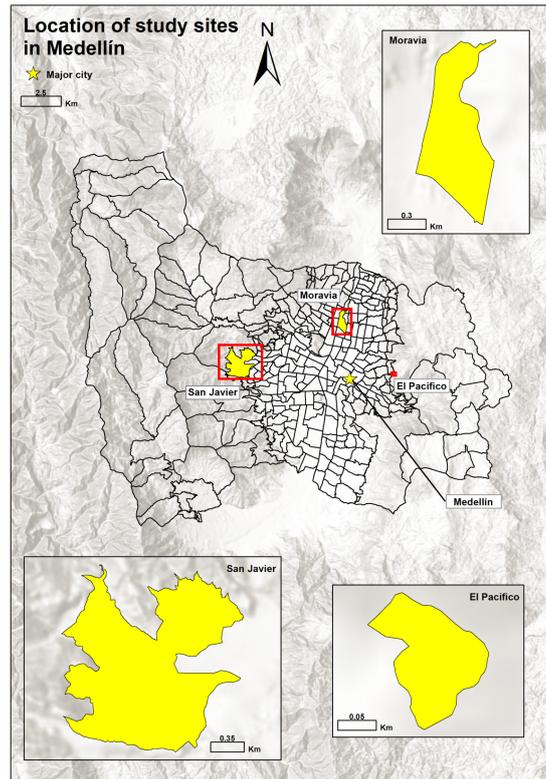


Figure 9: Location of neighbourhood study sites in Medellín

7.3.1. El Pacífico

Historical context and institutional community snapshot

With a current (2020) approximate area of 1.34 hectares, El Pacífico is classified as a *sector* (the smallest urban unit in Medellín) and was home to some 780 residents when the community census was conducted in 2016. The neighbourhood has gone through various development stages and once the settlement had stabilised, risk reduction became increasingly important. Like many self-constructed communities globally, and especially in Colombia, El Pacífico was established by IDPs fleeing the violence of the country's four-decade long armed conflict between left-wing guerrilla and right-wing paramilitary groups in the countryside. In El Pacífico's case, these were largely small-scale farmers who arrived in Medellín between 1994 and 1996 from Antioquia (of which Medellín is the capital) and neighbouring *departamentos* as well as people from other parts of the city who are unable to buy or rent (the so-called *permanently poor*) (Villa-Becerra and Ruíz-Botero, 2017; Rodríguez-Gaviria and Rivera-Flórez, 2019). They settled on unoccupied land on the slopes at the central-eastern fringe of the city. Further settlers bought, and in some cases were given, plots from earlier arrivals or armed groups, while later

arrivals tended to rent their accommodation (ibid.). In the recent years, socio-economically and politically displaced persons from Venezuela have moved into rented accommodation in the neighbourhood. In terms of economic activity, about two thirds of the then 780 residents were working or studying in 2016, and out of those working, slightly over half appeared to have a stable and regular form of income (corresponding to some 15% of El Pacífico's residents) (Villa-Becerra and Ruíz-Botero, 2017).

The neighbourhood is considered an *invasión*, which could roughly be translated as “informal settlement”, as it is not recognised by the municipality (thus an illegal occupation from the municipality's point of view) and not included in the municipal land use plan (the *Plan de Ordenamiento Territorial*, POT). Being located on the steep slopes at the margins of the city, the community has historically had to self-organise and mobilise regarding housing, infrastructure and other urban services, as well as risk reduction and management, with the latter risks relating to landslides and flash floods from the creek around which the neighbourhood was built. The institutional relation with the municipality has historically been ambivalent, as the neighbourhood is “informal” and much of its infrastructure is self-constructed, yet the community also receives participatory budget and other municipal support. As described in the introduction, in September 2020 the community experienced a flash flood of the creek, resulting in extensive material damage and leading the municipality to recommend the relocation of a quarter of the households into social housing elsewhere in the city.

Mobilisation

Collective self-construction was at the core of the community's efforts to address housing needs and for building community infrastructure when the first 34 internally displaced families arrived in the area of the future El Pacífico neighbourhood. At risk due to a structural factor (the inequality-induced violence on the countryside), they drew on rural practices of financial, in-kind and community work (the *convite*) to incrementally self-construct their neighbourhood, a practice illustrated in picture 2 below. To collect funds for construction material, the community leaders at the time would organise social events, such as Bingo evenings, and once the material was purchased, residents would volunteer to work according to their skills. Initial community construction efforts focused on basic infrastructure, such as paving, community water and (at first, informal) electricity supply between 1994 and the early 2000s, as a community leader noted during the interview:

“...the neighbourhood started as an ‘invasión¹²’... at the time I arrived the paths were unpaved. So, there was the first president of what then was the community housing board, and we started to work like we used to do: ‘right, let’s organise a Bingo and collect money to do some paving’, and everyone contributed according to their capacity and abilities – for example one person would pay for the bag of concrete, someone else for the sand, and everyone got together to make a path. This is how the neighbourhood was built.”

Illustrating the interaction between the risk-development nexus and self-mobilisation of marginalised communities, this community leader started to get involved in the construction of the neighbourhood similar to other residents *“...because there was so much need...especially with the water supply which was sourced from the creek further above and limited to certain hours a day for each of the neighbourhoods in the area and people started to fight about water, and sometimes there was no gas cylinder to heat the water...and the lack of electricity was the hardest. This is how I got increasingly motivated and went to the first community meetings.*

With the electricity network within the neighbourhood at first being sourced informally from utility poles in proximity of the growing neighbourhood, the utility company subsequently installed meters at each dwelling, for which it assigned the neighbourhood a nomenclature which the community uses to date (this topic is discussed in more detail in the following subsection).



Picture 2: A community meeting on risk mitigation (left picture) and community work (convite) to reduce landslide and flash flood risk (right picture), during fieldwork in 2019

With the neighbourhood increasing in population and structures, the community required further infrastructure. To be able to obtain public funds for further neighbourhood

¹² *Invasión* is the term colloquially used for neighbourhoods built informally on non-built-up areas, especially on slopes at the urban fringe designated as non-mitigable high risk areas.

infrastructure development, the community established a *Junta de Acción Comunal* (JAC, Community Action Board). Although still regarded as an *invasión* in a high-risk area – thus not being eligible for institutional investment in infrastructure – this provided the community with a legal ‘personality’ that would be recognised by the municipality, to apply for funds which would allow the community to build infrastructure and enter into a contractual relationship with the municipality. As the community leader indicated:

“We had a politician who had been helping us, which was essential for the discussion about the feasibility of a sewerage project, especially since this is considered a high-risk area. Once the opportunity of municipal funding for this project became an option it was necessary for us to create the legal personality in the form of the Junta de Acción Comunal, to be able to apply as a contracting entity. This really helped...” and *“policies talk about the innovative city and all that, but we still have to pay for the basic things by ourselves; without the legal status of being a JAC nobody in the municipality would take us seriously. It is the document with which one can fight – the one thing we can fight with.”*

To maintain the legal status and continue being eligible for funding, the JAC created planning processes for accountability and thematic areas for development with a JAC committee member responsible per policy area. In El Pacífico’s case these currently include health, environment, risk and infrastructure. These community action boards meet at regular intervals, both within thematic areas, and as a leadership committee, and are required to show activity, *“...otherwise the municipality might withdraw the legal personality of the JAC, as it has done under the previous JAC president”*, as the community leader pointed out.

The importance of community self-organisation and creation of external links is also echoed by the academic director of the neighbourhood’s community census, who argued in the interview that *“the neighbourhood is what it is today thanks to a work of conscientisation, education and mobilisation in coordination with actors at city and country level. The fact that they have drinking water today is the result of direct legal and political pressure on the municipality.”*

The impact of the above-mentioned municipality-financed and sub-contracted sewerage project, however, went beyond addressing the immediate community needs and construction project-related employment because it created a sense of permanence, as the community leader remembered, as follows:

“After the community had constructed the sewerage in the neighbourhood everybody started to invest, because before everybody used to say, ‘why putting in effort if they will take us out afterwards?’. Then [after the sewerage project] everybody started [to invest], even so much so that many of those who had sold earlier then regretted it.”

The importance of a critical mass of infrastructure to trigger further community investment and confidence, the mechanisms between marginality-induced risk reduction, self-mobilisation and institutional network creation, and the economic as well as confidence-“multiplier effect” from the initial municipal support that resulted from the institutional links, are evident from this community leader’s narrative. It is the combination of these factors which led to the virtuous cycle of de-facto self-legitimisation of this historically marginalised community, although Rivera-Flórez et al. (2020) argue that community members felt that these achievements led to a degree of complacency regarding the threat of being evicted due to being located in area designated as high risk.

In El Pacífico’s history – like in most self-constructed neighbourhoods – initial community organisation related to the mobilisation for basic physical and social infrastructure needs. Although the community had experienced hazards already between 1996 and 2012 (flash floods, landslides and rockfall), with the most urgent basic needs for much of the neighbourhood’s residents satisfied and given the ever-present threat of eviction related to being located in an area classified as high risk, the community’s recent activities increasingly relate to risk reduction. This is primarily due to its participation in university-led projects to raise risk awareness, as well as the co-creation of the Community Risk Identification and Management Plan in April 2018.

The history of community organisation illustrates this change as well as the de-facto formality-building interaction with Medellín’s municipal utility company, and an ambivalent relationship with the municipality, as discussed further below. *Convites* up to 2003 focused on the collective construction of housing, the community aqueduct and the initially informal electricity network. Between 2003 and 2013 the community secured municipal, utility, and international investment of infrastructure and housing improvement, with reduced community-led construction (*convites*) during that decade. The practice of *convites* again re-emerged following the collaboration with university projects regarding risk reduction, following the third landslide in the neighbourhood’s history in 2018 (Rodríguez-Gaviria and Rivera-Flórez, 2019). The primary focus of risk-reduction as a result of the community-university project was on collectively installing drainpipes to avoid the soil loosening below the structures and clearing rubble and undergrowth to allow rainwater to flow from the vegetation above the neighbourhood into the above-ground canalisation of the creek around which El Pacífico was built. As a result of these collaborative projects, the JAC also requested the residents not to build higher than one floor above ground level. To formalise these and other commitments

related to development and risk reduction, the residents endorsed a range of basic community rules to which the neighbours could hold each other to account.

Discourses

This study echoes Rivera-Flórez et al.'s (2020) research on community risk perceptions in El Pacífico and illustrates the argument that the risk-development nexus comes together at the community level. The risk perceptions refer to the “lack of control over the flow of water” (ibid.: 213) which includes concerns about the flash floods as well as landslides and rockfall from the creek, and the limited capacity of the water and wastewater infrastructure to cope with the combined pressure of rain- and wastewater, the continuous threat of eviction due to a part of the neighbourhood crossing the urban-rural boundary and being located in an area designated as natural reserve (thus only partially falling within the municipal planning zone), and challenges with municipal waste management. Based on field visit observations for this research and observations from community WhatsApp-group communications, the latter relate to the lack of municipal solid waste collection from the households, since the waste collection point is located at the bottom of the neighbourhood. Waste represents a significant risk factor in the neighbourhood, with the post-disaster report of the community-municipality action and recovery working group pointing to the accumulation of municipal waste in the riverbed and the canalisation of the creek as a factor in the severe flash flood in September 2020 (MAR, 2020). Thus, the link between the relationship with the municipality, urban service provision, and risk becomes apparent.

But what does the community appear to think about these interlinkages? During fieldwork in 2019, the community leader indicated that the key underlying challenges the community faces regarding its development and risk reduction were the greenbelt regulation and the designation as an area facing high and non-mitigable risk (see the map below), both of which prevent further community infrastructure investment. The Community Risk Identification and Management Plan (Rodríguez-Gaviria and Rivera-Flórez, 2019), jointly developed by the community and local university researchers, proposed 26 physical and socio-organisational action points to reduce the risks related to the hazards that led to the classification as area facing high non-mitigable risk. These build on the community's history of self-construction, yet less than half in the Municipal Plan for Disaster Risk Reduction and Management would be eligible for budgeted policies (ibid.). This apparent discrepancy between community organisation for risk reduction and municipal risk reduction policies is also reflected

in community discourses. The community leader, for example, perceives that the municipality provides limited assistance for risk management, as it is “...*the community, not the municipality, who has been reducing risk because we know we live in risk*”, although many of the collective community actions (the *convites*) do appear to be supported in the form of municipally participatory budgeting¹³. The community initiatives, such as the Community Risk Identification and Management Plan thus not only appear to serve for risk reduction itself but are also intended to represent the community’s response to municipal risk management, as the community leader illustrates:

“...*for the municipality to mitigate risk here is for you to leave, there is not much more that we can do*”; so, *this project helped us to tell them: we are dealing with it, and here is how you can help with the other ten.*”

Beyond the provision of infrastructure, risk reduction and symbols of inherent community resilience, *convites* for risk reduction and other forms of collective community action further represent means of strengthening sense of belonging, as it is the “*little things that bring the community together and that contribute to an incremental mobilisation of the community*” (community leader) El Pacífico’s JAC does receive funding from the municipality to organise community events for Halloween and Christmas.

This leads to the discussion regarding the community-municipality relationship. Despite El Pacífico’s virtuous cycle of self-empowerment and the community’s ability to make itself visible in the formally recognised institutional sphere, the relationship between community and the municipality appears to remain ambivalent. The community leader argues that:

“... *they [the municipality] invest in us but don’t recognise us. This is like a company having two different balance sheets, showing whichever is more convenient [one for tax purposes, the other for the shareholders] ... , you can also see it on the maps – we have addresses from the planning department but do not appear on the official map*”. This is confirmed by the maps below. The first is the official map on the municipality’s planning department’s geoportal, which places a significant part of El Pacífico (the area within the added blue outline) inside Medellín’s greenbelt, indicated by the road names in the green coloured area in the East. The second is a map which was co-produced with the community leaders on OpenStreetMap (an open, editable online map) as part of the UKRI GCRF project mentioned in Chapter 4. Rodríguez-Gaviria and Rivera-Flórez (2019) confirm that from the view of the planning department, one part of El Pacífico’s location is classified as high-risk area due to the creek that runs through it (*La Rafita*), while two parts of

¹³ The municipality of Medellín allocates 5% of the annual municipal budget to projects proposed by the neighbourhood committees. These projects range from physical infrastructure to health and education.

the neighbourhood are located within two different protected areas (the Pan de Azúcar Ridge and the River Nare Nature Reserve) where construction is prohibited.

