Towards Self-Managed (Urban) Resilience

A Case Study in Social Housing

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Statement of authenticity of material

This thesis contains no material which has been accepted for the award of any other degree or diploma in any institution and to the best of my knowledge and belief, the research contains no material previously published or written by another person, except where due reference has been made in the text of the thesis.

Evandro Davi Holz

Berlin, 13 April 2016
Executive Summary

Cities face a multitude of perils, of both anthropogenic and natural origins – from tornadoes to food shortages, from fires to social segregation. They are progressively concentrating wealth and societal functions with increased intensity, amplifying their centrality in the modern world, but also making them even more susceptible to these threats. Within this context, the concept of ‘urban resilience’ has gained ample prominence, referring to the ability of a city to deal with the problems to which it is exposed, whilst preserving its essential structures and functions.

Urban resilience comprises diverse understandings and relates to varied developments. The objective of this study is to assess what these different visions entail, and how the concept has evolved, in theory and in practice. Moreover, there is a particular interest in how urban resilience initiatives can be applied in the pluralistic environment we live in, via the empowerment of people, as individuals or groups, to proactively act in building theirs and their cities’ resilience – which I refer to as ‘self-managed resilience’.

There are two main principles underpinning the different perspectives on urban resilience. The traditional approach is based on an engineering outlook, and grounded on the understanding cities revolve around a single equilibrium state. An alternative emerging approach relates to an ecological standpoint, considering cities can shift into different states, without changing their basic structure. Differentiation is also made in terms of specific and general resilience: whilst the former refers to the resilience of a specific system towards a particular hazard, the latter considers unforeseen shocks with no relation to specific sources or responses.

These different visions reflect on a set of scales within which the concept of resilience operates. The traditional approach is focused on shocks, i.e. acute, once-off occurrences, such as hurricanes and terrorist attacks. Resilience measures concerning such events relate to coping capabilities, mainly including shorter-term actions towards minimising the impact of events and associated recovery time. New trends also include stresses, i.e. long-term, progressive and/or continuous events, such as water and air pollution or low educational levels. In consequence, adaptive and transformative processes are also taken into account, encompassing longer-term developments that shall allow cities to face and evolve throughout such problems.
The new perspectives on urban resilience recognise crises as intrinsic to the complexities of the world we live in, and actually necessary for our progress. The discontinuous, nonlinear and unpredictable circumstances we experience require us to embrace change and evolve from it. Such pluralism equals to events affecting and being affected by people, communities and cities in different ways, bringing a variety of trade-offs along with potential synergies. A change of paradigm in urban resilience practices, acknowledging this new vision, addressing appropriate scales and the multitude of involved variables, is thus deemed necessary.

In this study, I advocate ‘community resilience’ as the strategy that suitably assimilates this paradigm shift. Community resilience acknowledges that addressing such particular convolutions is only feasible via empowering citizens, along with their tangible and intangible assets, as the main drivers of change. For instance, communities and their individuals can offer valuable sets of skills grounded on their traditional and practical knowledge. Furthermore, initiatives with adequate community engagement are proven to generate the potential to achieve better outcomes, since they tend to be tailored to the particular resources and potentials of their members.

Community resilience features are analysed via a case study of the self-managed component of the social housing programme Minha Casa, Minha Vida in Brazil. The engagement of beneficiaries in all project phases, from design, construction works, and capacity-building programmes, provide significant potential to improve their resilience in social, economic and environmental aspects. Therefore, the programme perfectly portrays the new perspective on urban resilience – transforming an issue (lack of adequate housing) into an opportunity to embrace change and evolve from it.

In general, urban resilience does not substantially differ from many city-related practices. A constant struggle for political and financial support exists; thus, the combination of resilience with other developments can strengthen arguments towards achieving overarching objectives. Above all, there should be great consideration over the diversity of people and the distinct environments they live in, and the fact that circumstances are always bound to change. Allowing for continuous progress in face of shocks and stresses, whilst taking into account people, community and city limitations and potentials, appears to be a most feasible way forward.

Key words: urban resilience, community resilience, self-managed housing, social housing
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“Resilience is not in exceptional beings, but in ordinary people and the natural variables in their surroundings” (Uriarte Arciniega, 2013)
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List of Abbreviations and Acronyms

Caixa: Caixa Econômica Federal
CAO: Comissão de Acompanhamento de Obras
CAS: Complex Adaptive System
CBO: Community-Based Organisation
CCCR: Canadian Centre for Community Renewal
CED: Community Economic Development
CoBRA: Community-Based Resilience Analysis
CRE: Comissão de Representantes
CRPP: City Resilience Profiling Programme
DRR: Disaster Risk Reduction
ECHO: European Commission Directorate General for Humanitarian Aid and Civil Protection
GFDRR: Global Facility for Disaster Risk Reduction
HLM: Hierarchical Linear Modelling
IFRC: International Federation of Red Cross and Red Crescent Societies
JICA: Japan International Cooperation Agency
MCMV-E: Minha Casa, Minha Vida – Entidades
MCMVP: Minha Casa, Minha Vida Programme
MDG: Millennium Development Goal
NEPAC: Núcleo de Pesquisa em Participação, Movimentos Sociais e Ação Coletiva
NGO: Non-Governmental Organization
SDG: Sustainable Development Goal
UN-HABITAT: United Nations Human Settlements Programme
UNISDR: United Nations Office for Disaster Risk Reduction
WARM: Wellbeing and Resilience Measure
ZEIS: Zona Especial de Interesse Social
1. Introduction

[Resilience is] the ability of a system, community or society exposed to hazards to resist, absorb, accommodate to and recover from the effects of a hazard in a timely and efficient manner, including the preservation and restoration of its essential basic structures and functions.


Cities have always strived and endured through a multitude of shocks and stresses – from earthquakes to wars and food shortages. They have defended themselves against threats in the most varied manners within a great array of circumstances; they have vanished and been rebuilt. In most cases, cities have managed to outlast the civilisations that gave birth to them. In other words, in one way or the other, they have always pursued resilience aiming at facing the hazards to which they are exposed.

Throughout transformations, and sometimes catastrophic breaks, what perseveres is the urban fact (Salat and Bourdic, 2012). The urban fact is the ability of the city to subsist and maintain the functions it fulfils, within an environment in transformation. These functions, however, reflect the current reality of the city structure, and are always bound to evolve and adapt based on new needs and new expected outcomes.

The contemporary city incorporates an ever-increasing concentration of wealth and societal functions due to its continual centrality in the modern world. It represents a system of complex interactions between people and their activities, buildings and infrastructures, and the environment. The intensity and the patterns of these interactions result in many particular features that make them even more susceptible to hazards (Coaffee, Wood and Rogers, 2009).

This relatively recent global conjuncture has sparked growth interest in urban resilience. Resilience frameworks have been developed and employed around the globe, with the use of diverse approaches. These outlooks are built on the different understandings of the hazards cities are exposed to, and associated time and spatial scales involved. Overall, new perspectives and approaches are emerging, expanding the range of application of urban resilience in these aspects.

Within these new trends, there is a movement towards empowering people to take action more pro-actively in building theirs, and their cities’ resilience – which I
refer to as ‘self-managed resilience’. This perspective is the recognition that achieving ‘resistance’ against all disturbances people are exposed to is an unrealistic hope (Brudermann, Rauter and Yamagata, 2013). Nevertheless, allowing people to not only manage but to also reach a wider spectrum of assets (e.g. jobs, infrastructure and public services) leads to long-term sustainable resilience by adapting and transforming in the face of increasing uncertainty and unpredictability of events.

1.1. Objectives

The overarching objective of this thesis is the assessment of urban resilience from the perspective of understanding and maximising the capacity of people to anticipate, overcome, adapt and transform whilst facing disturbances. These strains vary immensely, from natural to anthropogenic hazards, occur in wide time and spatial scales, and affect people differently, therefore requiring multi-hazard, multi-sectoral and multi-stakeholder strategies.

I advocate the growing topic of ‘community resilience’ as embodying more closely the idea of ‘self-managed resilience’. It represents the understanding that enhancing citizens’ capacity to improve resilience, individually and collectively, allows the building of capabilities necessary to strive through shocks and stresses. In this case, community refers to people plus tangible and intangible assets, such as infrastructure and social capital, respectively, in the different applicable scales – from a settlement to neighbourhood or a whole city.

Portraying the outlook of community (self-managed) resilience, this research will assess the self-managed social housing arrangement case of Modalidade Entidades (MCMV-E) within the Minha Casa, Minha Vida programme (MCMVP) in Brazil. The objective of the case study is to assess if such provision capitalises the potential for increasing resilience in housing – in an individual, community, neighbourhood and city level. The rationale behind using MCMV-E as a case of community resilience is threefold: (a) the relevance of housing, a human right; (b) the representativeness of the self-management housing concept; and (c) the replicability of the assessment model for any housing arrangement that allows people to partake in the decision-making (details are provided in Section 4.3).
1.2. Problem Statement and Motivation

The use of the concept of resilience in the city context is rather recent. Whilst for the past four decades it has been applied in a number of sciences – e.g. economy, engineering, psychology and ecology (Rodinand and Garris, 2012), the term ‘resilient city’ has seen a sturdy increase in the academia only since 2008, becoming more significant from 2013 (de Jong et al., 2015). Several initiatives worldwide have stemmed from the attention that has been given to urban resilience, being amplified by its immediate connection to climate change. In general, governments and associated institutions at all levels tend to partake in these emerging movements, aiming to take advantage on the momentum and promote new developments, usually without proper proficiency.

Overall, resilience in the urban setting has been focused on economic and infrastructural aspects, usually taking a system-level perspective (Brudermann, Rauter and Yamagata, 2013). In addition, programmes to advance resilience “have not yielded results at local levels, particularly for communities that already suffer from structural inequalities and marginalization” (The World Bank, 2015, p.3). This derives mainly from the narrow understanding of (a) the variety of strains populations face and how differently they affect different people; (b) the potential for communities to play a role in building capabilities of their communities and cities; and (c) the dynamic nature of both of these aspects. This orthodox planning view, with “its attempts at coherence, its desire to predict and control [and] its inflexibility to respond to change and uncertainty [...] set it apart from the pluralistic, spontaneous, market-driven, entrepreneurial and serendipitous dynamics which shape cities in practice” (Hamdi and Goethert, 1997, p.iv).

As a result, the benefits of such strategies rarely reach the poor, and, when they do, they come at very high and unsustainable costs in management and administration.

Concerning mass social housing programmes, and in particular MCMVP, issues including loss of social capital of beneficiaries and the disruption that such settlements can cause in the city fabric are well document in the literature (e.g. UN-HABITAT, 2013). These problems derive from both tangible and intangible factors, such as the allocation of underserviced plots of land and lack of community participation, respectively. As usual, low-income populations are the most affected, since they have the least political and financial resources. MCMV-E is an initiative focused in this stratum, and is seen as an alternative to grant better opportunities to reduce such impacts by allowing beneficiaries, along with a leading entity, to self-manage their settlement.
Drawing on the above, the motivation behind this study is two-fold.

1. **To understand how the evolution of the theory and application of urban resilience** have elicited a more multi-stakeholder and multi-sectoral oriented approach, and to attain a discernment of the potentials and challenges of the application of such perspective.

2. **To investigate how empowering people can improve urban resilience** – particularly within self-managed social housing initiatives, which is still a relatively unexplored area. In addition, to offer an argument to strengthen the movement towards providing better habitat conditions, especially to the most vulnerable, and how urban resilience models can assist to this end.

### 1.3. Research Questions

Whilst advocating towards ‘self-managed resilience’, this thesis develops on three **main topics**: the evolution of urban resilience, the perspective of community resilience and the application of resilience in self-managed housing initiatives.

The main research question is:

“How has urban resilience evolved towards empowering people to ‘self-manage’ resilience?”

The subordinated research questions emulate the structure of this thesis, as follows:

1. **How has the perspective towards urban resilience evolved?**
   - What are the underlying theories?
   - How has urban resilience been applied?
   - What are the successes and challenges of the existing approaches?

2. **What does community resilience entail?**
   - How does its vision assist empowering citizens to proactively act in building resilience?

3. **Does self-managed social housing in the case of MCMV-E provide the potential to improve community resilience?**

### 1.4. Structure

This study is divided into four main segments, as described below.
Urban Resilience (Chapter 2): This chapter entails the description of the main characteristics, such as underlying theory and implementation practices, of the different perspectives of urban resilience. The assessment also includes a discussion over the range of application of the concept, in terms of hazards, time and spatial scales, and the inherent trade-offs and potential synergies arising in resilience-related developments. Information collected is utilised for a critique of these approaches, including their challenges and potentials.

Community Resilience (Chapter 3): This chapter provides the determining aspects of the notion of community resilience, as well as its linkages with concepts described in Chapter 2. In addition, there is a description of how different initiatives assess and employ community resilience practices.

Case Study - Self-Managed Social Housing (Chapter 4): Initially, there is a description of the overall arrangement of the MCMV-E programme. Drawing on studies evaluating the implementation of the project, the potentials for increasing resilience of the programme beneficiaries and their communities is assessed, considering social, economic and environmental aspects. Finally, such potentials are compared to community resilience features provided by selected initiatives described in Chapter 3.

Conclusions and Way Forward (Chapter 5): The final section of this work provides an insight on the evolution of field of urban resilience, particularly in the perspective of empowerment of individuals and communities. Additionally, with basis on the evaluation of the case study, it offers (a) potential improvements towards enhancing the outcome of the current MCMV-E scheme and (b) means of applying resilience as a supporting actor in the provision of social housing. Finally, it provides remarks on the challenges and potentials regarding the application of urban resilience practices.

1.5. Methodology

This work required three main data collection and assessment phases, as described below.

Resilient Frameworks and Community Resilience. This stage of the study comprised mainly desktop research of the available documentation in terms of resilience. This information is found in books, scientific articles and reports from researchers, independent consultants, institutions such as United Nations (UN), Rockefeller Foundation, USAID, The World Bank and private companies such as Arup and Atkins. Frameworks and strategies developed by such entities were reviewed, in order to illustrate
how strategies have been applied globally. Most of the information collected was qualitative.

**Case Study Background.** Also entailing mostly desktop research, this phase focused on collecting information regarding the arrangement provided by MCMV-E. Material was gathered from legislation developed by the different government levels and bodies involved in the programme, as well as newspapers, scientific articles and theses/dissertations that cover particular topics (e.g. participation) and projects. Where available, quantitative data (e.g. regarding financing) was collected.

**Case Study Evaluation.** The appraisal of the potentials for the MCMV-E to increase resilience of its beneficiaries was built on the concepts provided by the different initiatives in community resilience. Above all, the analysis focuses on the most determining characteristics of individuals, communities and associated assets that embrace the idea of ‘self-managed resilience’, including their coping, adaptive and transformative capabilities. Firstly, the potentials were categorised under social, economic and environmental factors – and, within social, under bonding, bridging and linking features. This generic approach is understood to allow a maximisation of the use of the available data (see limitations regarding availability of data in Section 1.6), by not restricting it to specific topics defined by the different initiatives. In addition, this method offers a holistic view, by facilitating the identification and assessment of the inherent linkages between the different agents that affect resilience.

Subsequently, the outcome of the first evaluation was utilised for an analysis of to what level MCMV-E can assist its beneficiaries in achieving the resilient communities’ features defined by three selected initiatives. The features proposed by Red Cross, Canadian Centre for Community Renewal, and USAID were chosen since they represent comprehensive views on community resilience and incorporate an ample range of social, economic and environmental aspects. The MCMV-E arrangement was characterised for each one of the features as (a) being able to substantially improve resilience, (b) being able to improve resilience to a certain extent, or (c) not being able to significantly improve resilience.

Information to substantiate the arguments made were attained from research studies on MCMV-E projects, as well as in communities worldwide that share similar features.
1.6. Limitations

Being still in relatively early stages of study, urban resilience as a concept is by itself limited to the freshness of the debate around it. Although some linearity in the evolution of the approach towards it can be identified, there is hardly consistency in its use. Aspects of both traditional and emerging approaches are often present at some level in most of the cases, and there is little signs one approach will become more prevalent than the other in the near future.

Concerning the case study, the main constraint was the impossibility of acquiring specific information regarding resilience directly from MCMV-E projects, regardless of numerous attempts. In addition, there is very limited literature available on the evaluation of community resilience, as it is understood today, for self-managed social housing initiatives. There are, however, plenty of studies exploring several of the components brought under the term resilience (such as social capital and community action), which were considered accordingly. In addition, studies covering some aspects of community resilience in MCMV-E settlements, and community resilience evaluation in other neighbourhood arrangements, were used to substantiate some of the arguments made.

Moreover, the use of just one case study in self-managed social housing can restrict the representativeness of the evaluation. The analysis comprised several different projects in distinct settings, though, and the core characteristics of such arrangements (e.g. households’ association and mutual self-help) are found in a variety of other housing developments. In general, the comparison of different projects/communities/cities brings inherent difficulties in levelling out information, given the dissimilarity in situations. Nevertheless, the study attempts to come up with arguments and propositions that can be applied in similar initiatives elsewhere.

Finally, since the first MCMV-E settlement was completed only in 2014 (Rodrigo Gomes, 2014), most of the utilised information refers to the planning and construction phases of the projects. Consequently, the progressive insertion of the housing complex into the urban fabric, and the associated relationship to other city elements, are still in early stages. Whereas possible, this assessment considers similar experiences in self-managed social housing that have already been around for a longer period to cover such gap. Ideally, further evaluation to validate findings here made should be performed in the future.
2. Urban Resilience

The field of urban resilience has seen substantial developments, both in theory and practice. The evolution of the concept, for the purpose of this research, is depicted via two main topics: its underlying theories, and its application range in terms of hazard types and spatial and time scales. Concerning practice, there is a debate over trade-offs and potential synergies, intrinsic to any implementation strategy on urban resilience, and examples of how different agents understand and work within this field. Overall, there is a particular interest in understanding how the evolution of the concept and its application have led to the upsurge of ‘community resilience’.

2.1. Theory

In very broad terms, resilience refers to the ability of someone or something to recover from a shock or disturbance. As a concept, it has been utilised in a variety of fields, such as economics, engineering, physics, psychology and ecology. Within an urban context, the engineering and ecological models are the ones more widely employed. These two perspectives, along with the associated concepts of specific and general resilience, multiple stable states, complex adaptive systems, adaptive cycles and panarchy, are described in the next sections.