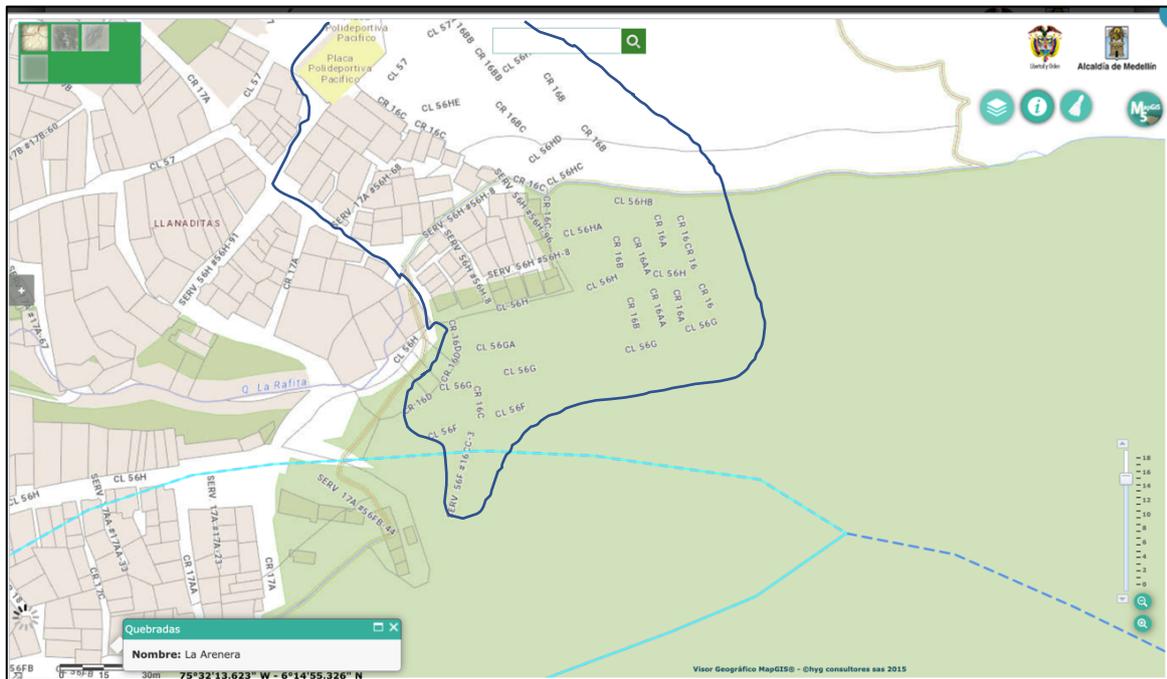


Figure 10: Map of El Pacífico (within the added blue outline) from the municipal geo-portal (Medellín Municipality, 2020)

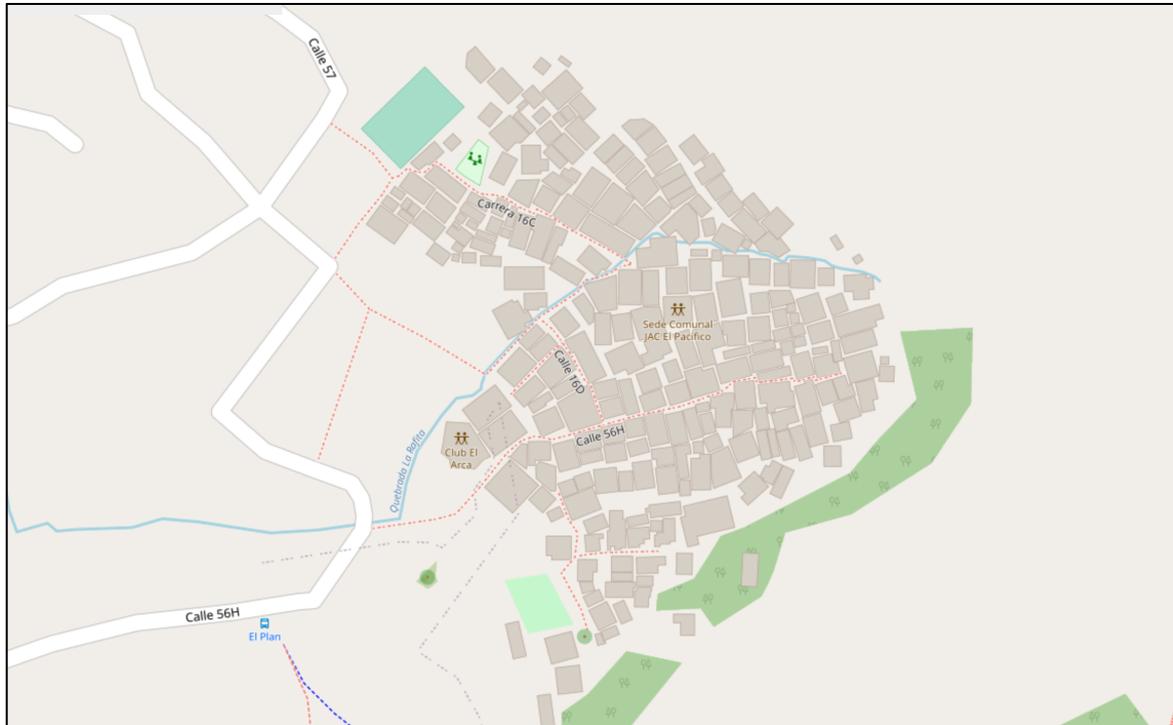


Figure 11: Community Map of El Pacífico (UKRI GCRF URBE Latam, 2020)

This apparent ambivalence is significant because it relates to a tension between the community's desire for expansion and visibility, and the municipal plan to increase access to

greenspace while limiting further urban expansion into the slopes (also see (Anguelovski *et al.*, 2016) regarding “green gentrification” in Medellín and other cities). The academic director of the community census thus perceives “*a conflict between the city’s ambition to be internationally attractive, for example with the greenbelt, which acts as the limit to the growth of the city but also as tourist attraction and counts as public greenspace – which is one of the weakest indicators in the city – and the community need for housing.*” This tension also manifests in the neighbourhood having two systems for street names (nomenclatures), as one community member indicated:

“In El Pacífico people still use the address EPM [the utility company] creates when they install the services for the first time. This is common in the self-constructed neighbourhoods. The addresses EPM allocates to each house are not the same as the ones assigned by the planning department and cadastre.”

The differences in conceptualisations between municipality and the community also determines the community leader’s definition of “basic service” – primarily referred to as water and sanitation, and electricity because “*there are not so many requirements as there are for internet and a gas connection, such as a bank account*”; the latter also depend on a permit from the planning department. These differences further mean that while fulfilling the conventional criteria of *adequate housing*, relocation to social housing as a solution for risk reduction does not necessarily represent an improvement of quality of life for the community. According to the community leader, the majority of El Pacífico’s residents are used to a pre-payment system for the utilities, which matches the needs of informal workers with non-regular income. Being relocated to social housing would imply higher expenses, due to having to pay into a contract (pay-as-you-use system), implying less control over spending, and higher costs due to Colombia’s social stratification system, where those of a lower *estrato* pay a subsidised rate for utilities. According to the community leader, relocation would imply a change to a higher *estrato*, thus higher costs (because of a reduced subsidy and the pay-as-you-use modality).

Due to the neighbourhood’s comparatively small size, the analysis of El Pacífico’s resilience and sustainability framing brings a clear insight into the trajectory from initial self-construction of housing and basic community infrastructure to self-empowerment in order to change the risk discourse from vulnerability and immitigability of risk to resilience. Organisationally, this included the establishment of a legal entity to formalise the previously spontaneously emerging community structures for collective work and to obtain municipal funding for development initiatives. The construction of municipally funded and community-built infrastructure further increased the sense of belonging and the confidence of staying in the territory. Yet, over a decade later, the community-municipality relationship remains ambivalent, due to the threat of eviction due to being located in an area designated by the

municipality as area with high non-mitigable risk and within the city's greenbelt while the community has collaborated with external actors (a university in this case) to propose strategies for risk mitigation. A discrepancy between the municipal framing of risk and the community's framing of resilience thus exists, which is visible in the cartographic representations of the neighbourhood and differences in the use of street nomenclature.

7.3.2. Moravia

Historical context and institutional community snapshot

Centrally located in Medellín's *comuna 4* and being included in the formal municipal planning process since 1993 (Ortiz and Yepes-Burgos, 2020), the *barrio* (the third largest administrative urban unit in Medellín) of Moravia covers some 44 hectares, and registered over 31,450 inhabitants in a recent official count (Medellín Municipal Planning Department, DAP, 2014; 2016). Dating back to the 1950s when the first IDP settlers arrived on the land in the centre of the Aburrá valley on the Eastern bank of the river Medellín, at what at the time was the northern margin of the city, Moravia has transformed from a socio-*spatially* to a socio-*politically* marginalised community. Since the 1950s the neighbourhood has developed from a *tugurio* (roughly translating into a so-called "slum", with similar common negative connotations) into an established neighbourhood in Medellín's city centre.

Moravia's history is to a large extent determined by the municipal landfill, which was in the community's territory in 1977, and it can broadly be divided into an era before the landfill, one of living with it, and the era after the landfill's closure.

The pre-landfill era from 1954 to 1977 is characterised by the arrival of families from rural Antioquia and surrounding *departamentos* and their collective efforts to make habitable the flood-prone land on the banks of the river Medellín. The settlement practices ranged from locating in and adapting the unoccupied land and building basic structures with recycled material (such as wooden walls with plastic covering, especially in the beginning) in an "informal" urban layout, to purchasing planned plots from earlier settlers and community planning boards. While the settlement process was driven by cohorts of families who arrived in the area at different times, individual community leaders as well as external actors (such as a priest, academics from the University of Antioquia and a midwife, amongst others) played a significant part in the planning, co-construction and upgrading of housing and the physical and social infrastructure of what for decades was Colombia's most densely inhabited

neighbourhood (Gómez-Barrera, Sierra-Arias and Montoya-Gil, 2005). However, since Moravia had not been formally recognised as legitimate part of the city until 1993, the residents continuously faced attempts of eviction in the first 30 years of the neighbourhood's existence (and do so, albeit partially, to the present, which is a significant and complex theme as the discourses section further below shows).

Although its operational period of seven years was relatively short compared to the over 60-year long history of the neighbourhood, the creation of a municipal landfill in the territory of the then still not formally recognised settlement in 1977, determined its future socio-economic and physical development and risk trajectories. The ever-growing *morro* (hill) provided a continuous source of “land” (for an estimated 2,300 dwellings in the early 2000s according to residents) and building material for housing, and of income from recycling. Working practices in this activity were mediated by a well-defined division of labour amongst family clans and gender and resulted in an economic geographical “ecosystem” related to recycling in Moravia. The combination of availability of space for building a *rancho* with the identity-creating practice of *convites* (the collective self-construction of housing and community infrastructure as an act of empowerment and resistance, as documented in the El Pacífico case study), together with opportunities for employment, and continuous flow of IDPs looking for safety in the country's cities, led to a significant growth of the neighbourhood's population in that period. The uncontrolled accumulation of municipal waste (the *morro* reached a height of 30 meters and an area of ten hectares in 1983) (Gómez-Barrera, Sierra-Arias and Montoya-Gil, 2005; Arango-Escobar, 2006) and fires from gases related to organic waste, however, would also determine the neighbourhood's official risk profile.

By the early 1980s Medellín had expanded along the Aburrá Valley to that extent that Moravia had become a central – though still not officially recognised – neighbourhood, with the city having grown around and beyond it, and the neighbouring wholesale market representing a source of affordable food and employment. From an economic standpoint, the closure of the municipal landfill site in 1984 resulted in a loss of employment. The years following the closure of the landfill site witnessed an increased presence of violent organised crime in the form of gangs who, amongst other activities, demanded protection payments, “self-defence militias” which originally had been created to protect the community from organised crime, and other militant and criminal actors, including drug cartels. These groups had started to appear in the mid-1970s and fought for territorial and social control of the neighbourhood, leading to Moravia suffering from one of the highest levels of conflict in Colombia between the 1980s and early 2000s. Community coordination and representation in that time was divided

between *Comites Populares* (*People's Committees*) and the *Juntas de Acción Comunal* (the Community Action Boards, JACs). According to Gómez-Barrera et al. (2005) a tension existed between these two types of community organisations as the latter received funds from the municipality and thus were perceived to be too closely aligned to the municipal government's interests.

Regarding community-government relations, the continuous population growth and Moravia's increasingly central spatial character coincided with a rise in interactions between the municipality and the community which went beyond attempts of evictions and the operation of the landfill which appear to have dominated the relation until then. Relatedly, a further significant historical factor during this period was the municipality's drive for government-planned and community-negotiated infrastructure construction. According to Arango-Escobar (2006), the municipality implemented an agreement of mutual help vouchers (*bonos de ayuda mutua*) where the residents were promised land titles in return of community work, notably the construction of infrastructure. With the construction of a paved road network, the expansion of the conventional basic urban services, including a school and health centres, Moravia was upgraded significantly through this modality in the mid-1980s. However, despite 400 families having been eligible for obtaining their land titles as a result of the community work voucher scheme only 90 land titles appear to have been given (Gómez-Barrera, Sierra-Arias and Montoya-Gil, 2005; Arango-Escobar, 2006).

In 1993 Moravia was recognised as legitimate neighbourhood of Medellín, which meant that the municipality officially included the neighbourhood in the urban land use plans and development strategies. The institutional recognition culminated in the 2004 participatorily developed strategy for Integrated Neighbourhood Improvement (*mejoramiento integral de barrio*) which was expected to address seven key thematic areas ranging from housing, physical and social infrastructure improvement, to economic development and health. This neighbourhood upgrading approach had been implemented as part of several city administrations' municipal development strategies in the subsequent decade. However, with the 2016 to 2019 administration changing the integrated development strategy for Moravia to a partial urban renovation plan that envisaged the demolition of a major part of the neighbourhood and replacing it with high density housing, the community in 2018 established a committee to mobilise against this change in approach and the classification of a large part of the neighbourhood as area of high non-mitigable risk due to its proximity to the landfill site which now is covered by a layer of concrete and vegetation.

Mobilisation

As is the case in all three neighbourhoods, the settlers of Moravia self-constructed their dwellings. In the case of the first settlers arriving in the area, these *ranchitos* (“little ranches”, a name reflecting the internally displaced settlers’ rural origin) consisted of sheets of plastic and wooden poles the residents found in the adjacent river Medellín, on the riverbanks, or material taken from other parts of the city. Risk reduction and construction of urban infrastructure and other urban services was synonymous for the displaced and in the beginning required the mobilisation of community knowledge and skills (the *convite*), as a community leader’s statement regarding mobilisation for urban service and infrastructure provision illustrates:

“One thing I have learned in this neighbourhood is risk mitigation, which is a core part of integrated neighbourhood development. We were only able to mitigate risk when we were organised as a community. We did this whenever the need emerged – for example for paving the roads, for building the water and sewerage network, all with convite ... this was supported by community knowledge [saber popular], so one person would say that they have experience in something, like how to build a drainage system, and this is how everyone contributed with their knowledge.”

Similarly, another community leader stated that *“to mitigate risk, we built the community drains and wastewater systems. We did convites for paving, and we also installed public areas for washing clothes with water tanks, as well as public electricity, and we organised food for the children.”*

As in other marginalised neighbourhoods, especially at the beginning of their existence, the practice of *convites* related to most aspects of infrastructure provision as the same leader indicated:

“We built the neighbourhood ourselves. Since they [the municipality] didn’t provide us with water, we took the water from a tube from below a creek, so we provided the water for everyone. The same with electricity – we attached cables to their transformers ... we also built the community spaces”.

In their statement, this community leader also implied that this collective effort, especially for infrastructure work at the beginning of the settlement, created a new and strong sense of identity because although the IDPs arrived from various parts of the country at different times *“...there is a good spirit of collaboration, and apart from the folklore there are no differences.”*

Neighbourhood risk management and development in collaboration with non-community actors was a result of both formal as well as informal agreements. As indicated in the historical evolution of Moravia, the collaboration between the municipality and the community in the form of the *bonos de ayuda mutua* (the mutual aid vouchers mentioned in the historical context) in the mid 1980s was a key moment in the history of the then still not officially

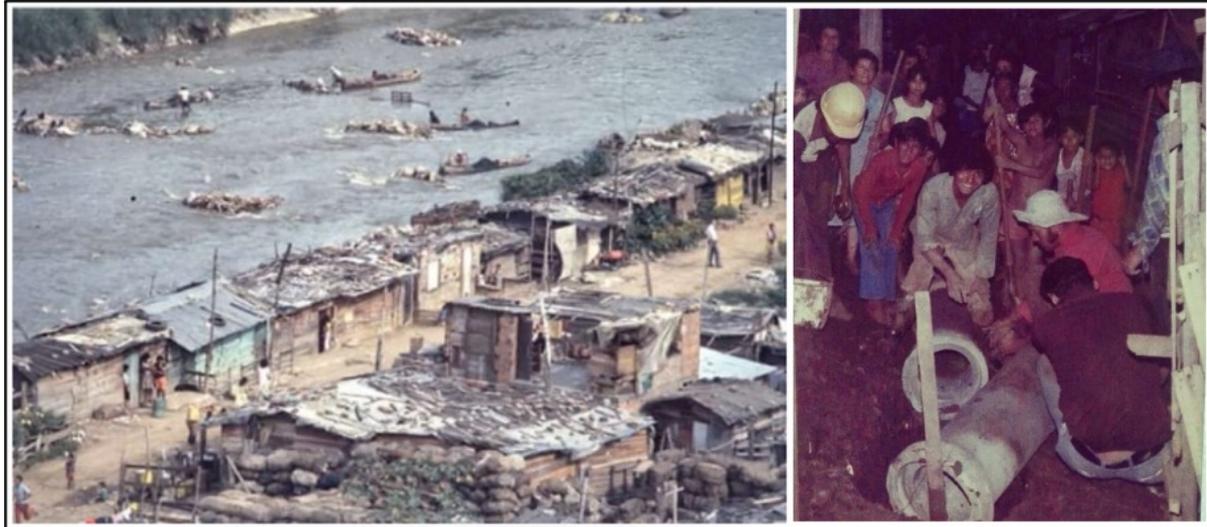
recognised, yet increasingly central, neighbourhood. In this form of alliance – which represents a combination between the bottom-up practice of *convites* and top-down de facto “formalisation” of the neighbourhood by the municipality – the residents were credited the minimum salary to pay for titles of land in return for working on neighbourhood infrastructure, such as the water and sanitation infrastructure (see the picture below), electricity, and road surfacing, as a community leader described:

“In 1985 with the municipal decree 12 – an agreement between the mayor at the time, the city council and the community – the decision was made regarding the integrated neighbourhood improvement programme, whereby the municipality would provide the material and the equipment, and the residents would provide the labour. The agreement was for the mayor to provide the funds, the community would pay for the land with [the vouchers received for] community work, the municipality would plan the neighbourhood and provide the material and equipment and then hand over the formal deeds of the land.”

Another community leader illustrated how this collaboration between the community of the still officially “informal” neighbourhood and the municipal government resulted in the expectation of formalisation and co-produced territory in a physical and metaphorical sense:

“Because of the community work as part of the bonos de ayuda mutua scheme I was allocated an entire road, most of which (except my house) I gave to neighbours and the municipality as public open space. Everyone was a construction worker at the time.”

Collaboration with the municipality also related to other thematic areas, such as livelihoods and economic development. With the help of governmental institutions (such as the *Alta Consejería para los Derechos de las Víctimas, la Paz y la Reconciliación*, the High Council for human rights, victims, peace and reconciliation), government schemes aimed to support community groups, such as a women’s cooperative, to enable women from the community to sell their products in major supermarket chains.



Picture 3: Early settlement at the banks of the river Medellín and a convite for constructing municipal infrastructure (Source: Moravia Resiste presentation to the community, 2019)

Most of Moravia’s housing and basic infrastructure in the first two decades of the neighbourhood’s existence were built with *convites*. Construction of housing and neighbourhood infrastructure in the subsequent decades was the result of the community’s collaboration with the municipality, as well as assistance from a political faith group and non-state actors (the Theology of Liberation-oriented *Padres de la Golconda*, who applied urban planning principles, and the *M-19* guerrilla group), although, unlike the *convites* in the beginning and the government-funded mutual aid voucher scheme for infrastructure construction, the collaboration of the latter two types of actors was not a result of community mobilisation but triggered by these external actors. The thematic focus of these activities however remained the same – the provision of infrastructure for housing and basic community needs, such as water and sanitation, electricity, and the road network.

Risk reduction and development were clearly intertwined for such a community of IDPs who were mobilising and collaborating to establish themselves in the city they had moved to. However, given Medellín’s expansion between the 1950s and 1980s, the neighbourhood became increasingly central while continuing to be increase in density. According to a community leader it appeared to be this spatial re-configuration (without the community itself moving), in combination with the high density and the limited presence of the state, which led to the emergence of non-state actors and violent conflicts in the fight for territorial control of this populated neighbourhood:

“The reason for the presence of many non-state actors and conflict in this neighbourhood, as opposed to other barrios populares, is the fact that here many votes can be easily obtained within a single voting boundary. People are poor [the interview partner is implying that as a result there is a higher vulnerability

for selling one's vote; comment added] *and the neighbourhood is very dense [implying that Moravia contains a high number of votes in one single constituency; comment added]. Moravia is the voting post with the highest population density in the city.*"

Having reduced risk by fleeing from the violence in the countryside and collectively self-organising to establish livelihoods in their new home, Moravia's residents were thus particularly affected by the urban violence which Colombia experienced in the late 20th century and the early 2000s. Given Moravia's socio-spatial situation and Colombia's political context at that period, risk management translated into dealing with the state and non-state actors driving the conflict in the neighbourhood, as that community leader suggests:

"The capacity to negotiate the conflict was what brought Moravia to its current level of development. That was the inflection point – either we get together and organise or we drown... Today, this is a healthy neighbourhood where business rules, there is no crime on the streets, and you don't see anyone consuming drugs on the street... we always had to address different kinds of risks by preparing proposals, mobilising and negotiating with the various actors... leaders emerged according to their knowledge as the need has always been great in different themes, regarding road paving, helping women and children who have experienced violence or who have just arrived from the countryside to apply for social benefits and protection, and how to live in the conflict without getting involved in it..."

The community thus organised to address the continuous and slow-burn shock of the violence, as described in the narrative of one of the leaders remembers meeting with the armed groups at the time to negotiate a strategy for enhancing security in the neighbourhood's public open space:

"In the Community Action Board, we had the idea that we would incentivise street vendors to sell their food, and bought the equipment and raw material for them, for us to be able to open the doors again. Then we as the Community Action Board went to the leader of the militia and told him that we need the community to be able to enjoy themselves on the street locally, so they don't need to travel to the city centre. Then the businesses started to grow, and the community developed... it now feels like a village."

The picture of a street corner in Moravia below illustrates the outcome of the physical-social processes described in the leaders' statements, in the form of community-driven mobilisation for neighbourhood infrastructure construction (reinforcing the sense of belonging)

and the example of drawing on informal governance networks to facilitate the use of public space.



Picture 4: Moravia public open space at night – street vending (left) and entertainment (right) (from field work 2019)

Current efforts of community mobilisation focus on negotiations with the municipality regarding the 2018 *Plan Parcial de Renovación Urbana* (plan for partial urban renovation) for Moravia. The Plan's core proposal is the relocation of households currently living in areas classified as high-risk on and around the former landfill site, and the replacement of existing structures in low-risk areas with blocks of flats in order to accommodate both the residents from the high-risk areas and those from the dwellings that are to be replaced by the blocks of flats (DAP, 2018). Given the controversy regarding the process by which the Plan was created, especially regarding community input prior to its adoption by the city council, a group of residents and community leaders created the *Moravia Resiste* (Spanish for Moravia is Resisting) collective with the purpose of providing the neighbourhood's residents with information regarding the Plan and empowering them, “*if an official knocks at their doors, they are better prepared to read the documents they might receive and respond...to inform the community what our plans are to defend what we have built over the last 50 years. Moravia Resiste has several sub-committees, such as communication, legal, and ways of mobilisation, such as cultural and social events*” (interview of *Moravia Resiste* members during fieldwork, 2019).



Picture 5: Moravia Resiste Members presenting to the community (fieldwork, June 2019)

The collective has also collaborated with university projects to make the neighbourhood's social and cultural capital visible, such as the Community Census with the University of Antioquia and the University Institution Colegio Mayo de Antioquia, Moravia's Living Heritage Atlas with University College London, and created an archive of pictures that capture key moments in the neighbourhood's history. The community group is also working with a city councillor who is calling for a change in approach to risk reduction in the neighbourhood to retain its social fabric. A community leader summed up the reasons for their opposition to the plan as follows:

"...to demolish Moravia would be to deny the spirit of Antioquia, the restaurants and take-aways, the bars, the cafés. This neighbourhood is full of life, because of its people, people who came from the mountains and who want to continue with their customs from the mountain. A building doesn't mean anything to them. If it was for a building, they would have changed their homes for a block of flats long ago. But no, this is what people enjoy. Being together, walking, chatting."

The above statement also reflects important elements of the discourses identified in Moravia, as the following sub-section illustrates.

Discourses

The community discourses strongly centre on the risk-development nexus, and specifically the role of the community-municipality relation in this context. Importantly, the community leaders show a strong awareness of the structural and historical inequalities and argue that given its socio-spatial situation, the drivers for mobilisation reflect the neighbourhood's role of microcosm of national socio-political challenges. Relatedly, one community leader indicated that most of the residents in Moravia were twice marginalised – firstly, as IDPs, and secondly, as neighbourhood which has experienced and dealt with particularly high levels of violence and organised crime, in addition to having been designated as the location for the municipal landfill. They have therefore suggested that the community mobilises to demand government recognition of this double marginalisation and of the community history of dealing with its impacts:

“We mobilise to talk to the government because everyone in Moravia is in one form or another a victim of the conflict in Colombia, ... it's not like we chose to come to the city to live in a tugurio and starve. It was the conflict between the government and the armed militias that brought us here. All the difficulties this country faced throughout the last four decades, such as the guerrilla movements ELN and M-19 and the paramilitary groups, Pablo Escobar and related interests, have started or have in some way found their way to Moravia.”

Regarding discourses around the risk-development nexus specifically, one of the key arguments in the community narratives is that the municipality's view is biased towards the inmitigability of the fire hazard from the covered landfill and, thus, instrumentalised to justify urban renovation (and associated evictions) as opposed to Integrated Neighbourhood Improvement (*Mejoramiento Integral de Barrios*). Responding to a question regarding risks in the neighbourhood a community leader asked why the fire risk from the landfill gases shown in the municipality's geological studies is being emphasised only now, when the community had been living with this risk since the creation of the landfill, and when the city appears to be under increased development pressure for re-densification.

This observation by the community does not imply a lack of risk awareness in the community. Community leaders' awareness of the fire risk appears high, especially given the recurrent major fires in areas in proximity to the *morro* between 2007 and 2017. The risk-development nexus at community level appears evident in this case, as in addition to the gases from the covered landfill, several of these fires resulted from physical structural risk factors, such as the prevalence of wood as construction material and gas cylinders for cooking in areas of the neighbourhood without access to the municipal network. Further indicating a high level

of risk awareness, the fire risk and development discourse also appeared in *Moravia Resiste* meetings (see picture below) where the community group emphasised the need to make new arrivals from elsewhere in the city or from other *departamentos* aware of the risk of buying plots on the *morro* from the gangs who continue to sell them illegally.



Picture 6: Moravia Resiste Committee Meeting (fieldwork 2019)

Regarding the community-municipality relation in the risk-development context, community members feel that the government shows limited presence for risk reduction, which appears analogous to the community view regarding the limited government presence and threats of eviction during the development/growth stage of the neighbourhood. One community leader argued that despite the municipality's call for urban renovation and relocation due to fire and landslide risk, the government does not intervene in the *local security's* (the collective of locally operating organised crime groups) activity continuing to sell plots without titles to the most vulnerable. Risk awareness and openness for engagement with regulatory requirements is also reflected in the community leaders' call for "*a reset in building practices, that from a certain point onwards all buildings should comply with structural safety requirements*".

This narrative of engagement echoes the 2004 to 2008 administration's Integrated Neighbourhood Improvement programme (MIB, for the Spanish acronym), with its proposals

of land ownership legalisation, “building with existing structures, protection of the existing residents in the neighbourhood, and priority of public sector investment” (DAP, 2004) (p.16). The programme was stopped by subsequent city administrations, but community leaders have been campaigning for a continuation of the MIB, which, importantly, would include community-driven risk management strategy. Legalisation of land titles appears even more important for the community in this case, as one community leader argued that “...*if they would have given us titles, this neighbourhood would have progressed by itself, without the need for government to help because people would have been able to sell and move on or develop the neighbourhood further. But they do nothing and don't let us do anything. We are not recognised, nor do they let us self-improve things.*” In the view of this community leader land titling would build on the history of self-organisation and thus promote development.

With the agreement of purchasing their titles with community and infrastructure work (the *bonos de ayuda mutua* – the mutual aid vouchers scheme the municipality had implemented), the issue of titling is even more important for this community as this programme not only created the expectation of receiving the titles as described above. As a form of integrated neighbourhood improvement, which the municipality had funded, it also generated a strong sense of identity and belonging. That particular episode of municipality-community interaction determines community narratives to date regarding the relation with the municipality. Its limited full implementation appears to have contributed to the community's lack of trust in the municipality's subsequent development proposals, and its critical attitude towards the municipality, as is reflected in a community leader's statement:

“...This is the frustration one has with the state. One would think that one is building the house on legal soil, paid for with my own work [with the mutual aid vouchers scheme], an architect did the plan of the house [to ensure it is structurally safe], why then did I do all this in a legal manner? For them now to declare the land government property and to expropriate us? ... So, when we build, the municipality doesn't give us the titles of the plots but for the tax they do count us?”

Given the development pressures related to the proposed urban renewal of the neighbourhood, community members understandably feel strongly about the perceived lack of community input and of consideration given to the community's shared history into the proposals. The community narratives also referred to the perception that the community is being marginalised a third time (the first being the forced displacement from the countryside, and the second relating to the risk creation due to locating the landfill in the neighbourhood), through the threat of gentrification and relocation to the periphery of the city based on top-

down risk assessments and undifferentiated interpretations of “development” for the sake of globalising the city.

A city councillor commenting in 2019 on the proposed developments on the community’s behalf, while agreeing to the need to relocate a part of the neighbourhood due to fire and landslide risk, also questioned the suitability of the development model, as “although it is well-intended, it would destroy Moravia’s social and economic fabric”. In an interview during field research, community leaders went further by arguing that the construction of the proposed housing blocks would ignore the community’s development potentialities created by 50 years of incremental community-led construction, drawing on knowledge in various themes:

“...all these houses are the work of families who have built them for over 50 years... we added bit by bit with stronger materials until we built stable houses, and we have shared these 50 years in this neighbourhood.... they are ignoring this to take us out and create space for international investors.”

The focus on Moravia illustrates how the community has dealt with various types of pressures during its over 50 years of history. As a community which was formed of displaced groups from across the country, the focus on Moravia has shown how the concepts of development and risk management have always been closely related for a marginalised community living in a self-constructed neighbourhood. This implicit understanding has driven and continues to drive their processes of resilience. The organisation of *convites* for constructing the neighbourhood, initially with basic material for housing, then the mobilisation of knowledge in the community for building the initial neighbourhood infrastructure, contributed to the social construction of the neighbourhood. Analogous to the structures in the neighbourhood, which were built with recycled as well as raw materials – faced with the combination of physical marginalisation due to the location of the landfill in the neighbourhood and the social-spatial determinants (density and strategic location within the city) of violence and organised crime, community leaders worked strategically with both formal and informal networks (as illustrated in the public space example further above). With Moravia having developed de facto legitimacy in the 1980s, not least due to its political importance related to its density and central location, the municipality implemented a neighbourhood upgrading scheme centred on the *convite* practice which the community had been applying to that date. The perceived positive physical and social impact of that collaborative upgrading scheme frame community discourses to date as it strengthened sense of belonging (*arraigo*) and legitimacy. That particular episode of community-municipality interaction also framed the future community discourse as only a small proportion of the promised title deeds in return of the community participation in the construction work during the upgrade were handed over. This is a critical issue for the

community since the deeds are perceived as a guarantee for remaining in the neighbourhood, thus a factor for resilience as they incentivise further community investment and engagement in co-constructing the territory.

The 2018 Plan for Partial Neighbourhood Renewal proposed by the municipal planning department has resulted in the creation of *Moravia Resiste* which opposes the planned replacement of large parts of the collectively built structures with purpose-built blocks of flats and planned public space. While the municipality's proposal is understood as a well-intended plan for risk reduction, and it fulfils the criteria of adequate housing, community leaders argue that it ignores the socio-spatial fabric which was constructed over 50 years of collective development, and thus reduces both infrastructural and community resilience. The community group thus mobilises to create awareness the risk of purchasing illegally sold plots in areas with landslide and fire risk and propose for the municipality to continue with the integrated neighbourhood improvement scheme a previous administration had started, and which had promised to build on the existing community processes and structures. This case study thus illustrates how a community's experience of marginalisation and unequal risk allocation has resulted in a different understanding of risk and development, and how self-organisation with both formal and informal networks created de facto legitimacy and potentialities for enhanced resilience. Given the community's acquired capacity to mobilise, it also shows the potential for friction if the top-down view is not sensitive enough and thus unable to engage with these bottom-up processes.

7.3.3. Comuna 13

Historical context and institutional community snapshot

Located on the steep slopes at Medellín's Western city boundary, Comuna 13 covers 7.4 hectares with 19 *barrios* divided into 33 *sectores* and has a population of around 160,000 inhabitants. While the history of the neighbourhood can be traced back to the early 20th century, the growth of the "informal" *barrios* of Comuna 13 started in the late 1970s, with most of the then new residents arriving from elsewhere in the city in search for affordable land (Montoya-Gil, Quiceño-Toro and Cardona-Echeverri, nd). With Colombia's internal conflict intensifying in the countryside, IDPs joined the earlier arrivals as a result of the conflicts in different parts of the country (ibid.), with an increased rate of self-construction through *convites* from 1994 onwards (Sánchez, 2011). Due to its strategic location as a gateway to the sea, the

narrow paths and the steep slope, armed groups have and continue to fight for territorial control, especially of the self-constructed *barrios* (Comuna 13 community leader, 2019). The conflict reached its height in 2002 with the controversial military *Operación Orión*, where the army, supported by the paramilitary groups, entered the neighbourhood with helicopters to take control of the *Comuna* from the guerrilla groups, resulting in forced disappearances and a still unconfirmed number of victims.

More recently, Comuna 13 has however also benefitted from large-scale infrastructure investment. In the early to mid-1990s the municipality upgraded the roads and housing as part of an integrated neighbourhood improvement programme (Amparo-Sanchez et al., 2011). In the 2000s, the municipality installed open air escalators and a cable car transport system in the neighbourhood, as well as a public library. Despite the community leaders' initial doubts, the escalators have significantly reduced travel to work time while converting that specific part of Comuna 13 into a notable tourist attraction (research interview, 2019).

Despite these significant advances, the neighbourhood still faces high levels of violence and organised crime, and high unemployment, combined with an increase in population (displaced Venezuelan nationals and IDPs) (DAP, 2019). Relatedly, the local development plan emphasises the challenges emerging from the increase in housing constructed in areas of high risk, the lack of housing availability for vulnerable sectors of population and an inadequate governmental response to the disaster risk scenario (ibid.).