2.1.1. Engineering vs Ecological Resilience

There are two main resilience perspectives that have been applied to urban systems: ‘engineering resilience’ and ‘ecological resilience’. The former “presumes a single equilibrium state, [...] and refers to the rapidity with which a system returns to its equilibrium after a disturbance” (Wu and Wu, 2013, p.213). The latter considers a system can “absorb change and disturbance without changing its basic structure and function or shifting into a qualitatively different state” (Holling, 1973 cited in Wu and Wu, 2013, pp.213–214). In summary, the main difference between these two visions is that, whilst the engineering one considers only one equilibrium condition, the ecological one understands that a system can have multiple stable states, and evolution is possible as long as the system remains functional.

The engineering resilience vision relates to the ‘traditional approach’ in urban resilience considered by this study. The city is seen as an entity revolving around a stable state, which can be ordered and controlled (Goldstein et al., 2015). Disturbances are
usually seen individually, consequently narrowing down the view on connections between risks and social and economic factors inherent of the city functioning. The main characteristics of such a system are “efficiency, constancy, and predictability” (Wu and Wu, 2013, p.214).

In contrast, the ecological perspective incorporates the new approach, entailing a complex, discontinuous, nonlinear and unpredictable view, within an era of uncertainty and insecurity (Goldstein et al., 2015). Its linkage to urban organisms comes from the later incorporation of socio-ecological systems. The concept focuses on the capability of a system to restore its core functioning services through adaptation, without the need to return to a specified previous operational standard (Cavallaro et al., 2014). It is further defined as (a) “the persistence of relationships within a system”, (b) “the ability of these systems to absorb changes of state variables, driving variables, and parameters, and still persist” and (c) “the capacity of a system to undergo disturbance and maintain its functions and controls” (Gunderson and Holling, 2002 cited in de Jong et al., 2015).

Specific vs General Resilience

The traditional and emerging approaches can also be distinguished through the debate over specific vs general resilience. Specific resilience relates to the particular response of a system towards a known disturbance – the resilience ‘of what, to what’ (and, more recently, ‘for whom’), usually referring to the engineering perspective (e.g. resilience of a neighbourhood to flooding events). In contrast, general resilience is a broader concept, considering the capacity to withstand unforeseen shocks, with no relation to a specific stress or response, related to the ecological view (Wu and Wu, 2013).

It must be noted that both notions (specific vs general) are not mutually exclusive. General resilience is valuable in terms of strategizing a long-term outlook of capacity building that can cover the most diverse and potentially adverse situations, being more relevant when addressing issues related to rapid urbanisation, due to the variety of challenges faced and potentially synergistic effects when addressing them (Chelleri et al., 2012). The use of specific resilience in particular issues, on the other hand, is relevant when tackling short-term and known risks.

The attention to specific resilience, in particular, requires thorough analysis of the “of what, to what, and for whom” aspect. Its characteristics can be found on various cases of highly resilient systems that are locked into undesirable configurations, such as oppressive political systems – in this case, the political regime is resilient towards
uprisings, for example (Elmqvist, 2014). In addition, a strong focus on specific resilience would “tend to make the whole system less diverse, less flexible, and less responsive in terms of cross-sector actions” (Walker and Salt, 2006 cited in Wu and Wu, 2013, p.215).

2.1.2. Multiple Stable States

A basic postulation underlying ecological resilience is the argument that ecosystems have multiple stable states (Holling, 1973). In this sense, cities are argued to be socio-ecological systems subject to a varied degree of changes, hence sharing similar resilience features. The varied forms of stability in ecology are also known as basins of attraction, multiple equilibria, or regimes. The transition between stable states is known as ‘regime shift’, whilst ‘thresholds’ refer to the margins between the basins of attraction. These concepts are represented in Figure 1 below.

![Figure 1. Multiple Stable States (adapted from Wu and Wu, 2013, p.215)](image)

| Example: a city with a reasonable level of resilience, but that can change into a distinct regime in the future due to a shock. | Example: a city with little resilience due to increasing environmental issues or social problems. | Example: a city currently facing severe large-scale stresses, such as escalating violence or food shortage. | Example: a non-resilient city with high levels of poverty and crime rates, and devastating damages from natural catastrophes. |

The change of states can occur through gradual and continuous (e.g. long-term minor social issues) or abrupt and dramatic (e.g. natural catastrophes) processes. It must be noted, though, that slow processes can also incur in sudden events (e.g. long-term social issues resulting into social unrest events) and vice-versa (e.g. flooding event leading to long-term increase in inequality). The traditional approach in urban resilience focuses on abrupt changes, and maintaining, or recovering and bouncing back to, a specific stable state. The emerging outlook, in its turn, includes gradual issues, and renewal, transformation and reorganisation properties, necessary for the evolution towards a new equilibrium (Folke, 2006).

Three are the main characteristics of ecological-systems going through these processes: coping (or absorptive), adaptive and transformative capacities. Coping capacities are hazard-oriented, and refer to reducing the vulnerability of a system to a certain threat. Adaption and transformation, on the other hand, are system-oriented: the
former relates to adjusting a system towards minimising impact of future disturbances – in a sense, improving coping capacities; the latter denotes deeper changes, and the reconfiguration of system’s dynamics in social, economic and environmental aspects on the long-term, not aiming at addressing a specific issue (Redman, 2014).

**Engineering and ecological resilience, naturally, entail different perspectives on multiple state states and coping, adaptive and transformative capabilities.** In general, the engineering approach embraces coping capabilities (and adaption to some extent, in the sense of preventative measures), whilst the ecological one incorporates more strongly adaptive and transformative features (Chelleri, 2012). In other words, whilst the former focus on preventing change, the latter encourages it. This differentiation can be visualised in Figure 2. Adaptive and transformative capabilities facilitate systems changing passing thresholds (tipping points) and, ultimately, reaching new regimes. Coping capacities, on the other hand, are focused on the maintenance of a specific state.

![Figure 2. Coping, Adaptive and Transformative Capacities (adapted from Chelleri, 2012, p.44)](image)

2.1.3. Complex Adaptive Systems (CAS)

CAS are defined as a “system composed of a heterogeneous assemblage of types, in which structure and functioning emerge from the balance between the constant production of diversity [...] mediated by local interactions” (Levin, 1999 cited in Wu and Wu, 2013, p.216). They are originally associated with socio-ecological systems and characterised by adaptive processes and self-organisation in smaller scales that result in effects at larger scales (see ‘adaptive cycles and panarchy’ below).

The concept implies that the reorganisation of sub-systems due to a shock ideally prepares the larger system for better adaptation for future events, increasing its
resilience (Rodinand and Garris, 2012). In addition, it understands that, whilst the overall city functions are maintained, the structure itself might not be. This can be observed both in terms of components of a larger system (e.g. a disruption in a transmission line leading to an upgrade in the electricity infrastructure), or different spatial and organisational scales (e.g. a community that enhances its capabilities after suffer from flooding events can increase the overall resilience of a metropolitan area). In summary, CAS embrace change – fighting against it would actually decrease resilience, since its main goal is to adapt, not to prevent.

2.1.4. Adaptive Cycles and Panarchy

An adaptive cycle denotes the dynamics within an ongoing process of renewal and regeneration CAS often go through. It entails four phases: (1) growth or exploitation, (2) consolidation or conservation, (3) collapse or release, and (4) renewal or reorganisation (Wu and Wu, 2013). Human systems can present similar patterns, though often not going through the steps in the same sequence as above (Walker and Salt, 2006). This process is portrayed in Figure 3.

![Adaptive Cycle](image)

*Figure 3. Adaptive Cycle (Gunderson and Holling, 2002)*

Adaptive cycles occur on a broad spectrum of spatial, temporal and organisational scales; the nested hierarchy of adaptive cycles arranged according to their characteristic scales is termed ‘panarchy’ (Holling, 2001). In other words, panarchy is the hierarchical structure in which natural, human, and socio-ecological systems are
“interlinked in never-ending adaptive cycles [...] across scales, describing the evolving nature of CAS” (Holling, 2001, p.390).

Although consisting of a hierarchical structure itself, panarchy is also seen in deliberate contrast with ‘hierarchy’. It suggests that slow-changing, large-scale processes influence nested sub-systems, but do not exercise control over them. It understands that local self-organised actors and processes can affect higher-order properties, since in a healthy social-ecological system, "each level is allowed to operate at its own pace, protected from above by slower, larger levels but invigorated from below by faster, smaller cycles of innovation" (Holling, 2001, pp.398–399). The term has also been used to criticise institutional agendas aiming at maximising output efficiency by maintaining system’s conditions stable (Goldstein et al., 2015). A graphic view of the concept of panarchy is provided in Figure 4.

![Figure 4. Panarchy (Wu and Wu, 2013)](image)

Cities present panarchical dynamics with nested adaptive cycles with particular scales in space and time. For example, a protest that starts in a specific community and
gains momentum whilst spreading out to the whole city can evolve into a constructive reform or a riot. Whilst the former often is an indicative of resilient institutional systems that promote public participation, the latter can be associated with lack of social resilience, as law enforcement fails to address the uprising revolt. Once the riot is dissipated, managers can count on social capital of the population and/or the financial and political support from supra-level governments to assist with reconstruction efforts (Wu and Wu, 2013).

2.2. Scales

Emulating theory, the scales of application of traditional and emerging urban resilience approaches also entail substantial differences. The debate on specific and general resilience is the one that most influences the spectrum within urban resilience is assessed. In addition, the incorporation of adaptive and transformative capacities, which include more strongly social and economic factors, is an important determinant. These scales are evaluated in three main instances:

1. The horizon of hazards considered, that is, the type of disturbances taken into account when dealing with resilience.
2. The time scales involved, referring to the periods of the occurrence of disturbances and associated societal processes.
3. The spatial scales involved, denoting the different perspectives in considering cities’ supra- and sub-systems.

2.2.1. Hazards

A city and its population are exposed to multiple hazards, of both natural and anthropogenic origin. Natural hazards occur as part of environmental processes (e.g. hurricanes, storms, earthquakes); anthropogenic (or manmade) ones occur in consequence of human activity (e.g. industrial accidents, social segregation and nuclear explosions). For the study of urban resilience, it is important to distinguish the nature of these perturbations in terms of fast and slow variables of change: whilst fast variables relate to shocks (e.g. hurricanes), slow ones refer to longer-term stresses (e.g. continuous pollution of a river) (Chelleri, 2012). It must be noted, though, that low-impact (in the short-term) continuous developments can also lead to fast variables (e.g. increased inequality resulting in social unrest).
The traditional approach on urban resilience has a focus on acute and once-off (on a short-term) occurrences. This approach has been particularly relevant in natural disaster reduction policies (Beilin and Wilkinson, 2015). It includes events of big magnitude, caused by ‘external’ forces, such as floods, storms, heat and cold waves, hurricanes and tsunamis. Nonetheless, it does encompass to some extent manmade threats, such as fires and terrorism. Within the concept of specific resilience, this approach aims at tackling particular events separately – the resilience ‘to what’.

New developments have broadened the scope to comprise long-term issues, both from internal and external agents, including more emphatically those of anthropogenic origin. Overall, it includes matters such as (a) reacting to ecological problems; (b) handling hazards and disasters; (c) coping with shocks in the development of urban and regional economies; and (d) promoting resilience through urban governance and institutions (Leichenko, 2011). Some examples are problems resulting from ongoing rapid urbanisation, such as segregation and poor housing conditions, migration, economic downturns, tourism and health risks. Concerning long-term environmental-related hazards, there are risks of desertification, declining water quality, water scarcity, increasing temperatures, etc. Broadly, it encompasses both shocks and stresses to which cities are exposed. In addition, there is a vision towards augmenting a system’s capacity towards manifold hazards – embodying the concept of general resilience, rather than focusing on solving issues associated with specific events (Arup and The Rockefeller Foundation, 2014, p.3).

2.2.2. Time Scales

Time scale refers to the interval used to assess the dynamics of the urban systems and subsystems (Chelleri et al., 2012). In terms of urban resilience, time ranges related to two main aspects are considered: the hazard itself, and the associated resilience capabilities/measures involved.

As described in Section 2.2.1, the most common denominations regarding the period of occurrence of events are ‘shocks’ and ‘stresses’. Shocks are sudden events – short-time and once-off occurrences (on the short-term), characteristic to the traditional approach. Stresses, on the other hand, are long-term occurrences, or events leading to or resulting from a shock, and have been incorporated by the new vision on urban resilience.

Likewise, coping, adaptive and transformative capacities occur in different temporal scales. Whilst coping features tend to be short-term, with closer relation to
shocks (e.g. financial resources for reconstruction), adaptation and transformative tend to be long-term developments, and more linked to stresses (e.g. improving educational levels). In this case, however, there is no such a clear distinction – the building and ‘use’ of such capabilities usually overlap significantly. Coping capacities can also comprise long-term commitments, as in the building of preventative measures, and long-term structural transitions can derive from reconstruction processes building from them. As an example, measures just before, during and after a flooding event, such as setting barriers to prevent further water movement, providing first aid, and performing reconstruction activities, refer to coping capabilities. In addition, the building of dykes as a medium-term strategy to minimise impacts for future events (preventative adaptation) can follow immediate emergency actions after a flooding event, and assist building this capability. Moreover, adaptive and transformative measures would include long-term and continuous actions, improving water management methods, gaining better understanding of flooding cycles, and perhaps utilising such events in favour of the communities (e.g. by making arid land more fertile).

**Figure 5 below portrays the temporal scales of hazards and resilience features.** Along the time (horizontal) axis, each characteristic is presented in relation to system thresholds, with the definitions used for each one of them, as well as the graphic visualisation (‘ball-in-a-basin’ metaphor, already utilised in Section 2.1.2). The first approach (engineering resilience) includes preventive adaptation and recovery factors, associated with coping capacities, shocks and short-term developments. The second approach (socio-ecological resilience) incorporates adaptation and transformation, and includes continuous stresses, occasionally derived from specific shocks (Chelleri et al., 2015).
2.2.3. Spatial Scales

Concerning spatial scales, urban resilience entails both cities’ sub- and supra-systems, as well as their linkages. Sub-systems include territorial subdivisions (e.g. households, neighbourhoods, districts), infrastructure components (e.g. electricity network, solid waste management system, housing, industrial facilities) and populations (e.g. individuals, groups, associations), amongst others. Supra-systems refer to higher level of governments and institutions, international agents, consumers in a different country, etc.

The difference between traditional and new approaches is again built on the concepts of specific and general resilience. The former focuses in the resilience ‘of what’, i.e. of a particular system, with limited acknowledgement of the linkages between it and other systems. The latter incorporates the understanding the systems are interconnected, horizontally and vertically, and that they influence and are influenced by the others (see CAS and ‘panarchy’ – Sections 2.1.3 and 2.1.4, respectively).

The two-way influence between communities and cities with faraway territories has been denominated ‘teleconnections’ (Chelleri et al., 2015). Those have emerged mainly due to improved modes of communications and transport and spatial reach of policy decisions, and can result in lower resilience levels, but also serve as an opportunity to increase adaptive and transformative capacities. As an example, the increase in demand by international markets of a traditional crop in Bolivia (quinoa) have led to unsustainable
land use in some rural areas (causing land degradation, amongst others), and urban-rural migration. Whilst rural residents had their resilience reduced, city residents benefited from the additional financial resources originating from the extra production. International and local organisations stepped up and developed a programme to increase the rural resilience by working in two directions: (a) shifting from command-and-control water resource management toward adaptive water resource management; and (b) shifting from intensive to organic farming integrated with animal grazing. Preliminary results have shown positive effects of these measures (Minucci, 2012).

2.3. Application

The incorporation of new concepts of resilience by governments and other institutions is still incipient and is naturally a reflection on the view of resilience itself. Challenges arise, for example, from very early stages of resilience developments, for instance in linking the risk assessment, done in a scientific and technical way, to the evaluation of community vulnerabilities (UNISDR, 2011, p.23). Therefore, the most recurrent practices regarding urban resilience are still related to the traditional approach (e.g. reducing risk towards natural hazards), driven by the greater tangibility of dealing with specific risks. Usually, projects do not take place in a holistic way, taking into account the risk a city is exposed to, whilst ignoring the (re)arrangement of risk factors in the environment surrounding them (UNISDR, 2011).

As depicted in Section 2.2, the traditional approach, built on engineering and specific resilience, focuses on mitigation and recovery measures, associated with coping (and, to some extent adaptation) capacities. It consists of actions to minimise the impact of hazards and facilitate the recovery process, such as infrastructure robustness, population awareness, financial means for reconstruction, etc. Such practices are also known as Disaster Risk Reduction (DRR). Programmes portraying these features include “Making Cities Resilient”, by UNISDR, and the GFDRR (Global Facility for Disaster Risk Reduction). The focus on coping capabilities is identified in documentation that elaborates on evaluating resilience, as follows.


- To what extent do partnerships exist between communities, private sector and local authorities to reduce risk?
• What is the scope of financial services available to vulnerable and marginalised households for pre-disaster times (e.g. saving and credit schemes, macro and micro-insurance)?

• To what degree does the local government conduct thorough disaster risk assessments for key vulnerable development sectors in your local authority?

• How adequately are critical public facilities and infrastructure located in high-risk areas assessed for all hazard risks and safety?

• How safe are all main schools, hospitals and health facilities from disasters so that they have the ability to remain operational during emergencies?

• How aware are citizens of evacuation plans or drills for evacuations when necessary?

• How much do warning systems allow for adequate community participation?

Building Urban Resilience\(^1\) (GFDRR) (Jha et al., 2013, pp.173–175)

• Does the location of your critical infrastructure increase the risk from natural hazards?

• Is it cost-effective to move critical infrastructure to a safer location?

• What redundancies can you build in so you will be able to continue operations?

• Does your organization’s governing body understand the risk of natural hazards disrupting services?

• Do you have a simulation program in place that addresses the risk from natural hazards?

• Have you taken part in tests or exercises run by your supply chain or emergency responders?

The engineering focus of such approaches normally leads to the implementation of top-down strategies. Participation of different stakeholders is increasingly being considered, however the technical implications of the measures tend to limit engagement. Some activities that cities have developed in terms of resilience that reflect the DRR vision are (UNISDR, 2012, p.33):

• Taking DRR into account in new urban planning regulations, plans and development activities.

• Establishing councils/committees/disaster management structures dedicated to DRR.