Mobilisation

The analysis of Comuna 13's understanding of resilience and sustainability illustrates the impact of scale and temporality on community mobilisation. Discussing the themes of habitat and disaster risk reduction and mitigation, the community leaders defined resilience as capacity to avoid a disaster or bouncing back to pre-disaster community life regarding housing and infrastructure – in the case of Comuna 13, primarily after landslides. They attributed the perceived lack of resilience in Comuna 13 to the limited community response to collective initiatives for neighbourhood improvement planning:

“I am part of 14 groups in social media for the community but when you send invitations to a community seminar or event on a Saturday, only five people turn up. Even though we have the structure, participation is not the best...if there is no specific project which implies immediate benefits, no one will turn up. The low participation means that if the municipal government proposes investment, it tends to go to other neighbourhoods because from here nobody will go to fight for it with the municipality.”

The community leader voiced similar concerns regarding the formal community governance structures, as *“in the communal planning council we have about 46 councillors and 17 ediles [elected sub-neighbourhood community councillors], to work at neighbourhood level on the 46 municipal development priorities but the committee is not efficient, and decisions about initiatives in the various policy sectors are often taken without the due process and preparation.”*

Ethnographic observation from participating in various community strategy meetings on neighbourhood planning and disaster risk management, also indicated limited participation, with a comparatively small group of “regulars”. These comments and observations appear to be in contrast with accounts of historical processes of neighbourhood co-construction, where a community leader recalls that *“...in one sector of the neighbourhood (Las Independencias) the community self-constructed its neighbourhood of 7,000 houses and built the infrastructure (water and sewerage etc.) by themselves with convites within two years, between 1982 and 1984.”* Beyond its impact on sense of belonging of a displaced group, the community leaders perceive self-construction of the neighbourhood sub-sectors as manifestation of resilience as well as resistance, as the community leaders’ observations at one point during the risk and development themed walk as part of this research illustrate:

“I really feel for this part of the Comuna 13 [Cuatro Esquinas] because I arrived here some 30 years ago when this part was a mountain with vegetation, and as a community, we built it by ourselves. We did the roads, street lighting, the telephone lines. I was the first who drove a car up this road”...“this is why 30 years ago the neighbourhood was very resilient – everybody participated in building this neighbourhood against the state”...“Now we have lost our identity, because we built entire neighbourhoods, but today people are no longer conscious of this.”



Picture 7: A group activity during an SDG-themed workshop with the members of the Comuna 13 neighbourhood Local Action Board (JAL) (fieldwork 2019)

One of the community leaders however also suggested that civic engagement is significant, as *“Comuna 13 has one of the highest numbers of grass-root organisations, where about ten- to twenty-thousand people per day meet to do something collectively, which might be a recurring activity, such as regular chess clubs or after-school clubs, or one-off activities, such as putting up the Christmas decorations for the block. This participation-action, how I call it, does not depend on the participatory budget, or any official policy. It depends on the needs and the resources of the community, and most of the time they do it without money.”* A comment during another interview with the same community leader suggests that the discrepancy between the perceived lack of mobilisation for neighbourhood initiatives, and the dynamic informal civil sector organisations, might be related to scale, since the community leaders during a community organisational census *“...have identified about 300 micro-territories in the neighbourhood and these micro-territories show different cultural and community-organisational behaviour and community action.”* In the community leaders’ views, the lack of alignment between formal and informal structures has reduced the effectiveness of the municipal participatory budget scheme because it creates an artificial structure to which the residents only respond because of the financial incentive, and in some cases negatively affects the ability to self-organise by

creating dependency (“*p-pendencia*”, a popular pun which refers to communities’ dependency-*dependencia* on the participatory budget-*presupuesto participativo*). In the view of the Comuna 13’s community leader for planning:

“...we have a parallel organisational life, which is different from the formal structures which frame the allocation of the participatory budgets. This means that the participatory budgets do not correspond to the organic organisational structure of the neighbourhoods, which is why they are not sustainable...they are counterproductive for participation because we had functioning working groups before, and when the participatory budget was introduced, people only took part if money was involved, and even then, not necessarily those with the best capacity but those with the best political ability.”

This statement implies a tension between participation and the solidarity expressed in the voluntary groups at micro-territory level. For these community leaders, solidarity relates to bouncing back from or adapting to shocks, which is why, in their opinion, residents mobilise quickly for immediate risk mitigation and basic needs, while participation for longer term and larger scale projects (for example, for risk reduction) is limited.

Narratives about the history of self-construction and marginalisation provide further insights regarding the factors that mediate mobilisation across Comuna 13 and relations with the municipality. The discrepancy mentioned in the statement above between the “organic organisational structure” (a result of development processes of the micro-territories) and the municipal planning layer appears to cause friction, and thus mediates the effectiveness of participatory planning processes initiated by the municipality. Socio-politically, this spatial-institutional discrepancy appears to be mirrored in an ambivalent relationship between community and municipality. In one interview, a community leader recalled an episode in 2010 when he mediated between armed groups from two *micro-territories* whose conflict had escalated, as part of a social activation (*activación social*) on the request of the municipality¹⁴. This episode indicates that the municipal authorities built on the informal networks resulting from the communities’ self-construction processes to address the slow-burn shock of intra-neighbourhood violence.

Self-construction as act of resilience and resistance also frames the interactions between communities in the *micro-territories* and the government. In response to a question about community-government relations, one of the community leaders explained the socio-spatial

¹⁴ In 2002 two military operations (*Operación Mariscal* and *Operación Orión*) aimed to establish state presence in Comuna 13 and resulted in a high number of civilian victims and further alienated the population. These events may have played a role in the municipal authorities’ change in approach to an *activación social*.

process which leads to low state legitimacy, and which reinforces the importance of informal governance, as follows:

“When the municipality decided to evict residents from the Las Independencias sub-neighbourhood [in the 1980s], the residents successfully fought against it. The boys who are now in the combo (the local criminal gang) saw as children how their parents fought against the municipality. This means that it will be difficult for them to accept the municipality as authority because they have built the neighbourhood with their own resources, not the state, which therefore has less legitimacy here. Most of the boys in the gangs are local and no matter what they do, the community will always protect them...because of all this and because of the ease with which the neighbourhood can be controlled from the top of the hill, the armed groups will always be here.”

The episode of the municipality approaching community leaders to engage with the informal actors suggests that from the top-down perspective the latter are recognised as intermediaries at sub-neighbourhood level. In another example, the community leader focusing on disaster risk illustrated that the authorities acknowledge their position, as the police agreed for the community work (clearing rubble) with youths, some of whom were members of a *combo*, to be completed before intervening. To increase participation from the civic initiatives, and thus effectively align the bottom-up organic informal solidarity-based structure and the top-down structure for municipal financing, the planning community leader has started to link existing grassroots activities to the priorities of the Community Action Board (the JAC) “not by asking what do you need?” but ‘what do you do, and how do I strengthen what you do?’, with the consequence that the JAC will not only consist of 10 people trying to mobilise the community, but will be a board with over 100 members who are already active in the community.

Discourses

The key theme emerging from the field research in Comuna 13 is the community’s apparent perception that “resilience is different here”. Following an invitation from the Universidad Autónoma Latinoamericana between May and July 2019, in this ethnographic research I provided the community leaders of Comuna 13 (as well as leaders from other Medellín *comunas* in SDG-themed workshops) with an introduction to the 2030 Agenda, the SDGs and SDG 11 specifically. The statement at the beginning of this Chapter represents the first reaction from the Comuna 13 leaders to the SDG 11 theme, and it continued to dominate subsequent interactions regarding resilience and SDG 11. This is illustrated by the community leader’s perception that *“often the indicator criteria might be fulfilled but the situation of the community*

remains the same...the development targets that were defined at municipal level had nothing to do with what's happening here in this comuna. The same happens with the SDG indicators. They are defined somewhere and achieved but have no relevance here." In addressing the sub-research questions regarding the communities' interpretations of the risk-development nexus and its mechanisms in their neighbourhoods, the following paragraphs explore the community leaders' discourses about the risk, development and resilience and the accounts of experiences which support these discourses.

The community leaders' implicit conceptualisations of resilience primarily represented their reflections on my presentation of the global and municipal SDG 11 indicator framework and a subsequent group discussion on the theme of "habitat". The interviewed community leaders of Comuna 13 suggested that the community's understanding of resilience is the ability to adapt to disasters and the return to a pre-disaster functionality in the ability to live in the neighbourhood, as one suggests in the interview: *"People adapt more than overcome a disaster. If the combo changes the rules of the game, people accept the new rules. If, because of a landslide, you can't walk on one side of the road, people will walk on the other side. But it doesn't solve the problem."* This discourse mirrors the observations in the mobilisation section above regarding limited participation for wider scale and longer-term initiatives in Comuna 13 in that it aligns with the tendency to respond to short term risk and development needs. A related observation to which the community leaders frequently referred illustrates the socio-spatial factors that appear to drive this risk-development narrative implicit in community discourses about resilience:

"People have two options after a landslide. If they have money, they fix their house; if they don't, they move further up the slope to a riskier area. And if someone with more money arrives afterwards from elsewhere in the city, they fix that house and move in, which is a form of gentrification."

The socio-spatial mechanism for the marginalising trend of the risk-development nexus, which Comuna 13 likely shares with other self-constructed neighbourhoods on slopes at growing cities' fringes, in this case is illustrated with the vicious cycle of neighbourhood-internal post-disaster gentrification. The community leaders also voiced frustration with municipal risk monitoring and management, which in their view is reactive and limited regarding risk reduction.

A particular challenge appears to be the combination of individual self-construction – as opposed to the community-organised *convites* –, limited vehicular access for municipal waste disposal, and the cycle of risk creation related to perceived limited municipal investment for risk reduction. During the disaster risk themed walk through Comuna 13 the community leaders emphasised that the most challenging risk factor was the accumulation of municipal

waste and rubble, as “40% of households do not have access to municipal waste disposal services because the waste collection lorries do not fit into the narrow roads, and with people building into the mountain and creating vast amounts rubble per day it represents a major environmental risk.” The disaster risk focused community leader agreed with that view and provided a differentiated assessment of the cycle of risk creation where “the accumulation of waste and rubble prevents the flow of water – because in this area of the neighbourhood water is below ground and not yet canalised, like it was done when the houses were built by convite, while the rubble increases the pressure on the ground. With the houses built without consideration to neighbourhood planning, people feed the wastewater into the creek or just straight out of their house, which then accumulates further down the slope. The municipal utility company then argues that this is an area of high risk, and they cannot invest, ...if the municipality does not regulate these flows of water, they disappear below ground and we will have a landslide sooner or later.”

Community leaders perceive that municipal post-disaster interventions in the neighbourhood are superficial and ineffective in preventing further disasters in the same area, effectively leaving risk mitigation with the area’s residents to them. To exemplify the lack of engagement between the municipality and the community, the community leader for disaster risk referred to an episode where following a landslide the municipality prohibited construction in an area and declared it as high non-mitigable risk. This declaration prohibited construction and infrastructure investment and prevented the community leaders to adapt the area for community use. Due to the mechanisms of socio-spatial marginalisation and given the context of informality (and low state legitimacy identified in the mobilisation section above), the risk however continues to exist. Thus, the cycle of marginalisation and risk creation continued, as the same leader described: “With the land being abandoned [following the landslide and designation as high-risk area] people started to sell plots again and I as then vice president of the JAC in this area came here weekly to warn people against building here. The municipality then instead of organising this area inserted columns to stabilise the mountain, and all this came down, and even one of my family members lost their life here. And now people are starting to build again in this area, and rubble is piling up, resulting in pressure on the ground.” The picture below, taken during the field research, showing a pile of rubble on an empty plot with rainwater pipes from the neighbouring house leading into it, illustrates this cycle. The sign was installed by the residents of the immediately surrounding area and reads “dumping of rubbish prohibited”. The white plastic sheet in the back of the plot is a provisional measure applied on steep slopes throughout the neighbourhood to prevent rainwater draining into the exposed soil without vegetation cover.



Picture 8: Rubble deposited on a vacant plot (fieldwork, 2019)

These processes are reinforced by the community's perception of municipal risk management in the neighbourhood, as, according to the community leaders, the city administration *"have prohibited construction in these sectors but they don't say why and what they think about doing with them"*. The community also perceives that the municipality applies different risk criteria for community and municipal infrastructure, as *"people don't understand why the municipality is permitted to build these viaducts considering their weight and that of cars on them will have, while they are not allowed to build anything because of the risk designation"*.

Despite these critical views regarding the municipality in the community discourses, the community leaders in the discussion group also emphasised the physical vulnerabilities of the individually self-constructed buildings and the need for geological and structural guidelines to avoid the implicit marginalisation-disaster-risk-gentrification cycle. Past municipal-led housing improvement initiatives however appear to have had an alienating impact. According to the community leaders the residents whose houses were to be improved did not agree with design and implementation, which they felt was imposed and did not account for the self-constructed nature of the buildings and the acquired construction skills in the community. As one community leader highlighted, community opposition to housing improvement would be

reduced and thus more effective with a collaborative dialogue: “*If I propose a design and they don’t find that it’s adequate I want to know the reasons and I will accept them if they are justified. But if it is adequate and technically and financially viable, they should accept my proposal for the design.*” A similar observation applied to the challenges and risk implications of the accumulations of rubble and solid waste where the group agreed that municipal efforts for risk reduction would only have an impact if the municipality invested in risk education and awareness raising to enable the community to take responsibility.

The analysis of risk and development-related mobilisation and discourses in Comuna 13 points clearly to challenges resulting from a misalignment between the formal and the informal spheres. In Comuna 13 this is most evident in the contrast between low participation for neighbourhood-wide long-term initiatives – such as the involvement in community planning meetings – and the dynamic engagement in micro-territory activities – such as solidarity after a disaster or the organisation of youth sports activities. A closer look suggests that the process of self-construction of the various parts of the neighbourhood in the early stages has translated into the organic “parallel organisation” in micro-territories with strong informal networks consisting of civic initiatives as well as armed groups, with a strong sense of belonging. Friction with formal constructs is thus two-fold – firstly due to the limited state legitimacy, and secondly because of the addition of “artificial” formal organisational layer. The community leaders, at their own initiative as well as at municipal request, act as ‘boundary spanners’ between the two spheres.

The understanding of resilience and discourses about the risk-development nexus mirror the tension between socio-spatial marginalisation and self-construction on the one hand, and municipal efforts to reduce risk, on the other. The cycle of socio-spatial marginalisation, self-organisation and risk also determined the discourses of resilience and the understanding of the risk-development nexus in Comuna 13. The focus on short term actions observed regarding mobilisation reflects in the resilience-as-adaptation discourse – leading to intra-neighbourhood post-disaster gentrification, while the scalar character of self-organisation is mirrored in the construction activities in the micro-territories (as opposed to community-coordinated *convites*), manifesting in the continued accumulation of rubble being identified as the most significant risk factor in the discourses. The gap between the formal and informal spheres and its perceived risk-perpetuating effect is also visible in the community’s questioning of the application of risk-criteria for construction, the perceived lack of the municipality’s engagement in the form of interventions and discussions regarding risk reduction, infrastructure investment and imposed design for housing improvement, all of which, in the community’s discourses, appear to alienate

and further reduce state legitimacy by ignoring the existing potential from its history of self-construction. With community leaders acting as intermediaries between the two spheres they call for translation and dialogue to overcome the fragmenting and risk-perpetuating effects in both mobilisation and discourses in the form of an organisational “translation” in the former, and an openness to exchanges of proposals for risk reduction and housing improvement in the latter.

The Comuna 13 community leader for planning suggested the localisation of global resilience and development frameworks similarly requires a comparison of understandings: *“Here we don’t know how the UN, or the municipality interpret each of these targets, they don’t say how this applies to us, in our situation.”* The community leader was keen to develop a localised monitoring framework produced or validated by the community but also called for proposals to guide or at least stimulate a discussion regarding the parameters of localisation at neighbourhood level: *“For example, the only feasible form of renewable energy here is wind. If we were to install wind energy generators here it’s not clear how exactly the goal is being achieved, what the contribution is of such a project. For monitoring the SDGs do not show how to link the cause to the overall effect of achieving a specific target. It would be good to have a guide of how to go about interpreting it, like a logical framework.”* This comment leads to the discussion regarding the factors that shape the communities’ interpretations of the risk-development nexus and how these might help with developing an approach for meaningful localisation of the monitoring frameworks which account for inequalities as well as the communities’ potentialities.

7.4. Discussion

With their modes and themes of mobilisation and discourses regarding the risk-development nexus, this chapter has presented the communities’ understandings of resilience and sustainability and provides an insight into the drivers of the multiple at the community level. Given the iterative nature of this research (see chapter 4) the analysis along the mobilisation and discourses dimensions of community risk-development governance processes allows to draw out to the communities’ components and sources of urban transformative capacity regarding sustainability and resilience from the communities’ histories and their own narratives. It also leads to potential conceptual entry points to co-productively and dialogically enhance relevance and transformative potential of localised resilience and sustainability monitoring frameworks.