• Establishing education/awareness/training programs.

\(^1\) questionnaire directed to private individuals or organisations that own or operate urban infrastructure, but that can also be used as part of a community and stakeholder participation programmes
• Organizing multi-stakeholder dialogues.
• Undertaking risk assessments.
• Applying simple structural solutions to mitigate hazard impacts.
• Taking environmental protection measures such as tree planting or wetland conservation.

The new urban resilience outlook, drawn on ecological and general resilience, has introduced a multi-hazard and multi-stakeholder approach, whilst incorporating adaptation and transformation capabilities. This includes a stronger consideration of general socio-economic aspects, as employment, education, access to public services, and social networks. Such developments are reflected in initiatives by the United Nations Human Settlements Programme (UN-Habitat) and Rockefeller Foundation, for example.

UN-Habitat created the City Resilience Profiling Programme (CRPP) in 2012. The programme “goes beyond conventional approaches to ‘risk reduction’, delivering a forward-looking, multi-sectoral, multi-hazard, multi-stakeholder model for building resilience that recognizes [...] the inherent interdependencies of each part of an urban system” (CRPP, n.d.). The consideration of the different scales and elements within a city and their interaction, interdependency and integration, are incorporated into five dimensions (CRPP, n.d.):

• **Physical attributes**: from housing units, and unpaved village roads to the complex built environment of mega-cities.

• **Functional attributes**: cities’ processes and flows, from a rural village market to transport hubs, and commercial, governance and social processes.

• **Spatial attributes**: geographical location and distribution in particular spatial terms – from the smallest plot up to peri-urban, regional, national and international contexts.

• **Organizational attributes**: any association of humans for some purpose that can influence the profile of the city. These can be formal, informal, corporate or political; including organisational scale from individual to neighbourhood, regional or national associations; from council of elders to professional or religious associations; as well as more formal entities, such as local, regional or national governments.

• **Time**: the understanding that cities are not motionless, and evolve constantly.

The Rockefeller Foundation initiated the 100 Resilient Cities programme in 2013, with the objective of assisting cities in overcoming the “physical, social, and
economic challenges” they face (The Rockefeller Foundation, n.d.). These include not just short-term shocks, such as natural catastrophes, but also stresses such as “high unemployment; an overtaxed or inefficient public transportation system; endemic violence; or chronic food and water shortages”. Within the City Resilience Framework, developed in partnership with Arup, the following dimensions of urban resilience are defined: Health & Wellbeing; Economy & Society; Infrastructure & Environment; and Leadership & Strategy. Each one of these elements, in their turn, are composed of specific drivers, including, for example, “empower a broad range of stakeholders”, “support livelihoods and employment”, “ensure public health services”, “ensure social stability, security, and justice” and “foster economic prosperity”.

The implementation of the 100 Resilient Cities agenda in the participating cities reflect this holistic vision. In Brazil, for example, resilience programmes are being developed in Porto Alegre and Rio de Janeiro, where workshops have been conducted to analyse priorities towards reducing people’s vulnerabilities, improve adaptive capacity, social equity, as well as incentivising communities to have a collaborative culture. Evaluation is conducted based on the following pre-established indicators (WRI Brasil, 2015):

- Community indicators: social cohesion, and institutional coverage.
- Individual indicators: risk perception, preparedness, communication, knowledge and competencies, and financial resources.

In summary, further to hazard-specific related measures, the new outlook on resilience considers a much broader range of actions. It can include, for example, improving engagement of community-based organisations, empowering vulnerable social groups, promoting capacity-building initiatives for unemployed people, increasing levels of transparency of government data, and improving infrastructure for an underserviced neighbourhood. These, of course, are important measures by themselves, and can be part of the ‘normal’ development plan of a city, but nonetheless increase resilience by providing people with better conditions to face economic downturns, for example.

2.3.1. Trade-Offs and Synergies

One of most relevant factors in implementing resilience (as well as other urban-related) practices is the debate over trade-offs. Any development, regardless of how inclusive and effective, cannot integrate the multitude of elements intrinsic to a city with the same level of consideration, hence demanding a discussion over balance. For urban
resilience, conflicts can arise in fronts such as specific vs general resilience, coping vs adaptive and transformative capacities, normal vs mitigation-oriented development, environmental vs social vs economic impacts, short-term vs long-term value, neighbourhood vs citywide impact, resilience level vs effectiveness, amongst others. Some of these deliberations are elaborated below.

In terms of specific and general resilience, the main challenge is understanding how one affects the other. The complexity lies in the fact that improving general resilience can sometimes result in a negative effect on a specific subsystem, while other subsystems benefit from it. As an example, in a city with very limited financial resources, funding capacity-building programmes, for example, for fishermen that often suffer from seasonal downturns in their income, can minimise the amount of resources available for transport in their neighbourhood. In this case, while the general resilience would increase, the specific resilience of the transport system would be jeopardised.

The discussion over coping vs adaptive and transformative capacities occurs in a similar fashion. As described in Section 2.1.2, whilst coping capabilities mainly refer to specific resilience, adaptive and transformative ones relate to general resilience. Some authors argue mitigation efforts have drawn greater attention than adaptation processes due to the concern that one can lead to the omission of the other (e.g. Wikstrom, 2013). The rationale behind it lies on the fact that adaptation strategies require acceptance of change, and more comprehensive and robust policies, whilst mitigation deals with a higher degree of certainty, making it much more tangible on the short-term.

From the governance and planning point of view, ‘normal’ and ‘mitigation-oriented’ developments ought to be distinguished (Muller, 2007). ‘Normal’ developments are understood as infrastructure and city system upgrades that are part of the status quo development plans, such as the extension of an electricity network to cover a new neighbourhood. ‘Mitigation-oriented’ improvements, on the other hand, in the field of resilience, are the ones taking into consideration prevention towards specific hazards (e.g. climate change related issues). On the above example, this means extending the same electricity network with added robustness to withstand strong storms that have become typical in the area – which might not be economically feasible due to the added costs.

Regarding time scales, “it is important to recognize that short-, medium- and long-term resilience strategies [ideally] coexist as essential, sometimes conflicting components of urban dynamics”, due to the overlay of the perspectives of adaptation
and transformation when dealing with regimes and thresholds, and the multidimensional nature of retrieval (Chelleri et al., 2015, p.188). Managing urban resilience then requires attention to multiple temporal scales, and the balancing of these coexisting multi-scalar approaches and associated powers, interests and inertia. This debate is critical, as “the infrastructure we build today locks us into patterns of behaviour for many years to come” (Muller, 2007, p.100). Referencing normal vs mitigation-oriented developments, this can mean that developments that do not incorporate mitigation practices now, for one reason or another, can severely limit alterations at a later stage. As usual, this affects even more deeply under-resourced communities, since several issues require urgent attention, and reflecting and addressing potential issues of the future is often disregarded.

The dispute between individual or neighbourhood needs vs city needs can arise on the spatial scale, also conveying trade-offs in the social vs economic sphere. For example, while some social welfare programmes might be of great benefit for individuals, they may deprive government of the resources required to address city-level issues, such as arterial infrastructure. Nevertheless, the local government can also consider that acquiring some debt (reducing its resilience) to fund these programmes might be a feasible way to reduce extreme levels of poverty in a certain neighbourhood, empowering vulnerable groups.

Finally, the application of resilience itself brings a conflict with system’s efficiency. Efficiency depends on maximising outputs by reducing function overlaps, for example. Resilience, on the other hand, is built on overlaps and linkages between agents (i.e. having more than one way of achieving one goal). In governance, efficiency is improved via reduction of redundancy (overlap of work between different bodies); however, this can mean increased vulnerability to address novelties (i.e. cases where responsibilities are unclear, such as in climate change issues) (Elmqvist, 2014).

Overall, a way to reduce trade-offs implications is to evaluate potential synergies between different actions (Atkins et al., 2012). This means focusing on measures that can produce valuable effects in more than one aspect, directly and/or indirectly, creating ‘win-win’ or ‘triple-win’ situations. For example, improving walking and cycling infrastructure can primarily improve mobility for and enhance people’s economic conditions by making their commuting easier, but can also boost their social capital (since it facilitates relationships in the neighbourhood) and reduce pollution in the area (bringing health benefits). On the other hand, developments such as park & ride, vehicle quota systems, or low emission zones, although having an impact on congestion and
pollution, probably produce less of such linkages. Applying measures with synergistic effects, due to the betterments in various fronts, are most likely to have better public and political support (Atkins et al., 2012).

Nevertheless, identifying these synergies and evaluating the real-life effects of policies are not an easy task, nor guarantee of successful results. Particular difficulty arises due to the unpredictability of circumstances changing over time. The use of strategic planning towards incremental measures is a feasible approach to this challenge. This method considers upgrades as part of the natural lifecycle of a system, and entails the performance of developments considering the current conditions whilst allowing flexibility and adaptability for future improvements. In this sense, focusing on ‘low or no regret’ policies (i.e. actions that can be more easily adapted in the future) can be an effective approach (Atkins et al., 2012).

In a similar manner, trade-offs can be addressed through ‘soft measures’. ‘Soft measures’ are non-structural processes, such as the use of institutional arrangements, employed to improve management of current resources. It contrasts ‘hard measures’, which include the upgrading of infrastructure, and are usually much costlier. The relevance of ‘soft measures’ has been endorsed by international cooperation agencies, such as the Japanese JICA (UNISDR, 2011, p.39).

Generally, recognition exists that the trade-offs must be addressed to the extent possible during the planning stage. Assessments can use existing tools for scenario planning, for example, which entails the identification of basic trends and uncertainties and the construction of a series of scenarios that can help compensating usual mistakes in decision-making, as overconfidence and tunnel vision (Schoemaker, 1995).

An example of planning towards incremental measures is the application of the ‘making room paradigm’, developed by Shlomo (Solly) Angel (2014). It is built on the principle that the ‘containment paradigm’, which considers supressing city sprawl, is not adequate to rapidly urbanising cities in the developing world. The new paradigm recognises that expansion is inevitable, and that land for public infrastructure should be secured well in advance to allow “more efficient, more equitable, and more sustainable” growth. The methodology includes estimating the amount of land required (based on demographic projections) and planning of an arterial grid, as well as a hierarchy of public open spaces in the area. Such land should have its land right secured, and be protected
from development by the creation of institutional structure, in order for later development of public infrastructure.

2.3.2. Resilience and the Sustainable Development Goals

Following the expiration of the Millennium Development Goals (MDGs), which were established in 2000 and are mostly due in 2015, a new set of goals has been released as part of the Post-2015 International Agenda. The MDGs entailed eight broad goals set by the UN and signed by all its member states at the time, aiming to improve social indicators worldwide – e.g. reduce poverty, increase education levels, promote gender equality and combat certain diseases.

Discussions over the Sustainable Development Goals (SDGs) started in the summit Rio+20 in 2012. The main topic of debate and criticism towards the MDGs was regarding the lack of consideration of environmental and economic aspects. The new package of goals – a total of 17, which was officially released in September 2015, contains a much broader perspective of indicators, and includes a goal (number 11) specific to city development, whilst contemplating economic and environmental factors within the whole range of goals.

The term ‘resilience’ is also cited throughout, and reflects the relevance of the term, along with sustainability, to the new vision of social, economic and environmental development. Some examples of the targets directly related to the implementation of resilient practices are listed below.

Goal 1 – End poverty in all its forms everywhere

- Target 1.5: By 2030, build the resilience of the poor and those in vulnerable situations and reduce their exposure and vulnerability to climate-related extreme events and other economic, social and environmental shocks and disasters.

Goal 9 - Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation

- Target 9.1: Develop quality, reliable, sustainable and resilient infrastructure, including regional and transborder infrastructure, to support economic development and human well-being, with a focus on affordable and equitable access for all.
Goal 11- **Make cities and human settlements inclusive, safe, resilient and sustainable**

- **Target 11.1**: By 2030, ensure access for all to adequate, safe and affordable housing and basic services and upgrade slums.
- **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.
- **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.
- **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.
- **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.

Goal 13 – **Take urgent action to combat climate change and its impacts**

- **Target 13.1**: Strengthen resilience and adaptive capacity to climate-related hazards and natural disasters in all countries.

Even considering only goals and targets explicitly mentioning resilience, the range of incorporated aspects already reflects the holistic view of emerging trends on the field. In addition to these, there are several targets that would relate to resilience, such as food provision (target 2.4), transportation (11.2), economic losses due to disasters (target 11.5), air quality and waste management (target 11.6), and green and public spaces (target 11.7).

2.4. Concluding Remarks

**Being still an incipient concept, the application of resilience should be analysed into perspective.** Although basic definitions tend to converge, there is still limited understanding on the differences between the traditional approach and emerging trends, for example, which naturally leads to initiatives with varying levels of efficacy.
In terms of engineering vs ecological resilience, it is reasonable to assume cities are in a continuous process of internal and external change. “They decline or expand, developing new form and function, dealing with various difficulties such as segregation, changing demographics and spatial patterns, economic crisis and global competition” (Wikstrom, 2013). Therefore, it is unlikely they can enter a state of complete stability, and stepwise evolution is the most probable path of development. Also, it is also possible to assume that cities can reach a similar level of functioning as before a stress however in a different conjuncture, bearing in mind that the ideal scenario is the city evolving throughout its problems, rather than just getting operations back in order.

Above all, there is a concern “about the lack of systematic multi-hazards risk assessment […] factoring in social and economic vulnerabilities” (UNISDR, 2011, p.10). The focus on specific hazards can lead to the simplification of resilience as the opposite of vulnerability (i.e. the more resilient the less vulnerable), disregarding the complex relationship between these terms. Although related, the latter refers to the sensitivity of an individual or community to a disturbance, whilst the former is concerned with the capacities of such entities to resist or recover from a disturbance (Frankenberger et al., 2013). Oversimplifying this relationship consequently narrows down resilience as a “product of a certain place and time period”, since it can only be “verified” by the observation of the impacts of a specific event whenever it occurs (Chelleri et al., 2015, p.182). In addition, since the vulnerability is the problem to be addressed, and there is limited vision that the city should evolve throughout this process, efforts are directed at coping capabilities and recovery works.

In practice, the unidimensional nature of most developments constrains the potential to leverage social and economic conditions. In addition, urban resilience has hardly been applied beyond city boundaries, and have often been limited to either single or narrowly defined issues (e.g. population, climate, energy, water) (Elmqvist, 2014). Although such strategies do reach a certain level of efficacy in optimising resource use and improving coping capacities, cities or individuals cannot truly improve resilience “without acknowledging and accounting for their dependence on ecosystems, resources, and populations from other regions around the world” (Elmqvist, 2014).

Several studies substantiate the thinking of resilience practices as opportunities to boost social justice. Beilin and Wilkinson, for example, argue that “resilience can easily be co-opted by the powerful and reaffirm a ‘business as usual’ norm, even in the face of social-ecological devastation or socio-economic degradation affecting social-ecological
outcomes” (2015, p.1209). However, reduction in underlying risk factors regarding vulnerability – such as poverty, uncontrolled urbanisation, vulnerable rural livelihoods and poor urban governance – have progressed the least while implementing resilient-related practices (UNISDR, 2011, p.27). This explains, for instance, why disaster loss and impacts continue to escalate, and, with no substantial change in approach, can lead to further inequalities and poverty.

Current governance arrangements, though, tend to undermine the potential for integrating strategies in distinct fronts into one overarching objective. On the one hand, there is a risk in compartmentalising ‘resilient’ actions as a different matter, risking of loss of opportunities to develop a fully comprehensive strategy. On the other hand, a certain level of separation is necessary to allow the use of an appropriate level of expertise and depth which can facilitate the access to resources. Yet, so far there is no evidence that resilience has been “hardwired into business processes” (UNISDR, 2011, p.43).

The challenges and limitations posed above require a new approach towards resilience in cities. Emerging trends, although incorporating a new spectrum of application in terms of hazards, spatial and time scales, and social and economic aspects, focus on analysing the resilience of individual cities. Yet, this approach is misleading, since “resilience is an attribute of a system not a locality”, and people rely on resources and services from different locations (Elmqvist, 2014). In addition, such view limits the recognition of the pluralistic environment people live in, and that events affect and are affected by people in different ways. A change of paradigm, addressing appropriate scales, and recognising citizens, as individuals and groups, and their assets as systems, and therefore the main drivers of change, is thus deemed necessary.

In this study, I advocate the concept of ‘community resilience’ as the one that better incorporates this approach. In this case, community (as for people plus tangible and intangible assets) can refer to individuals in groups in different levels – neighbourhoods, districts, or cities. By centring on community resilience, there is a stronger recognition of social and economic aspects, as well as the acknowledgement of the importance of the role of people themselves as potential lead actors in the management of their resources. In other words, this means taking a step back from SDG 11, for instance, and its focus on cities, to SDG 1 (Target 1.5), which emphasises the building of resilience of people, in particular the poor and vulnerable.

The concept of community resilience is further discussed in Chapter 3.
3. Community Resilience

Community is a social entity with a greater meaning than the number of people located in a particular territory. It embraces their social and economic relationships, and the sharing of ideas, customs, goals, institutions and services in distinct levels of conformity and conflict (Uriarte Arciniega, 2013). These variables largely determine their strengths and weaknesses, consequently influencing socio-economic impacts of shocks and stresses and coping, adaptive and transformative capacities. Therefore, here I advocate for the concept of community resilience not only because it incorporates these aspects more strongly, but also because it embraces the empowerment of citizens and communities to take the lead in “self-managing” their resilience.

Community resilience, by definition, stands for the capacity of a community to absorb potential stresses and shocks and evolve whilst maintaining or improving its social, economic and environmental conditions. It is understood as the “balance between economic productivity, environmental health, and the social needs of communities”, i.e. the ability of the community to successfully overcome disturbances based on social (political/cultural), economic and environment parameters (Frankenberger et al., 2013, p.5). Moreover, it is seen “as a process or relationship rather than a property – one that can be framed to permit alignments and divergences between different perspectives” (Goldstein et al., 2015, p.14).

However, people learning how to adapt to changes in social, economic and environmental aspects is not enough. A change in economic, political, cultural and other conditions that lead to social catastrophes or increase environmental damages is necessary (Uriarte Arciniega, 2013). To this end, direct or indirect participation in processes of risk identification and planning of response measures is crucial, as it naturally makes people to commit more strongly in such developments. Community resilience, then, should “bring different perspectives and participants to the discussion, open[ing] up alternatives to well established government approaches to disasters, and encourag[ing] a shift of power, influence, leadership, and responsibility between government and other private and civic organizations and local residents” (Multinational Resilience Policy Group, 2015, p.31).