The fact that the three communities live in neighbourhoods in the same city yet with differences in their stages of development, area and population, spatial and topographical contexts, community organisational and political composition and responses to their socio-spatial challenges, reinforces the call for a differentiated and neighbourhood-wide approach to municipal monitoring localisation.

The most tangible factors which result in variations in understandings of risk and development are the settlement characteristics. In the case studies settlement stage (temporality), location (space) and size (or scale of analysis) appear to be the key to analytically approach the nature of community-internal and external mobilisation and the framing of risk and development discourses, and thus unpack them to then link them to systematic insights for methodological discussions regarding monitoring. As table 12 indicates, the community understanding of the risk-development nexus changed with the settlement stage and appears to be mediated by an ambivalence between the formal and informal spheres. It evolved from a focus on adaptation to and of a hazardous environment in the early / arrival stage, to a development focus, characterised by community construction of physical infrastructure, to community internal and external mobilisation and narratives primarily addressing perceived risks to the existing, consolidated development, driven by an ambivalence between the formal and informal spheres. The following paragraphs discuss these common moments which are summarised and allocated into the three settlement stages in table 12 and reflecting the dimensions of community governance processes applied for the analyses of section 7.3 – see table 1 in section 4.5), which have shaped and represent the communities' understanding of the risk-development nexus.

Dimension	Arrival-early stage	Growth	Consolidation
Internal mobilisation	<ul style="list-style-type: none"> • Self-construction of housing and basic infrastructure • Shared histories of recent displacement 	<ul style="list-style-type: none"> • Governance structures for coordination and own legitimacy 	<ul style="list-style-type: none"> • Established thematic working groups • core leadership structure • varying sense of belonging and involvement
External mobilisation	<ul style="list-style-type: none"> • Limited 	<ul style="list-style-type: none"> • Formal (municipality and utility operators) • Dealing with informal actors in absence of state as authority 	<ul style="list-style-type: none"> • Formal structures and academia • Informal actors representing threat but working around each other
Discourses: view of risk & development	<ul style="list-style-type: none"> • Development as risk mitigation/reduction - adaptation to and of hazardous environment 	<ul style="list-style-type: none"> • Development focus 	<ul style="list-style-type: none"> • Addressing risk to existing development
Discourses: relationship to institutions	<ul style="list-style-type: none"> • "Invaders" / resistance / absence of state • Strong sense of belonging at sub-neighbourhood level - constructing territory 	<ul style="list-style-type: none"> • Ambivalence: neighbourhoods (C13 and Moravia) becoming strategically important • Allies (all three) • Greenbelt and greenspace as development focus (El Pacífico) • Recognition of community expertise and networks during times of internal conflict (social risk reduction) 	<ul style="list-style-type: none"> • Between absence and risk creation/perpetuation • Some antagonism (El Pacífico / Moravia) • Perceived ignorance of community resilience which formed due to absence of state

Table 12: Settlement stage and community framings of risk and development

The *convites* for mutual help with housing and community-planned and implemented neighbourhood infrastructure construction characterise the early stage of all three neighbourhoods. Having arrived in the city as IDPs, finding affordable land meant adapting and working with hazardous characteristics (slopes or marshes). Being considered “invaders” of public land the relation to the municipality ranged between “abandoned by the state” (as indicated in the early-stage settlement-Moravia discourse and in El Pacífico) to opposition by the municipal authorities (present Moravia discourse and Comuna 13). As the El Pacífico and Moravia discourses indicated, risk mitigation and development were synonymous at this stage of the settlement. In Comuna 13, resilience in the form of community mobilisation for construction also represented resistance, as one community leader observed. The combination of the recently arrived urban dwellers’ shared histories of displacement, the imported rural practice of the *convite* (“like we always did before” as the El Pacífico community leader commented), the idea of recreating village life and of building *ranchitos* at the margins of the city, and the need to rely on their knowledge, resources and time, resulted in both a physical and mental co-construction of the territory and a strong sense of belonging. Scale appears to play a role for mobilisation within the community, since the two larger neighbourhoods Comuna 13-San Javier and Moravia were built in sub-neighbourhood areas, and due to its size El Pacífico – the newest and smallest of the three neighbourhoods – could be regarded a sub-neighbourhood. The discourses regarding mobilisation therefore indicate a strong willingness within the community to participate during the early stages of settlement. Leadership emerged according to community needs and personal technical or administrative-organisational expertise, as indicated by the statements regarding mobilisation in El Pacífico and Moravia. Self-construction led to increased spatial and infrastructural presence in the neighbourhood, and formal (the *JACs*) and informal community-organisational structures. In addition to housing, the main infrastructure elements the community designed and built were the (mostly unpaved) paths, “pirated” electricity, community water tanks and drainage and community spaces.

Another important moment in community mobilisation with an impact on understandings of risk and development are the collaborations for development with the municipality and with non-governmental and non-state actors in the neighbourhood. These occurred at different stages and for different purposes in the three neighbourhoods (some of which are described in the historical context sub-sections), yet the community leaders emphasised specific trigger moments. Having established the *JAC* as institutional and organisational tool and with the leader’s political link to the municipality, the community in El Pacífico was able to apply for and obtain municipal financing for the collaborative sewerage

project, despite being located in an area designated as high non-mitigable risk and thus not suitable for infrastructure investment. For Moravia, an important moment in its early history was the joint development of an urban concept for the neighbourhood with the activist priests in the 1960s, and the municipality-led collaborative upgrading of the infrastructure with the promise of title deeds in the 1980s after the closure of the landfill, yet still prior to the official recognition as neighbourhood in 1993. These episodes of “pragmatic” mobilisation for collaborative neighbourhood upgrading and infrastructure development with non-governmental groups, informal networks and the municipality changed the communities’ discourses. In early-stage Moravia and El Pacífico, it increased confidence about the ability to remain in the territory and moved the implicit discourse from development-as-risk-mitigation to development, resulting in further growth, while Moravia’s collaborative infrastructure construction with the municipality and promise of title deeds strengthened the communities’ claim to the neighbourhood. Commenting on these interactions, the community leaders questioned the contradiction between municipal investment and de facto recognition through neighbourhood upgrading, and the municipality’s reluctance to formalise the neighbourhoods as official *barrio*.

The communities’ initial self-construction of basic infrastructure, such as an electricity network, also attracted the attention of the municipal utility company. Although the latter subsequently implemented the nomenclature for improved metering and invoicing (that is, not with a development-driven purpose), it represents a form of implicit legitimisation. This implicit legitimisation is significant for the discourse in El Pacífico (the only case study neighbourhood which is still not officially recognised), since the community uses the utility company’s nomenclature as it covers the extent of the neighbourhood according to electricity users, rather than the municipality’s view of the “planned” urban boundary, which places part of the neighbourhood into the protected greenbelt.

With the neighbourhoods largely consolidated in their territories – though not necessarily legitimised, and the development struggle continuing – the question of risk to development becomes important in mobilisation and discourses. Due to their location and size, both Moravia, as increasingly politically and strategically important central and high-density neighbourhood, and Comuna 13 due to its role as gate to the “road to the sea” in the West of the city, represented microcosms of Colombia’s multi-faceted internal conflict. Given the nature of the conflicts in their territories, mitigation of this slow-burn shock of violence largely depended on the community leaders’ ability to work with the various formal and informal actors and networks. Implicitly recognising their knowledge of their neighbourhood’s history

and networks, and the resulting socio-political and spatial configurations, including limited state legitimacy, the municipality called upon them in *social activations* to negotiate ceasefires in the case of intra-neighbourhood conflict in Comuna 13. As example of social risk reduction for development, the leadership group in Moravia in turn built on their informal networks and knowledge of the community's rural legacy of village life on the street to contact the dominant armed group at the time and negotiate a bottom-up (if one considers the armed group as authority in the neighbourhood) proposal to increase safety in public space at night during a time of severe urban conflict.

According to the leaders' narratives, current community efforts of risk mitigation are not mirrored by the municipality's approach, and at worst contribute (albeit inadvertently) to perpetuating socio-spatial marginalisation in all three neighbourhoods. In El Pacífico this discrepancy appears in the limited eligibility for municipal funding for the shared social and engineering action points in the neighbourhood's *Community Risk Identification and Management Plan*, as the community's response to municipal risk management, which, according to their experience, tends towards eviction. It is also apparent in the tension between community action for risk mitigation in El Pacífico's built-up areas located in the protected greenbelt, and eviction as only perceived municipal proposal for risk reduction, represented in the differences in the cartographic representation of the territory. In Moravia, the community mobilises against eviction justified with fire and landslide risk from the *morro*. Given its history of collaborative construction with the faith group and the municipal scheme of construction work for land titles while living with the risk since the creation of the landfill, they question the proposals for replacing the self-constructed housing and infrastructure with blocks of flats – a proposal which, they argue, would also ignore the neighbourhood's social, economic and cultural fabric built around the community's history of transforming of risk factors, such as the landfill. In Comuna 13, the community leaders' experience with post-disaster management after landslides echoed the view from El Pacífico regarding the municipal approach to risk mitigation in their territory. Their discourses about risk suggested that a building ban as standard municipal response effectively responsabilises instead of engages with them to address the underlying dynamic of intra-neighbourhood gentrification where the marginalised continue to move further up the slope, resulting in accumulations of construction rubble in areas without vehicular access, thus further exacerbating geological risk and socio-spatial marginalisation.

Despite histories of limited state legitimacy narratives of resilience and self-construction as resistance in the self-constructed neighbourhoods due to experiences of repeated abandonment and victimisation, the community leaders' proposals for addressing the

challenges related to the risk-development nexus indicate openness for dialogue. In addition to El Pacífico's proposal for community-municipality collaboration in its *Community Risk Identification and Management Plan*, the community is currently (2020/2021) in negotiations regarding partial relocation with municipal agencies. The community proposals are informed by planning studies and translate their views into the terminology of the municipal administration. The community in Moravia continues to fight relocation by proposing strategies, such as co-constructive Integrated Neighbourhood Improvement to build on community experience of transformation and reduce the likelihood of renewed socio-spatial marginalisation – a dialogic approach regarding design for risk reduction which has been echoed by the community leaders in Comuna 13. Their plan to align the fragmented informal civic organisational structure across the neighbourhood's micro-territories with the formal structure of participation addresses the legacy of intra-neighbourhood conflict in Comuna 13. It also builds on micro-local level community activities, thus aims to reduce disenfranchisement related to the lack of local relevance and might enhance sustainability of participation by reducing the tendency to propose community activities for a financial gain.

The episodes of mobilisation and discourses regarding the risk-development nexus thus also clearly show that the three communities' understandings of resilience and sustainability are mediated by the inherent ambivalence between the formal and informal domains. This formal/informal ambivalence refers to spatial terms, specifically due to the tension between the community and municipal boundary definitions (a critical issue already identified at the global level – see subsection 5.2.2, “item boundary” in the discussion regarding definitional boundaries), which overlaps with the organisational tensions, such as those discussed in the paragraph above, with community leaders acting as boundary spanners between the formal and informal spheres.

Summarised in table 12, the overlap between temporality relating to the settlement stage and the organisational aspect, with its implications for conceptual and spatial boundary definitions, clearly relate to the components and sources of urban transformative capacity from figure 5. In the early/arrival stage, with the community's focus being on self-organisation and initially limited mobilisation of external actors, *forms of agency and interaction* only happen at community level. *Inclusivity and diversity* at this stage primarily refer to the community drawing on each other's skills and resources to self-construct the neighbourhood as development as risk mitigation reduction, with *relational dimensions* focused on horizontal (community) level. During the growth stage, with community governance structures for coordination with external formal and informal actors and self-empowerment emerging, the communities' *relational dimensions*

appear to support transformative capacity, which manifests in significant advances of shared construction of physical infrastructure in the neighbourhoods and some legal formalisation. In the consolidation stage, with established vertical links (such as research institutions and NGOs) and horizontal integration in the *relational dimensions* of transformative capacity, a focus on the development processes to address obdurate spatial and organisational tensions relating to the legacy of the formal/informal ambivalence appears critical. This framing brings the discussion closer to entry points to start establishing a connection between the community understandings and the conceptualisations of global and municipal monitoring practices. The discussion in the following chapter brings the critical issues of monitoring risk and development at global, national and municipal, and community level together and draws on the community potentials that emerged from these.

Chapter 8. Discussion: working with translations and tensions in urban sustainability monitoring

8.1. Introduction: Multiples and tensions

Global sustainability governance through goals relies on the translation and interpretation of themes related to the risk-development nexus across scales. Through investigating their transformative capacity characterised by socio-spatial inclusiveness, thematic representativeness and empowerment, this critical analysis of monitoring framework localisation followed the sequence of scalar translations and interpretations from the global to the sub-neighbourhood level. It aimed to make visible the inherent multiples in sustainability governance “by uncovering critical points of interpretation where different perspectives and expertise...are hybridised” (Coaffee and Clarke, 2016) (p. 15) and inequalities “baked in”, resulting in insights into “which understanding is referred to, and from there to why [and whose] resilience¹⁵ is perceived to be a desirable policy outcome” (White and O’Hare, 2014) (p. 938).

This “multiple” – or multiple ways of seeing – to which literature refers regarding sustainability and resilience concepts is matched by tensions in approaches to measuring them. Here commentators point to the political nature of creating indicators and call for critical awareness when designing development and risk monitoring frameworks. Much of these political considerations relate to questions regarding the purpose of the indicator (such as comparison of spatial variability, social learning, empowerment, and legitimisation) and relevance.

Methodological guidance and discussions range between technocratic views where measurement depends on the availability of mostly professionally or institutionally generated data, proposals of thematical groupings of factors that mediate the risk-development nexus (such as the CRI indicator framework), monitoring implemented differently according to scale, and assumptions regarding the interactions between factors of risk and of development. Scale has emerged as the core mediating factor for these multiples and methodological trade-offs in both scholarly and grey literature approaches to measuring the risk-development nexus (Chapter 2). Critical commentators have also encouraged taking a process view and focusing on risk-development *mechanisms* rather than painting a picture of resilience and sustainability

¹⁵ Considering the discussions in the Introduction, resilience in this sense refers to a framing concept relating to reduced risk and socio-environmental well-being and justice, including sustainability.

themes according to a pre-defined template. Such templates, they argue, are based on assumptions about the relevance of baseline factors and their interactions which tend to be driven by data availability and existing measurement practices guided by risk and development conceptualisations, particularly from the global North. These considerations thus clearly point to the role of the multiples inherent in monitoring frameworks for the implementation gap, between sustainability and resilience narratives on the one hand, and the extent to which they are implemented equitably, on the other (Matin, Forrester and Ensor, 2018). The preceding chapters have indicated that this tension also relates to the extremes of a prescriptive approach from the global level down the scale, and the risk of re-labelling existing indicators at the national and municipal level, both of which are not necessarily transformative.

With the cross-scale analysis completed in Chapters 5-7, how then to understand the extent to which monitoring frameworks are transformative? Considering the conceptual framing of localisation as thematic investigation at the different levels proposed in Chapter 3 and the overall analytical concept in Chapter 4, the answer to this question might be obtained by thinking about the extent to which localisation exercises trigger changes and trade-offs within Wolfram's (2016) components and sources of urban transformative capacity (*agency and interaction forms, core development processes, and relational dimensions*). Framed by Hölscher and Frantzeskaki's (2021) three perspectives of urban transformations (*transformations in, of and by cities*) these are results of different emphases in each of the four elements of SDG monitoring framework localisation as thematic investigation (*relevance, temporality, scalar alignment-consistency, and engagement; see figure 4 in Chapter 3*) that emerged from the literature. Following a discussion regarding the purpose and stakeholders of localisation-as-thematic-investigation exercise at each level, this chapter thus discusses the trade-offs in the domains of transformative capacity and considers the implications for the multiple. It will additionally draw on the insights from the third empirical chapter to discuss the extent to which the inclusion of the factors identified there might affect the three components of urban transformative capacity. Figure 13 below illustrates the approach for the discussion in this chapter.