Community-driven initiatives towards addressing the needs of vulnerable communities in the face of shocks are not a recent phenomenon. When successful, such developments usually benefiting all concerned (The World Bank, 2015). Nevertheless,
as they are usually based in marginalised settlements, they lack financial and political resources. Partnerships with local and national governments, academia and the private sector are thus deemed necessary. This way, communities are recognised as active agents, and can gain access to public services, technical training, and decision-making processes to maintain and escalate their initiatives. Furthermore, these partnerships are precedent setting, as they demonstrate reducing impacts from disturbances require a collaborative approach, in which communities should play a central role.

Via such partnerships, community-based organisations (CBOs) can offer a particularly valuable set of skills towards building resilience. In general, CBOs leverage their participation with grounded experience and practical knowledge, portraying relevant features such as (The World Bank, 2015):

- **Organised, informed, experienced constituencies**: groups of people (e.g. urban poor in informal settlements, farmers) have a strong commitment to address challenges faced by their communities. Capturing their knowledge and experience can be effectively used to catalyse solutions towards building resilience.

- **Field-tested practices and solutions**: communities are proactive and recurrently field-testing solutions to their issues. Institutional partners are usually sought to collaborate in strengthening, refining and scaling up these practical actions.

- **Holistic, multi-dimensional approaches to resilient development**: community-initiated actions normally stem from efforts to overcome crises and its everyday struggles for survival, hence intrinsically incorporating resilience and vulnerability reduction elements. Vulnerable groups facing disasters, in addition, often bundle themes and issues that address interconnected components of disaster risks, poverty and development failures, being able to prioritise strategies that have multiple benefits.

- **Make government programmes responsive and accountable to resilience priorities of the poor**: grassroots-government engagement has been proven to result in a more effective delivery of government programmes, since governments by themselves are often unclear how to address the needs of such populations. Contribution is seen in two ways: communities bring their resilience-building priorities into programmes, showing how public development programmes can be effective in DRR; and via ongoing engagement, communities can enforce the responsiveness and accountability such programmes to local communities.
3.1. Main Features

The concepts underlying community resilience can be directly linked to ecological resilience. From CAS, it takes the vision that change should be embraced, by focusing on adaptive and transformative capacities. From adaptive cycles, it gets the notion of the community as a system within an ongoing process of renewal and regeneration. Drawing on panarchy, it builds on the fact that self-organised actors and processes can affect higher-order system properties. Therefore, the focus on community reflects the acknowledgement that resilience manifests at different levels: individual, household, community, and higher-level systems (e.g. cities, nations and ecosystems) (Frankenberger et al., 2013).

Based on this relationship, coping, adaptive and transformative capacities (previously discussed in Section 2.1.2) can be tailored to communities, as follows (IFRC, 2012; Keck and Sakdapolrak, 2013):

- **Coping capacity**: ability of communities to reduce exposure and impact from shocks and stresses, using resources that are readily available.

- **Adaptive capacity**: proactively making informed decisions on their livelihood based on knowledge of changing conditions. The main difference between adaptive and coping capacities is the temporal scale – whilst the former implies long-term planning, the latter focus on short-term rationale.

- **Transformative capacity**: entailing governance mechanisms, and people's abilities to access assets and assistance from wider arenas (from government, private sector and civil society stakeholders) and participate in decision-making processes. The main distinction between transformative and adaptive capacities concerns the degree of change and outcome they imply – transformation encompasses a paradigm shift towards aiming not to secure, but to improve people’s well-being in face of present and/or future issues.

Several initiatives define characteristics a resilient community should portray. The outlook provided by the Red Cross (IFRC, 2012), complemented by literature by Goldstein et al. (2015), Pooley et al. (2010), Tobin (1999) and Paton et al. (2001) is described below.

A resilient community is the one that...

- ...is knowledgeable and healthy, having the capacities to evaluate and monitor its risks, whilst acquiring new skills.
...is organised, and capable of identifying issues, define priorities and act.

- Features: collaborative problem solving coupled with reflective analysis-in-action to accommodate diverse knowledges and align on a shared future without eliding essential differences; competence (process by which a community works together to identify needs and determine ways to meet those needs).

...is connected, interacting with external stakeholders that can provide support in terms of goods and services, for example.

- Features: high levels of political support; partnerships with private sector; independent and interdependent social networks and appropriate planning taking into account local and national stability; interactions that are experienced as a collective, expression of sense of community and community action.

...has infrastructure and services, such as adequate housing, transport, energy, water and sanitation, and associated means to maintain and upgrade these systems.

- Features: low risk and vulnerability by having robust physical assets.

...has economic opportunities, including alternatives for employment, income and financial services, which are flexible, resourceful and reflective to change.

- Features: technical skills and assets.

...can manage its natural assets, recognising their value whilst protecting, maintaining and improving them.

- Features: community sustainability (meeting individual needs within a culture that harmonizes with nature).

Assets and resources alone, however, are not sufficient to characterise community resilience – it is their quality that determines it (IFRC, 2012). They have to comply with features such as reflectiveness (i.e. ability to evolve reacting to new developments and evidences), flexibility (i.e. being adaptable to evolve based on changing circumstances), self-organisation and adjustment. Additionally, the capacity of persons to cope with threats and learn from them, whilst adjusting to future crises, is not only based on their own willingness. Mostly, “it is a question involving all those societal factors that both facilitate and constrain people’s abilities to access assets, to gain capabilities for learning, and to become part of the decision-making process” (Keck and Sakdapolrak,
As an example, having a well-paid job can provide someone the chance of enrol in a school to finalise his/her studies. In contrast, having a house, but that is isolated from the city, usually incurs in limited access to health services.

The societal factors that enable people’s accessibility to assets majorly encompass intangible features. The most common denomination describing those is ‘social capital’, acknowledged as the foundation of collective action, collaboration, and self-organisation. Social capital can be divided into three types (Frankenberger et al., 2013).

- **Bonding social capital**: defined as the links between community members, including principles such as trust, cooperation, and solidarity.
- **Bridging social capital**: refers to the connections of one community/group to other communities/groups. It can facilitate access to a broader range of external assets and it can cross physical and cultural barriers.
- **Linking social capital**: depicts more ‘vertical’ networks between individuals and groups interacting with institutionalised and formal entities in the society. Resilience, as a discursive formation, can provide a powerful tool for establishing power relations with these institutions.

3.2. Application

As for urban resilience, the application of ‘community resilience’ varies considerably. Initiatives usually require in-depth studies to minimise issues associated with intrinsic heterogeneities within and between communities – which are naturally far more complex than infrastructure systems, for example. Overall, three aspects need to be considered in this sense (Frankenberger et al., 2013):

- The recognition of the inherent diversity of the population in any given community and the consequent uneven levels of resilience of its individuals/groups. This uniformity can influence the building of social capital and, in consequence, resilience capacities. When distinct groups are connected to each other with norms of reciprocity and trust, supported by governance systems and social attitudes oriented to ensure equity, these capacities are strengthened. In contrast, the differences can be aggravated in case collective action is not inclusive and participatory.
- The complexity of community-level systems, in terms of formal and customary institutions, nature and function, differs in the different scales (a small village is different from a provincial capital, for example).
• The debate over individual vs community resilience - the acknowledgement that community resilience does not necessarily equate to uniformly resilient individuals, and vice-versa. In addition, it must be noted that there is a risk of using the term community resilience to disregard structural problems, burdening individuals and communities with the responsibility to tackle issues by themselves, ‘blaming’ them if they are not resilient enough (The Young Foundation, 2012). Similar issues can arise between resilience at other levels, for example community vs city.

**In terms of structure, community-based resilience programmes do not substantially diverge from other types of development plans.** Models are generally built around strategic planning structures, having community resilience appraisals feeding all stages of the process – from analytical assessments, to the review of options, definition of goals, and development and evaluation of plans. An overview of the usual line of action is provided below (Canadian Centre for Community Renewal, 2010; The Young Foundation, 2012).

**Step 1:** Definition of the features of a resilient community according to the programme outlook, with the development of indicators associated to such features.

**Step 2:** Elaboration of a portrait of the community via the collection of data for the defined indicators, as well as the mapping of resources, potentials and challenges.

**Step 3:** Evaluation of data, comparison to benchmarks, and definition of priorities for action.

**Step 4:** Development of plan to address identified issues.

**Step 5:** Implementation of the plan, with monitoring of its efficacy and upgrade whenever necessary.

**Successful community-based resilience programmes typically share certain characteristics.** Broadly, these include engagement – within the community and with other actors, as well as the availability of resources – both in terms of capabilities and funding. The main indicators associated with fruitful initiatives are listed below (IFRC, 2012).

• Enabling environment
  o Motivation and capacity of the community and community leaders.
  o Motivation and capacity of community association stakeholders and the strength of partnerships between them.
Capacity of external actors (government, NGOs, private sector) and the strength of partnerships with them.

- Programme design
  - Level of community participation and ownership of the resilience-building programme.
  - Level of integration of the programme with other sectors.
  - Appropriate balance between standardisation and flexibility in programme design.