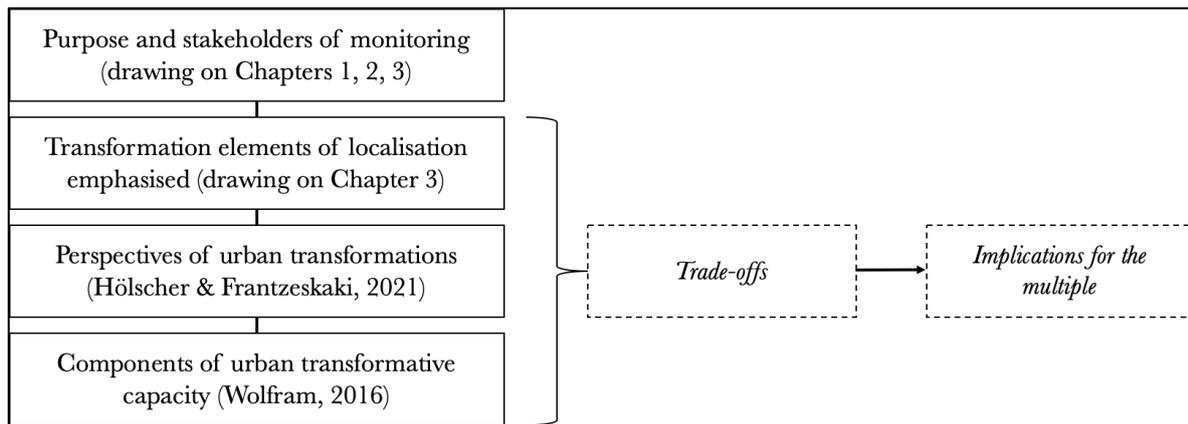


Figure 12: The conceptual approach for the discussion

8.2. Scalar transformation trade-offs of monitoring framework localisation

Transformative capacity of global level monitoring as thematic investigation exercise

With the 2030 Agenda the UN Member States agreed that progress would be “reviewed using a set of global indicators, which will be complemented by indicators at the regional [referring to global sub-region] and national levels” (UNECE, 2018). At the global level, the primary stakeholders of the thematic investigative exercise of reporting are UN-Habitat as the UN agency responsible (the *custodian agency*) for SDG 11 and the National Statistics Offices (NSOs) as entities responsible for generating data and reporting on progress towards that Goal to the High-Level Political Forum (HLPF), convened by the UN General Assembly (UNGA). Driven by the mandate for global comparability, the negotiation for a harmonised (i.e., globally comparable and standardised) conceptual understanding and methodological approach, aims to encourage the UN Member States’ NSOs to reflect on how the respective indicator theme is currently interpreted, and the extent to which this interpretation is inclusive.

Of the transformation elements from figure 4 in chapter 3, the thematic-investigation exercise at this level emphasises *scalar alignment* in the form of convergence among NSOs regarding the SDG target theme and *temporality* to ensure continuity of the datasets used for SDG monitoring. These emphases during the global negotiations help explain the conceptual implementation gap between the inclusive SDG 11 target definitions, and the narrowly defined parameters to measure them identified in Chapter 5. The target definitions with horizontal and vertical inequalities signal the need to account for the latter and encourage the creation of inclusive indicator frameworks. The need for an immediate implementation of the monitoring frameworks to enable temporal consistency up to 2030, however, leads to a limited

consideration of inequalities in the parameter definitions (thus representing a conceptual implementation gap) while the datasets used for measurement at the national level refer to conventionally generated (e.g., census or household surveys) NSO products. The framing of this activity as thematic investigation, and specifically considering the call to verify the change in people's perceptions during such investigations (Freire, 1970) – that is the extent to which conscientisation has happened – provides an additional, dynamic picture of the extent to which monitoring localisation as process has had an impact on transformative capacity.

At the global scale, the methodological negotiations and workshops with the NSOs and respective sector experts have led to a thematical and comparative conscientisation regarding differences in statistical and policy conceptualisations across countries. These dialogues about concepts made visible the differential assumptions among the Member States regarding the SDG target themes and the implicit differentials in institutional frameworks from which the data emerge.

One example of these reflections arising from the global methodological discussions directly relates to the scalar tension between national and city level responsibilities for implementation and monitoring identified in the localisation literature. In this aspect stakeholder discussions for global methodological alignment observed in UN-Habitat workshops have resulted in institutional conscientisation regarding these tensions and the socio-political obduracies underpinning them. There, the discussion among UN global and regional offices, European Commission and NSO officers, and researchers from nine African countries on the tension between the existing, politically defined urban boundary and the global grid (degree of urbanisation) methodology illustrated this process of thematic investigation¹⁶. Considering the not officially recognised neighbourhood of El Pacífico in Chapter 7, whose residents have mobilised in order to be included into the city boundary, and who throughout the neighbourhood's history have dealt with the consequences of being institutionally and spatially marginalised, the potential of these methodological dialogues at the global level as part of the localisation process as a trigger for methodological and institutional transformation have become all too visible. These global discussions thus uncover the implicit transformative (or regressive, if not further addressed at the national level) impact of scalar tensions in monitoring and reflect the national stakeholders' challenges with the trade-off between the relevance and global comparability dimensions of localisation.

¹⁶ Concerns or discussions regarding the extent to which such a technical harmonisation workshop might be considered a neo-colonial activity did not appear in the discussions I witnessed.

The global level emphasis on *scalar alignment* and *consistency* has the following trade-off within Hölscher and Frantzeskaki's (2021) perspectives of urban transformation. It resonates strongly with the *Transformation by Cities* perspective which explores global changes as a result of urban development approaches, particularly its view of cities as “key loci for trialling sustainable approaches and solutions that inform the global sustainability agenda” (p.8). Here, the SDG 11 need for monitoring at city level represents a methodological innovation for national statistics and triggers initiatives for scalar methodological coordination of monitoring between the national and city level, as proposed by UN-Habitat's national sample of cities approach, and dialogues between national and city level monitoring stakeholders. The trade-off lies with these authors' perspective of urban *Transformation of Cities* perspective, which focuses on explaining interactions between urban policy themes. With its emphasis on the *alignment* dimension, the global level monitoring framework does not attempt to explain the interactions between urban risk-development context and outcome. While this resonates with Coaffee and Lee's (2016) view that such mechanisms are not globally generalisable (see Chapter 2) it also means that at the global level the monitoring framework does not aim to establish universal blueprints for the factors of the risk-development nexus. This might appear in contradiction to the combination of broad target definitions being associated to specific parameters, which would suggest an attempt to define the nexus at the global level. As discussed above, it is however an outcome of the methodological negotiations which aim for maximising methodological agreement among Member State NSOs. This negotiated and globally legitimised nature of the global monitoring framework reinforces its role as broad conceptual frame for the multiple interpretations of sustainability and resilience further down the scale. It also highlights the need for an explicit consideration of inequalities in the global monitoring framework (which is the focus of Chapter 5) for localisation to enhance transformative capacity across the scale.

The global framework's implications for Wolfram's (2016) components of urban transformative capacity are analogous to considerations regarding the perspectives of transformation above. The focus on global alignment and framing for methodological mobilisation among NSOs means that changes in *agency and forms of interaction*, which include considerations of inclusiveness and empowerment, are limited at this level. However, as illustrated in the participants' discussions at a 2018 SDG 11 methodological harmonisation workshop, these global-national dialogues and negotiations related to monitoring methodologies have the potential to trigger change in the *development processes* of Wolfram's (2016) urban transformative capacity, particularly by problematising methodological

obduracies related to institutional legacies, such as the discrepancies between actual and political city boundaries, translating into a spatial misalignment between monitoring and implementation. The inclusion of subject matter experts to the global methodological negotiations for moving the indicators towards Tier I (agreed methodology and datasets) status, such as the proposed redefinition of parameters (e.g. in SDG 11.6.1 – from *urban solid waste regularly collected and with adequate final discharge* to *municipal solid waste collected and managed in controlled facilities*) (UN-Habitat, 2018b) is another transformative impact to Wolfram’s (2016) *development process* component of transformative capacity as the critical reflection and subsequent change of indicator criteria sets the agenda for policy implementation. The following subsection will discuss the impact on transformative capacity of SDG 11 global-to-national and municipal localisation and its scalar trade-offs.

Transformative capacity of national-municipal localisation as thematic investigation exercise

While the subsection above considered the methodological discussions for global level reporting, this subsection questions the extent to which SDG 11 monitoring framework localisation at the national and municipal levels has contributed to transformative processes there. Charged with developing an indicator framework that fulfils the dual role of reporting on the set of global indicators and for the national planning context which thematically relates to the respective SDG indicators, NSOs function as methodological boundary spanners. They connect vertically between the global and national scale methodologies, and horizontally act as data brokers by negotiating access to and certifying the statistical quality of data from ministry and similar administrative records for SDG monitoring.

At the city level, the municipal planning departments developing the SDG indicator frameworks appear to have more methodological freedom than the NSOs, since the UN Member States have committed to contribute to the global SDG progress report at country level. The municipal stakeholders are thus not required to draw on data generated by the NSO. This also means that the national and municipal SDG monitoring differ in their approaches of localisation and why moving up or down the scale is more than adding up or disaggregating down the scale as many commentators suggest.

The differing purposes bring the scalar tensions again to the fore since they also lead to differences in indicator specification and datasets used, and thus produce a multiple of how sustainability is enacted at different scales. Within the SDG thematic investigation framework that emerged from the literature in Chapter 3, this particularly refers to the tension between

scalar *alignment* and *relevance*. On the one hand, the national monitoring stakeholders are required to cater for the global need for cross-scalar alignment and continuity across administrations to 2030, and at the national level, ensure that policy relevance of the monitoring framework reflects current priorities meaningfully both at the national *and* global scale, on the other. In the case study, the national government proposes to address that tension by adopting a dual approach with the tracer indicators for scalar alignment and temporal consistency for global level monitoring for each SDG, and the complementary indicators to reflect national policy priorities and relevance.

Following the observation of limited transformative capacity in the nationally localised SDG monitoring framework, interviews with monitoring stakeholders revealed the potential drivers for this apparent shortcoming. The localisation process has resulted in a first transformative step by widening the range of national government level stakeholders; however, temporal obduracy in the indicators that are intended to enhance local representativeness (the *complementary tracer indicators*) reduces scalar alignment for a meaningful translation up and down the monitoring scale and risks closing future spaces of dialogue. This observation makes visible the gap between monitoring and implementation in Colombian national level localisation. While localised implementation is guided by principles of processes of transformative capacity, such as the calls for inclusive reflexive re-evaluation, redesign of existing policies – as suggested in the CONPES strategy document – nationally localised SDG monitoring appears to be a fixed product of the initial process, mediated by the national policy framework at the time of that inter-institutional dialogue at national government level.

In the absence of process criteria for developing localised indicators, the transformative capacity of national level SDG monitoring localisation thus depends on the monitoring purpose and the thematic choice of localised indicators related to the national policy it represents (or represented at the time the CONPES document was adopted) and the national entity's approach to measuring that indicator. The example of the methodological changes to widen the criteria to measure the national housing illustrates this tension and the transformative potential of the localisation exercise at national level in Colombia. With SDG 11.1.1 as SDG 11 tracer indicator used for global level reporting, the NSO was able to negotiate the methodological change for calculating the national housing deficit with the relevant ministry. In this regard the reduction of the threshold of what constitutes overcrowding measured by the number of people sleeping in the same room now reflect the criteria proposed by UN-Habitat, in addition to a reassessment based on the latest census results, which also indicated a reduction of the average number of people living in a dwelling. This methodological adaptation (amongst

others which relate to the housing deficit indicator in Colombia) has significant impacts regarding the right to access social housing for communities living in self-constructed neighbourhoods on the slopes of the densely populated Aburrá Valley, such as El Pacífico and Comuna 13. Chapter 6 suggested that the CONPES document with its tracer and complementary indicators represents an obdurate element as it appears to fix these indicators and their parameters, and that very few of the latter type of indicators are thematically relevant to the global framework while (according to the interview partners) relating to previous administrations' policies, thus cemented in institutional inertia.

However, considering the continuing methodological discussions at the global SDG level, in which the Colombian NSO participates, and the change driven by the adoption of SDG 11.1.1 as tracer indicator for SDG 11, the impact of national methodological localisation on the *components of transformative capacity* is ambivalent. It promoted obduracies due to the requirement for temporal consistency (manifesting in the CONPES document) but also positively affected *development processes* and *relational dimensions* as it triggered critical reflections and a continued search for alternative, non-NSO data sources, including administrative records. This ambivalence, more than a trade-off, can also be seen regarding the impact of the national localisation in view of Hölscher and Frantzeskaki's perspectives on urban transformations. The NSO's position is also ambivalent regarding the extent to which transformations travel across scales (the *Transformation by cities* perspective) because of the drive to align the national indicator system with the global methodology on the one hand, and the tensions regarding the complimentary indicators and the mandate for indicator continuity in form of the CONPES strategy, on the other. The following paragraphs will show that localisation at the city level deals primarily with Hölscher and Frantzeskaki's (2021) *Transformation of Cities* perspective. The localisation in both the Voluntary Local Reviews and the study of Medellín's localised monitoring framework has led to specific interpretations regarding the "kind of and how [urban] system functions are delivered" (ibid.: 7), although uncertainties remain regarding the relation to the national level, with concerns of them measuring past each other.

The transformative capacity trade-off of localisation at the municipal level primarily relates to the increased potential for relevance and engagement on the one hand, and the scalar tension with the national level mentioned in section 3.2. on the other. Enhanced engagement and the consideration of inequalities appeared to be important for most of the VLR narratives, and it also distinguished the Medellín localised 2030 Agenda from the narrative in the national CONPES document. The increased focus on local relevance and scalar methodological

freedom manifested in the VLRs' thematical and procedural heterogeneity. The analysis of the VLRs however also indicated a form of implementation gap in localisation between narratives framed around themes relating to *agency and forms of interaction* (Wolfram, 2016), including calls to account for inequalities in localised 2030 Agenda policy implementation, and the apparent obdurances in the approach to localised monitoring, with limited citizen engagement. The data for the indicators in the VLRs analysed were sourced from agencies and institutions associated with the municipality. With the exception that the process for including data at the NSO level includes a certification process regarding statistical quality (implying less flexibility regarding new data sources), which is not required at the municipal level, this practice is similar to the national level localisation and suggests a positive impact on the *relational dimensions* across municipal policy siloes, especially in the cases of the VLRs which localised a higher number of SDG 11 indicators. However, considering the comparatively increased methodological flexibility (no mandate for alignment with the global framework nor for adherence to national statistical quality control), the implementation gap is significant. While there is an increased flexibility, and thus a multiple in the form of the variety of SDG 11 indicator interpretations, the measurement approaches indicate a limited ability to leverage on that increased flexibility to meaningfully engage with citizens and other civic stakeholders.

The discussions with the planning officers in charge of SDG localisation in Medellín indicated that these contradictions are due to the municipal – national scalar tensions in localisation that were identified in the literature. Regarding the inherent tension between *relevance* and *scalar alignment* at the municipal level, the data from the interviews suggest that municipal monitoring stakeholders indeed appear to perceive localisation as an opportunity to extend the range of monitoring stakeholders, and to reflect on existing policy themes where engagement with new monitoring stakeholders primarily refers to the co-definition of indicator sets and their parameters with municipal agencies. The input of the wider institutional (university and civic) landscape was sought at a further stage of the monitoring localisation process, to identify datasets and sources for the previously defined localised indicators. Considering the inclusion of these actors with a stake in urban monitoring, SDG monitoring localisation therefore appears to have resulted in increased institutional engagement across siloes, which points towards a positive transformative impact on Wolfram's (2016) *relational dimensions* of urban transformative capacity from enhancing *relevance* during municipal level localisation. Similar observations regarding the transformative impacts of monitoring localisation in Medellín apply to approaches for collecting citizens' concerns regarding their

neighbourhoods included a feedback app which algorithmically assigned the themes of their statements to an SDG.

Although citizen input still appears to be mostly “extractive”, the process of engaging with a broader range of stakeholders to agree on (though not necessarily co-create) the local methodology for SDG monitoring is similar to the national level. The municipal level SDG monitoring localisation in contrast appears to encourage increased diversity by engaging with external views, i.e., from institutional stakeholders outside the municipal government, which corresponds to the increased methodological flexibility at that level. Considering the importance placed on the awareness of *temporality* in the assessment of transformative capacity, this carries transformative potential as it decouples SDG monitoring from the policy objectives of the city administration at the time of the definition of the localised framework while enabling continuity. The emphasis on participation is also the municipal officers’ key claim for continued validity of the localised monitoring framework, formalised with a guidance document for future administrations. As indicated, the monitoring localisation exercise has also triggered reflective processes regarding the inclusion of new themes in monitoring, and the search for methodologies and data to enhance representativeness (especially for the national SDG 11 tracer indicator).

The main challenge, however, appears to be scalar alignment with the national level monitoring framework as a result of limited engagement with the NSO. This challenge also appears to be related to the tension inherent to the need for local relevance and resulted in the adoption of different thematical concepts in most SDG 11 indicators. It is also exacerbated by inter-scalar methodological discrepancies in data generation and the lack of locally relevant datasets which can be disaggregated to the city level. Notably, these concerns are reflected in the interview partners’ suggestion that this lack of engagement between scales might lead to inertia and box-ticking as well as their perception of uncertainty regarding the relevance of the local indicators for national level reporting (i.e., up the scale). It was suggested in the municipal level interviews that these appear to be exacerbated in cities with limited technical and financial capacities – implying a reduced transformative impact of localisation in cities “further behind”, while better resourced municipalities such as Medellín appear to have taken the opportunity to have some initial form of transformation.

The discussion in the paragraphs above has focused on the multiple ways in which SDG monitoring is undertaken across scales and the tensions regarding the impact on transformative capacity inherent in this multi-scalar localisation. With localisation of the SDG monitoring framework understood as thematic investigation, the following subsection discusses how

municipal level localisation might be enhanced to generate processes of transformation during this exercise.

8.3. Equitable localisation as a process to Leave No One and No Place Behind?

As described in Chapter 5, the upgrading of indicators along the Tier system is largely (though not exclusively) determined by the availability of disaggregated socio-economic data. In fact, since July 2020, the global indicator framework contains no more Tier III indicators, which means that the Inter-agency and Expert Group on SDG Indicators (IAEG-SDGs; consisting of UN-Agency and Member State NSO delegates, academia and indicator-relevant sector experts) has agreed on the concepts and measurement methodology for all indicators. Through that lens, albeit still a major challenge for the 97 remaining Tier II indicators, inclusive monitoring now is merely a question of technical capacity related to the ability to create sufficiently disaggregated data. The July 2020 SDG indicator classification sheet (UN Statistics Division, 2020) suggests that, for example, for SDG 11.3.2. (direct democratic civil society participation in urban planning), the adoption of a globally “harmonized” methodology for defining the urban boundary the European Commission’s DEGURBA approach) contributed to that indicator’s upgrade from Tier III (no agreed concept) to Tier II (concept definition agreed, limited data availability).

Although no SDG indicator Tier level categorisation exists for municipal SDG monitoring, stakeholders working at municipal level monitoring, including municipal planning officers and global urban development and resilience initiatives have started to address the challenge of the limited city level data availability for the globally defined methodology. Discussions at global and regional (Latin American and Caribbean) scale on urban level monitoring in which I participated during the research emphasised the need to reduce fragmentation of urban sustainability and resilience monitoring approaches, agree on “harmonised” methodologies and methods for SDG monitoring by cities, and promote relevance by disseminating the results among citizens (CODS, 2019).

The existence of measurement frameworks proposed by several city networks and the suggestion of the need for awareness raising among citizens about the local importance of the 2030 Agenda and their city’s performance indicate that the localised monitoring is understood as a product or outcome. While resonating with the debates on the multiple and the variety of purposes of monitoring in chapter 2, this framing also supports the tendency of the professionalisation of sustainability and resilience with tools such as scorecards that define what

it means to be resilient or sustainable, “requiring a high degree of professionalisation and information management...demanding new forms of governance of cities that support the needs of business exploitation” to which Coaffee and Lee (2016) (p.126) pointed.

To address these scalar tensions observed in section 8.2, a move from the (localised-indicators-as-) product to the -process view seems an appropriate purpose of this research, especially as that view reflects the ‘Leave No One and No Place Behind’ principle by allowing for considerations regarding the *equity in decision-making processes, accountability to marginalised groups, the integration of local knowledge, and social learning* amongst other process attributes (Moser et al., 2019). With the conceptualisation of monitoring framework localisation as transformative process, and with equity understood as accounting for *social vulnerability and differential access to power, knowledge, and resources*, as Matin et al. (2019) propose, what then can the insights from the community dialogues about risk and development in Chapter 7 tell us about entry points to enhance equity in that process of knowledge production?

With its analysis of community mobilisation and discourses the field research provided clues for a meaningful localisation of global risk and development frameworks in and with marginalised communities in neighbourhoods with a history of self-construction. It also addressed the conceptual proposal for understanding localisation of global urban monitoring frameworks as thematic investigation for transformation, by considering factors of *relevance, of temporality* (change over time or continuity), scale, and of *engagement* in mobilisation and discourses. These are:

Community internal and external networks – formal or informal

The communities in this research had very strong informal internal networks and sense of belonging at sub-neighbourhood scale in their early stages and later mobilised both municipal and informal external (non-community) actors. A community with strong internal networks, which might even be at micro-territorial scale, as the case study of Comuna 13 has shown, might not conceptually share the municipal development goals, especially if development is still mostly about risk reduction as it was in the early stages of the settlement. It might also be important for continuity and relevance of monitoring to understand the type, scale and continuity of a community’s external networks – for example political (such as the city councillors in the El Pacífico and Moravia examples who are appointed for the duration of the electoral cycle and support a specific political agenda), or existing collaborations with universities (El Pacífico) which might act as community advocates and translators between

community and municipality. Strong informal networks which might have emerged historically, but do not connect to the wider neighbourhood, risk imbalanced (or even politically hijacked) local translations of global development concepts.

Diversity of (tacit) knowledge

Chapters 5 and 6 questioned the transformative potential of the conventional tendency to apply centrally defined categories and interpretations of risk and development indicators at the global, national and municipal levels. The community leaders' insights illustrated the importance of tacit knowledge for equitable transformation. In case of El Pacífico and Moravia, for example, the availability of social housing might count towards the municipally localised SDG 11.1.1 (adequate housing) indicator, and from a quantitative view (though still a qualitative criterion in Colombia's national housing deficit definition) exposure to hazards (landslides in El Pacífico, fire in Moravia) is reduced, but it might not be equitable and transformative because it ignores the community's history and acquired capacities of (responsibilised) self-construction and risk reduction. In Comuna 13, knowledge about the practices of intra-neighbourhood post-disaster gentrification, limited state legitimacy and organisational fragmentation in this self-constructed neighbourhood (amongst others manifesting in the repeated accumulation of rubble), explains the mechanisms that drive the lack of effectiveness on risk reduction, and perpetuating impact on socio-spatial marginalisation of the ban on construction in an area with a high non mitigable risk designation. Conceptualising tacit community knowledge emerged as a key factor for establishing the interlinkages between risk indicators and socio-spatial factors.

Leadership and legitimacy

In the knowledge production process of creating a localised monitoring framework, community leaders can be understood as translators and boundary spanners with a creative role in the formulation of initiatives. From a thematic investigative point of view community leaders interpret the globally defined indicators within the local context. They establish the locally determined thematic interlinkages between risk and development while actively seeking out and creating opportunities for equitable transformation in risk and development governance in relation to their territory. In territories with low state legitimacy due to their histories of marginalisation they also negotiate and translate between the formal and

organically grown and emerging informal structures which have a limiting impact on development or might be leveraged and empowered if translated to a formal structure which is associated to funding, as proposed by the community leader in Comuna 13. The creation of meaningful local relevance is the most tangible outcome (for example, for localised accessibility indicators in low-income high-density neighbourhoods on steep slopes), illustrated by the regressive risk cycle of post-disaster management in Comuna 13, and they are also well placed to identify the socio-spatial and institutional mechanisms of the risk-development nexus the neighbourhood. Community leaders, many of whom are volunteers, are, of course, instrumental to their neighbourhoods' development, especially in neighbourhoods with histories of marginalisation. While it is not the intention of this short paragraph to do justice to their importance, it does aim to draw attention to the fact that their role still does appear to go largely uncounted in the global risk and development frameworks currently in use. Operationalising informal community leadership and its catalysing potential might be an important addition to current indicators of democratic community participation (SDG 11.3.2) and existence of community organisations in sustainability and resilience frameworks.

8.4. Reframing the localisation of SDG 11 monitoring in practice

This research was only possible due to interviews and conversations with stakeholders involved in SDG 11 monitoring in UN-global, national and municipal governance levels, and with community leaders in Medellín. As the case study chapters show, these stakeholders face the challenge of working with the tension in the process of localisation, which, rather than being linear, is a process of scalar negotiation and dialogue. The discussion in section 8.2 also showed that the institutional stakeholders at the three different levels all face the challenge of dual scalar translation, for reporting purposes up the scale and monitoring purposes down the scale. Thus, tensions exist even within the same level of indicator governance. Given this context, the objective of this section is to distil the trade-offs the different stakeholders might want to consider when thinking about SDG 11 localisation and transforming the way this is done. For the institutional stakeholders at the various levels, the question is how to make this process transformative, for it to result in a monitoring framework which accounts for socio-spatial inequalities and is consistently measurable over time, yet is relevant locally and representative, while taking a pragmatic standpoint to minimise the additional administrative, financial and technological burden from implementing it. This section adopts this pragmatic view and

discusses the transformation trade-offs of the localisation process given the framework's dual requirements and its resulting characteristics at each level.

Looking up the scale, the global level the SDG 11 indicator framework is used for global comparison during the annual High Level Political Forum. With the purpose of steering goal-led governance and discussions among the 193 Member States, the UN SDG custodian agencies, subject matter experts and civil society representatives, conceptualisations in the form of the target definitions and their operationalisations with parameters and data disaggregation require broad consensus and alignment for comparability. It also aligns with the purpose of goal setting, which is “to single out a small number of concerns ...to galvanize attention and mobilize resources” (Young, 2017) (p. 33). Viewed through Wolfram's (2016) sources of transformative capacity, the transformative value of monitoring here lies with the provision of a space at the global level for critical reflection on progress and discuss steps towards the identification of broad interlinkages between policy siloes.

Looking down the scale, “with the global indicator sets and reporting templates as starting point” (Hák, Janoušková and Moldan, 2016) (p. 119) the global monitoring framework acts as a device to guide the thematical discussion for the national level localisation. At the national level, this happened with the creation of indicators defined in the CONPES document and subsequent methodological discussions in the case of Colombia, as presented in Chapter 6, as well the global (UN-Habitat)-national (NSO) discussions at the technical harmonisation workshops. The risk to transformation at this translation between global and national levels is that the degree of conceptual abstraction and methodological approach, which is based on national statistical and statistically accredited institutional data (a pragmatic choice), might lead NSOs to focus on the global blueprint indicator design, thus inadvertently sacrificing relevance and representativeness to maintain global level relevance. The opposite effect would be the obduracy and lack of adequacy as the NSO interview partner observed regarding the indicators proposed in the CONPES national localisation strategy. As indicated above, the process of localisation, however, has already led to transformations regarding emerging cross-policy silo dialogues and the reduction, or at least questioning, of obduracies in historically dominant framings, such as the re-definition of housing adequacy and city boundaries. Global-to-national level localisation exercises might thus be complemented by encouraging systematic participation initiatives such as technical harmonisation workshops by the wider national stakeholders with engagement beyond their role as providers for related sector data. This is an important consideration given the tendency to automatise the data extraction from administrative and ministry records and other sources of data for SDG monitoring.

Looking at the next translation down the scale, the link between the national to municipal levels in SDG monitoring is weakly defined in the national to city level (Colombia to Medellín) localisation, as there does not appear to be a clear functional purpose of reporting between these two levels. The limited dialogue between these two levels beyond an alignment with the national level CONPES localisation document is reflected in the municipal interview partners' observations in Chapter 6, and clearly resonates with the scalar conflict identified in the literature. This gap represents a risk to the transformative capacity of localisation because, although I did observe the existence of such initiatives for cross scalar coordination during the field research, interviews at both national and municipal levels indicated that these were not systematic. This limited systematic cross-level coordination in turn reduces opportunities for joint progress review. However, active and systematic coordination between the two levels might accelerate methodological innovation. This is especially in the case for Medellín as one of the eight UN-Habitat pilot cities for its municipal level SDG monitoring methodology, the increased methodological freedom for experimentation at the municipal level as indicated by the heterogeneity of the VLRs, and the higher transformative capacity of the municipally localised framework as indicated in Chapter 6 when compared to the national level. As part of a systematic and mainstreamed approach, there may also be an opportunity for aligning the 100 Resilient Cities initiative and its monitoring framework, with the localised SDG 11 monitoring, as interviews suggested that the link between that global initiative with the Chief Resilience Officer already being located within City Hall (during field research in 2019) and the planning office there appeared to be weak.

With its methodological flexibility, municipal localisation also represents an opportunity to systematically and dialogically engage with those furthest behind within the city for SDG 11 monitoring. The localised monitoring framework in Medellín mostly draws on institutional-administrative databases and some citizen engagement through the Quality-of-Life Survey and its *HablameD* App. A methodologically focused engagement with communities living in Medellín's self-constructed neighbourhoods which would follow the LNOB mandate and ground the localisation in their realities clearly is a challenge. Much of this challenge is related to the extent to which the informal processes can be accounted for and leveraged upon for the SDG 11 monitoring localisation process. Here, a separate methodological approach for localising the indicator framework at intra-urban level (or at least with communities living in neighbourhoods with a history of self-construction) might be useful for enhanced representativeness from the municipality's point of view, and relevance from the communities' perspective. An equitable process of constructing the monitoring framework might directly

leverage on the role of community leaders as translators and boundary spanners between the formal and informal realms in terms of governance structures and in terms of the tacit knowledge regarding the locally differentiated and socio-spatially mediated mechanisms of the risk-development nexus. It is also at the municipal-neighbourhood level translation where critical issues regarding the tendency of global Northern concepts being inadvertently imported might be addressed, and, through such a conscious and systematic process of meaningful localisation, be fed back up the scale. Due to its comparatively higher complexity and limited existing processes to engage systematically and meaningfully with the communities for SDG 11 localisation (unlike the inclusion of the wider institutional actors at the municipal level), pilot initiatives might be one way forward at this level.

This chapter has analysed the cross-scalar trade-offs in transformative capacity as a result of the drivers of the resilience and sustainability multiple at the different levels, suggested entry points for a transformative reframing of the localised indicator framework as process, and reflected on the practical implications monitoring stakeholders at the various scales might want to consider in order to consciously and critically reflect on the trade-offs they face at their governance level. The following chapter takes stock of this research by presenting the findings in response to the research objectives and the limitations. It also relates back to the debates in the literature from chapters 1, 2 and 3 to provide an account of the thesis' contribution to theory.

Chapter 9. Conclusions

9.1. Summary

This thesis aspired to investigate the drivers of the urban resilience and sustainability multiple. With the case study of a global urban sustainability and resilience indicator framework (Sustainable Development Goal 11) being applied across scales it addresses the gap in the literature regarding a systematic investigation of the resilience multiple on the one hand, and regarding the political-institutional nature of urban resilience and development monitoring framework localisation on the other, by following the conceptual journey from the global to the community level.

Situating the thesis within the broader discussions regarding the interactions between considerations of risk and of development, the urban resilience literature, and global resilience and sustainability policies, chapter 1 presented the motivations for the research and its objectives. Chapter 2 focused on the tension between the reasons for creating and implementing urban resilience and sustainability measurement frameworks and critical conceptual challenges with these endeavours. Following this wider discussion which reflectively compared the reasons for measuring resilience, risk and sustainability, and the extent to which the state of the art is currently able to do so effectively, chapter 3 explored the factors which mediate this process in detail, and in doing so presented the conceptual link between the sustainability and resilience multiple and the localisation of global urban indicator frameworks. That chapter critically pointed to the discrepancy between existing guidance for global sustainability policy localisation and the currently limited consideration regarding the process of indicator framework localisation beyond data disaggregation and the use of emerging alternative data sources. Importantly, it also prepared the conceptual ground for the analysis, by framing SDG monitoring localisation as exercise with the potential of triggering change in the components of urban transformative capacity, and critically explored the politics and often unchallenged framing power of indicator frameworks and their tools.

Chapter 4 presented the analytical concept based on the key concepts from the literature review which framed the methodological approach, reflected on the scalar case study approach adopted, and discusses the methodological tools for data collection (document analysis, semi-structured interviewing, participant observation) in detail. Starting with the scalar analysis, chapter 5 examined the drivers of the multiple at the global level, leading to conceptual and practical implementation gaps (as summarised in the findings below). Chapter

6 took a two-tiered approach for the investigation of the interpretations of sustainability and resilience with the localised indicator frameworks. The investigation consisted of horizontal analysis of municipal SDG 11 indicator frameworks globally – resulting in a heterogenous picture in terms of their transformative capacity, followed by a vertical analysis to understand the political-institutional drivers of the scalar differences in translating these concepts. Chapter 7 analysed the community level interpretations of sustainability and resilience with a detailed ethnographic investigation of the themes of mobilisation and the discourses regarding risk, resilience and sustainability. Lastly, chapter 8 brought the three analyses together in a discussion of the tensions, the trade-offs, as well as the institutional mechanisms and impacts of the scalar translation. The following sections in this chapter present the major findings in response to the research objectives, a reflective discussion on the key contributions to theory, the limitations of this research and an outlook for future research.

9.2. Major findings

Addressing the Aims and Objectives

Critically examining the process of cross-scale harmonisation, the first research question related to the tension between comparability and representativeness of global sustainability and resilience frameworks in cities with marginalised neighbourhoods. The overall answer to this question is that from a global point of view, representativeness of intra-urban inequalities is indeed affected, which still presents a challenge for implementing the Leave-No-One-Behind and Reach-Those-Furthest-Behind-First mandates. The factors for this implementation gap relate to:

- the indicator framework conceptualisations which risk glossing over inequalities further down the scale – thus inadvertently “baking in” factors of marginalisation and perpetuating inequalities and a limited critical consideration of the conceptual multiples in the SDG 11 target themes;
- the parameter formulations with their inherent assumptions regarding mechanisms of risk and development acting as blueprints for localisation – thus risking the reduction of relevance and the ability to identify the factors leading to enhanced risk and citizens’ reduced ability to exercise their rights to urban services and well-being; and
- the data sources and production, which currently rely strongly on conventional methods, such as the census or household surveys – thus risking excluding the

“informal” neighbourhoods and overlooking the differential socio-spatial correlations mediating the risk-development mechanisms.

Out of these three, the focus of global SDG 11 monitoring stakeholders for methodological improvements to leave no one behind is on mainstreaming technologies and data practices for enhanced disaggregation, data integration across policy silos and automation, including remote sensing. This technocratic approach would appear pragmatic given the mandate for comparability at the global level, however, it also coincides with a limited explicit consideration regarding the extent to which the process of data generation itself might contribute to the components of transformative capacity, and thus reduce its representativeness. Relatedly, the tension between the broad indicator conceptualisations on the one hand, whose transformative potential depends on the local translation of the conceptual multiples, and the risk of a parameter blueprint that is adopted across the scale with a limited relevance on the other hand, appears unaddressed. It would be important to think about this tension and its trade-offs consciously and systematically during the design of the SDG 11 indicator with each level.

The second research objective focused on the translation of the global methodologies and concepts, specifically – does national and municipal localisation appear to be transformative by triggering new practices and the inclusion of new actors? The horizontal analysis of municipal level VLRs suggests that this only appeared to happen to a limited extent. The analysis of the VLRs suggested that the majority of VLR narratives propose to account for at least one form of inequalities and that citizens would be consulted for SDG 11 planning. However, only a few had SDG 11 indicator frameworks in terms of the extent of disaggregation, citizen participation in data generation methods and diversity of themes which supported their transformative agendas. The vertical analysis which focused on national and municipal localisation in Colombia and Medellín indicated that municipal level localisation was more transformative due to the municipal monitoring stakeholders’ ability to draw on a wider variety of more disaggregated datasets which are not required to adhere to the stricter national statistics quality standards. The stakeholder interviews illustrated the scalar tensions which mediated the outcome of the indicator framework localisation at both the national and municipal levels. At the national level these related to the intention to harmonise the indicator methodologies with the global framework on the one hand, and the obduracy of the national localisation document aiming at continuity of the proposed set of complementary indicators that were negotiated at the time with central government ministries, on the other. This tension has already led to methodological innovations of the national statistics indicator for the housing (habitational)

deficit, due to its status as SDG 11 tracer indicator which aligns with the global methodology for SDG indicator 11.1. The tensions for municipal level stakeholders clearly reflect the national-municipal level scalar conflict to which localisation literature had pointed. These refer to the lack of comparability between the two levels of indicators of the same theme and the general perceived lack of coordination between municipal planning department and the central government entities for SDG 11 monitoring. Thus, while the indicator frameworks could be considered “transformative work in progress” in terms of their socio-spatial inclusivity – with the municipal framework being slightly more transformative – at both national and municipal levels localisation has led to different degrees of engagement and negotiations with institutional actors at the same level, which by itself is a transformative outcome of localisation. The vertical tensions and lack of scalar coordination – likely to be related to the limited clarity of roles for reporting as suggested in the literature – remain a challenge and points to the need to take a systematic governance process approach for SDG 11 indicator design and reporting. This leads to the third question of this thesis with the objective of finding entry points for recalibrating the indicator frameworks to better account for marginalised communities living in self-constructed neighbourhoods.

How can such communities’ understanding of their risk and planning possibilities reframe conceptualisations of the risk-development nexus implicit in the global and municipal monitoring practices? This question relates to attempts to make “the informal” visible and doing so in a way which establishes a dialogue between these marginalised yet self-empowered and organised communities’ understandings of risk, development and resilience and the SDG 11 monitoring framework. This represented a challenge during the field research precisely because of the discrepancy in framings, manifesting in initial community reactions that “this [resilience/sustainability] does not apply here”, while the municipal and national monitoring stakeholders tended to point to the census and household surveys as sufficiently inclusive for capturing the socio-spatial reality in the self-constructed neighbourhoods. The process view of the indicator framework construction (as opposed to the indicator framework as a finished product, as discussed further above) created a space for establishing a dialogue between the risk-development themes as addressed by the community, and the themes inherent in SDG 11. The interviews regarding risk, resilience and development with community leaders and ethnographic participation in community meetings events related to these themes resulted in initial clues regarding the methodological entry points to reframe conceptualisations of the risk-development nexus based on these communities’ realities. The observations confirmed that a first step towards a recalibration of monitoring to enhance sensitivity to realities in self-

constructed urban neighbourhoods is to take a neighbourhood, as opposed to an individual dwelling, approach for monitoring. While the findings of this case study are not generalisable to other locations, this appears to be closer to the communities' histories and realities, since they are the results of collective co-construction. In the case studies the discrepancy in framings could be explained with the limited state legitimacy and the existence of informal governance and organisational structures, a strong sense of belonging and tacit knowledge regarding the socio-spatial mechanisms and interdependencies of the risk-development nexus, with the leaders acting as boundary spanners between the formal and informal realms – all of which emerged from the histories of self-construction. A systematic way to localise the SDG 11 monitoring framework in cities with self-constructed neighbourhoods might thus take a process view by acknowledging and building on these informal processes. While there is no quick “solution”, one way forward might be to continue translating the SDG 11 framework down the scale with the community leaders, by using the global SDG 11 indicator framework as the lens for this thematic investigation and extending the municipal SDG 11 monitoring framework with the “informal” neighbourhood filter.

As already indicated in section 8.3., given the different purposes of indicator localisation at the different levels, a key message is the proposal to develop a *process* framing of indicator localisation across the scale that systematically applies criteria relating to the components and sources of urban transformative capacity, as indicated in the suggestions for further research further below. Such a framing would address gaps in debates regarding the sustainability and resilience monitoring with a differentiated view, in that it complements the currently predominant localised-indicator-as-product focus on data disaggregation. It would also allow a constructively engagement with the inherent trade-offs among the scalar resilience and sustainability multiples and trigger a dialogue to consciously mediate between the scalar trade-offs and their methodological implications, such as the risk of perpetuating inequalities at the municipal level for the sake of comparability at the global level. The institutional discussions and reflections which have emerged during the moments of translation across the global-to-national and global-to-municipal scales in chapter 6 and discussions observed at the methodological harmonisation workshops have already shown the potential of a conscious process view of localisation as thematic investigation (section 3.3) for reframing the multiple, thus addressing regressive impacts of the inherent scalar trade-offs. The reflections regarding the potential of a process view for a constructive engagement with the multiple to address the cross-scalar trade-offs – which were possible due to the cross-scalar case study of the SDG 11 indicator framework – point to the first body of literature to which this thesis contributes (the

resilience literature), as will be discussed in the following section, along with a critical contribution to debates regarding resilience and sustainability framework localisation.

9.3. Key contributions to theory

The key theoretical lenses through which this research was conducted are urban resilience theory (chapter 1), and the emerging body of literature on the localisation of resilience and sustainability measurement frameworks (chapters 2 and 3). Chapter 2 presented the debates regarding the purpose and object of measurement, and chapter 3 reflected on the way these are implemented, with a discussion of the methodological aspects that affect the scalar resilience and sustainability multiple and these measurement frameworks' transformative potential (summarised in the analytical concept figure 5 in chapter 4). The following paragraphs reflect on this thesis' contributions to the above two theoretical arenas.

Chapter 1 discussed earlier commentators' approaches to the concept and showed that resilience has been interpreted in various ways in literature. In their comprehensive review Moser et al. (2019) have shown that resilience has been theorised as trait, process or outcome while others have engaged with the multiple interpretations of resilience (Simon and Randalls, 2016; Chmutina et al., 2016), pointed to the political nature of the concept, including its temporal and spatial application (Meerow and Newell, 2015), identified an implementation gap between the discourses and policy interventions (Coaffee and Clarke, 2015; Chmutina *et al.*, 2016) and explored the trade-offs between specific episodes and scales of interventions (Chelleri et al., 2015). To address this gap and its inherent institutional inertia, they pointed to the need for critical analyses “regarding the extent to which principles underpinning resilience can become enmeshed within the formal planning processes of vulnerable urban areas” (Coaffee and Clarke, 2015) (p.249), with Chmutina et al. (2016) suggesting that there might be a scalar element to this implementation gap.

By investigating this multiple systematically across the scale from the global to the neighbourhood level, the thesis contributed with an insight into its institutional drivers, specifically the extent to which measurement practices might contribute to institutional inertia by “enmeshing” or “baking in” different conceptualisations (the *multiple*) which prevent transformation in governance processes. The case study of the SDG 11 monitoring framework localisation brought the institutional needs and purposes for measurement (relevance, temporality, alignment, engagement) as drivers of the multiple to light. This in turn provides

entry points for a more purposeful and targeted (or Freirean conscientized) engagement with the institutional drivers of the multiple across the scale.

The thesis also expanded the notion of scalar resilience trade-offs (Chelleri et al., 2015) by producing insights regarding the above drivers' cross-scale (to be distinguished from between-scales) trade-offs in the components and sources of urban transformative capacity. For example, the need for comparability and methodological alignment enhanced the *development processes* component of urban transformative capacity by providing a *space for reflection progress* at the global level, and improved *the relational dimensions* (reduction of *horizontal siloes*) at the national level, but led to a negative impact on the *forms of agency and interaction (inclusion)* at the municipal level with the majority of localised indicator frameworks in the VLR reports requiring significant methodological changes if they are to be transformative.

A further example of the cross-scalar trade-off emerging from differences in the interpretations of sustainability and resilience characteristics also related to the tension between temporality and relevance between the global level on the one hand, and the national and municipal levels on the other. Here the need for immediate measurement of progress led to different proxy datasets being used as SDG 11 tracer indicators at different scales. While again supporting the global level mandate for *space for reflection of progress* as source of urban transformative capacity the analysis has shown how the cross-scale multiple gets “baked in” and thus perpetuates institutional inertia, exacerbating the scalar tensions between national and municipal governments within the UN organisational setup which Satterthwaite (2018) had highlighted, thus negatively affecting *relational dimensions* between national and municipal government levels, which is likely to widen the gap between discourses and implementation of urban sustainability and resilience. The cross-scalar trade-off impact at the neighbourhood level relates to the community understanding of resilience and sustainability is shaped by temporality (the settlement stage) and the ambivalence between the formal and informal domains. The need for comparability at the global level leads to a focus on physical structural criteria for measuring housing adequacy and on disaster impact and exposure for measuring risk and resilience. With this framing being adopted at the national and municipal levels in Colombia and Medellín, the research has shown how the mandate for alignment fixed these conceptualisations as policy priorities for SDG 11, thus risking perpetuating the vulnerability and hazard focused understanding of resilience with a limited consideration of the community organisational structures which emerged from this history of informality. Here the scalar trade-off thus refers to the *relational dimensions* between the municipal and community levels, as opportunities for a shared reframing of resilience between municipality and communities might

be overlooked. Thus, by bringing the critical inter-level stages of localisation and their transformation trade-offs to light, one of the outcomes of this thesis is to encourage further investigation and conscious reflection on the transformative impact of monitoring localisation. At the same time, it responds to critical voices who perceive a lack of institutional will to adapt their measurement practices and methodologies by using a case study to document and analyse the inherent socio-political obdurances that make such a change difficult, but not impossible.

These examples point to a further contribution to the resilience literature, which is the role of data as material manifestation and factor shaping the (in)equity of resilience implementation. By viewing the localised indicator framework themes and methodology as interpretation of the sustainability and resilience multiple the thesis has illustrated the impact of the knowledge effect of the indicator frameworks localisation on urban transformative capacity. This was particularly evident in the institutional framings of urban resilience and sustainability as the reliance on conventional datasets and risks enshrining the conventional conceptualisations and limiting opportunities for a negotiated or shared reframing of resilience and sustainability with a diverse range of actors. The study thus does not propose another set of indicators which aim to better reflect the marginalised communities' and their self-constructed neighbourhoods' realities. Rather, based on shared moments in mobilisation and discourses during the co-construction of the communities' territories (thus similar to the neighbourhood effect identified in epidemiology), the ethnographic field research has resulted in connection points (see section 8.3) where research, community activism and institutional practices related to the democratisation of data and measurement practices on the one hand, and monitoring localisation on the other hand, might intersect for the transformative co-construction and operation of resilience and sustainability indicator frameworks.

Relatedly, a key contribution to the debate regarding resilience and sustainability indicator frameworks localisation is evidence of the transformative capacity-enhancing potential of indicator localisation. Here the research took the commentators' question regarding the purpose of measuring seriously by evaluating its likely contribution to transformation. With scholars and practitioners pointing to the modeller's dilemma in making visible the mechanisms between context and outcome, various sets of indicators with antecedent socio-political and environmental conditions have been proposed. As discussed in detail in Chapter 8, while uncritical localisation risks baking in regressive understandings of resilience and sustainability, the study has also brought transformative processes at the various scalar points of translation to light. These processes could be seen in the discussions of national statistics officers when reflecting on the global SDG 11 methodology, leading to windows of

opportunity for a dialogue, such as the case of the city boundary definitions being determined by the degree of urbanisation rather than political-institutional criteria (see chapter 8). This change in measurement practices opens up the possibility of a thematic reframing from illegality and vulnerability to a framing which aligns with the community understanding of resilience. Thus, although it does not aim to resolve them, the process view of monitoring suggested in section 8.3 addresses the scalar tensions between comparability and relevance and representativeness, while promoting the components of urban transformative capacity.

The final contribution provides a concrete entry point for further research which would align with the process view. Given the primary focus on data disaggregation and the integration of non-conventional data in the existing literature, such as citizen-generated data and from environmental and other sensors used for urban operations, the thesis provided a detailed insight into the institutional processes relating to measurement and the localisation of urban indicator frameworks. It therefore contributed with a call for a systematic approach to complement the discussions which focus on technical feasibility and data availability with socio-institutional considerations, such as the continued validity of the indicator across administrative periods and its representativeness in cities with a high degree of socio-spatial variations.

9.4. Limitations

An important limitation of this research is that as a case study-based research it is not possible to generalise its results. Since the study covered the entire scale of SDG 11 monitoring framework governance, from the global to the community, sub-neighbourhood level, generalisation would require a systematic and deeper understanding of the impact of localisation on urban sustainability and resilience monitoring at each level. The limited generalisability is also due to the geographical and social context of the community case studies. Community mobilisation and discourses about risk and development are likely to be different in self-constructed neighbourhoods in countries with different histories of marginalisation. Moreover, the study has only focused on SDG 11 indicator localisation. The transformative potential of other risk and sustainability frameworks implemented at national and city levels, such as the SFDRR and others mentioned in Chapter 2 have not been investigated, although only the SDGs are localised and reported at all scales.

The interviews were conducted with the institutional stakeholders at the national level who were responsible for SDG 11 localisation at the time of the interview (2019). The research did not investigate the previous administration's point of view regarding the reasons for

adopting the set of indicators that were proposed and the extent to which they in fact only relate to that administration's policies. This would require a comparative analysis of the previous and current administration's policies and their relation to the tracer indicators.

Regarding methods, the community interviews only involved community leaders who might have different views to those "further behind" in their communities. Although there are shared characteristics between the communities, the interviews are likely to be biased towards the community leaders' views and their achievements as leaders. During the ethnographic research and repeated walks with the community leaders on several occasions and community meetings I could perceive that they were indeed respected by the community members, and at times they would confirm the community leaders' stories during a conversation. I also witnessed their engagement and the community members' relations with them in different situations, which again supported their stories.

9.5. Future research

This study has followed the process of SDG 11 monitoring framework localisation from the global to the local level and, based on global and municipal interviews, investigated the extent it is inclusive and representative in the context of intra-urban inequalities, and thus might trigger transformation. With a view to reframe indicator localisation towards a process of dialogical thematic investigation at the community level, ethnographic research complemented the institutional perspectives with characteristics of the communities' approaches to risk and development governance. It has contributed to the urban sustainability and resilience debates regarding the implementation gap, specifically the role of multi-level monitoring for transformation in goal-setting governance. During the research one peer-reviewed paper was published in 2018, and a second paper, based on Chapter 6 is being drafted.

For future research it would be important to do deeper longitudinal studies regarding the transformative impact of SDG indicator localisation at one level. This would provide a richer picture of changes in governance processes, as well as the extent to which these changes were subsequently mainstreamed. Moreover, to increase generalisability, a comparative study on SDG 11 indicator framework localisation at the national and municipal level in other Latin American countries and cities would be key. It would further be important to investigate the extent to which the shared community processes and conceptualisations of risk and development are found elsewhere.

A key theme for a follow-on study would be the possibility of leveraging on the community leaders as translators and boundary spanners for a meaningful and transformative localisation of the indicator framework at the municipal level, especially when thinking about its intra-city translation, that is from the municipal to the neighbourhood or even sub-neighbourhood levels.

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