- Programme management
  - Sufficient time to implement the programme.
  - Sufficient funding to implement the programme.
  - Adequate assessment, monitoring and evaluation procedures.

Once again, the importance of partnerships with governments, NGOs and private sector is highlighted. As mentioned in Section 2.3, traditional approaches towards urban resilience mostly employ top-down strategies, due to their more technical nature. For community resilience, on the other hand, partners (in particular governments) are seen as enablers of new or pre-existing initiatives. Some recommendations to empower communities to actively participate in such collaborations are provided below (The World Bank, 2015).

- Develop tools to facilitate engagement of communities with other stakeholders, including government and private sector.
- Provide resources for community-led risk analyses and decision-making regarding prioritisation, agenda setting and definition of practices.
- Incentivise collaboration of local, national and subnational governments and associated institutions with communities to advance resilience developments.
- Publicly formalise the roles of communities, providing greater visibility of their capabilities in planning, training, applying and monitoring resilience.
- Institutionalise, formalise and, where possible, scale-up practices and partnerships that portray effective and synergetic outcomes.

There are several initiatives worldwide regarding evaluation and implementation of plans on community resilience. In addition to the one implemented by the Red Cross (see features in Section 3.1), four of them are described below.

**Canadian Centre for Community Renewal (CCCR)**
The CCCR launched the ‘Community Resilience Manual’ in 2000, being one of the first comprehensive programmes in the field. Funded by the Forest Renewal British Columbia, the project started in 1998 aiming at developing a “simple, practical resource that could assist [...] many economically-distressed small towns [...] to assess local circumstances efficiently and effectively, and on that basis make better decisions about how to invest their limited resources” (Canadian Centre for Community Renewal, 2010, p.1.1).

The philosophy, principles and strategies of the initiative are associated with the Community Economic Development (CED). Promoted by the Canadian Community Economic Development Network, the CED refers to actions by populations to create economic opportunities that improve social conditions locally, particularly for those who are most disadvantaged (The Canadian CED Network, nd). Its relation to community resilience lies on its belief that the different sectors and members of communities are all interdependent, and its endorsement of self-reliance, sustainability, and independence as means of dealing with potential issues. Moreover, it focuses on sustainability and resilience rather than the typical goals such as employment or income (Canadian Centre for Community Renewal, 2010).

The CCCR programme defines four dimensions of resilience aspects: people in the community, organisations in the community, resources in the community and community process. Twenty-three characteristics of resilience are defined based on these four dimensions (detailed in Section 4.3.4). Data regarding these characteristics serve as a guidance to the definition of indicators, which ultimately subsidise the development of a portrait of the community. This portrait, in its turn, serve as a basis for the decision-making process over setting local priorities, and for the creation of a plan to address such priorities and strengthen resilience.

USAID

The USAID, United States agency on international aid, has developed a conceptual framework aiming at measuring community resilience as part of its broader Feed the Future Learning Agenda. The programme has the objective of operationalise and evaluate resilience with the recognition of the “ongoing debate over definitions of resilience and measurement approaches” (Frankenberger et al., 2013, p.iii).

The proposed strategy includes evaluation of the socioeconomic context, shocks, stresses, community livelihood assets, social capital, and community social
dimensions. Together, these aspects compose the community's capabilities for collective action that affect community resilience. These capabilities are structured as follows (detailed in Section 4.3.4) (Frankenberger et al., 2013).

- **Community Assets**: tangible and intangible resources used by communities to meet their needs, including human, financial, natural, physical and political capitals.

- **Social Capital**: including bonding, bridging and linking social capitals, as explained in Section 3.1.

- **Collective Capacity of Customary Institutions**: capacity of traditional institutions to implement collective action at the local level in fields such as risk sharing, social protection, resources management, and conflict prevention/mitigation.

- **Community Social Dimensions**: elements of social networks that enable communities to take collective action in face of shocks and stress, including preparedness, responsiveness, learning and innovation, self-organisation, diversity, inclusion and aspirations.

- **Collective Action Capacities**: actions carried out aiming at supporting the security and well-being of community members, including disaster risk reduction, conflict mitigation, social protection, natural resource management, and management of public goods and services.

The use of Hierarchical Linear Modelling (HLM) methods is proposed for the performance of quantitative analyses of data. Such method is applicable to interscalar dynamic of nested relationships, as it occurs between the different levels of resilience. Therefore, it allows an evaluation of how effects at different levels influence the resilience of integrated systems, and the outcomes and their determinants to be included in an integrated analysis.

**The Young Foundation**

The Young Foundation defines resilience as a sum of “features incorporating cultural, human, political, financial and social resources” (The Young Foundation, 2012, p.12). Its community resilience programme is grounded on the understanding that resilience and wellbeing are directly connected: the capacity of taking decisions, to overcome problems and to request assistance, for example, are all resilience behaviours that influence wellbeing. In addition, positive sentiment of wellbeing associated with resilience can result in better levels of subjective wellbeing (Mguni and Bacon, 2010).
Based on this relationship, evaluation of resilience is carried out via the Wellbeing and Resilience Measure (WARM) tool. Considering both ‘hard’ (e.g. infrastructure) and ‘soft’ (e.g. personal relationships) factors, the tool captures community capabilities, such as level of social capital, good schools and social services, as well as its vulnerabilities, such as levels of depression and unemployment. Its structure entails three overarching domains:

- **Self**: personal wellbeing and resilience, including income and wealth, health, education and life satisfaction.
- **Supports**: emotional and broader personal support, including stable families, networks of friends and social networks.
- **Systems and structures**: economic situation, availability of public services and infrastructure, including crime, local economy and effectiveness of public services.

**Along the same lines of other programmes, indicators are defined based on these features.** Data is collected and benchmarked against reference values – either national data, or data from comparable communities. These are then feed into a plan, and later put into action.

**UNDP**

The United Nations Development Programme (UNDP), with support from the European Commission Directorate General for Humanitarian Aid and Civil Protection (ECHO), has developed the Community-Based Resilience Analysis (CoBRA) project. The main objectives of the programme are identifying the characteristics of resilience for a target community; assess level of achievement of these characteristics by the community; identify determinants of resilient households; and identify the priorities in building local resilience (UNDP, 2014).

**The utilised methodology is mostly qualitative.** For data collection, it entails participatory approaches – focus group discussions and key informant interviews. In addition, unlike other initiatives, “it does not identify any preconceived components of resilience but rather allows communities to define it, assess their progress in achieving it, identify households that are more (or fully) resilient and specify the interventions they believe best build resilience” (UNDP, 2014, p.v).

**Four CoBRA assessments have been completed in a pilot programme** – three in Kenya and one in Uganda. The resilience features that were most highly ranked were related to education, access to water and peace and security. Moreover, communities have
realised they currently attain low levels of these features, even in time of no crises. Finally, it was observed that such features did not match with current interventions supported by governments and their partners.

3.3. Concluding Remarks

Overall, community resilience is drawn on a conjunction of tangible and intangible factors, ranging from community networks, mechanisms of social protection, policies/regulations, economic opportunities, formal and informal institutions, physical assets, amongst others. These are all built on different levels, in an arrangement that can be define as ‘layered resilience’, “whereby actions at the individual level feed up to the community, organisational and city scale” (UNISDR, 2012, p.46). This organisation can be associated with ‘panarchy’, and emphasises the importance of cohesive action between actors in different scales, along with a holistic approach to the matter. For example, improvements in education in the individual level can result in empowerment of community associations, which, in turn, can improve the debate over public services with higher-level institutions. Such arrangement is graphically represented in Figure 6.

![Resilience Wheel – San Francisco, California (adapted from UNISDR, 2012)](image)

The community resilience perspective tends to focus on long-term developments. Overall, it works with the understanding that having good social and economic conditions minimise the effects of shocks in stresses. It must be observed, though, that “human behaviour in exceptional situations is very different from human behaviour in ‘normal’ every-day situations” (Brudermann, Rauter and Yamagata, 2013, p.86). These two are indeed interconnected, and, to some degree, one depends on the other – implying that
specific measures towards extreme events, related to emergency procedures, for example, are necessary and should also be considered.

**It must be noted that the community resilience perspective builds on the idea that resilience capacities are already part of people, as individuals and groups.** These features are part of natural processes occurring in society since its origins, leading to its development, normality and balance when they have been altered (Uriarte Arciniega, 2013). Bringing these to “conscious awareness is an important step in moving towards taking intentional action to influence their circumstances” (Canadian Centre for Community Renewal, 2010, p.1.5).

**Finally, the approach towards ‘self-managed’ resilience advocated in this study can be applied in the three main steps of the development of community resilience practices.** The first one refers to enhancing the means for communities and individuals to understand their problems. The second one relates to identifying potential ways forward based on the communities’ potentials and limitations, considering possible trade-offs and synergies. The third step refers to proactively act and implement proposed strategies, monitor developments and adapt them accordingly. Such approach is understood to allow a better consideration of the heterogeneities and unpredictability of society, therefore leading to more suitable measures towards increasing resilience.

The application of community (and self-managed) resilience are exemplified in the case study presented in Chapter 4.
4. Case Study - Self-Managed Social Housing

Urban resilience concepts, in particular community (and self-managed) resilience, will be evaluated through the case of the Modalidade Entidades (MCMV-E) of the Minha Casa, Minha Vida programme (MCMVP).

Massive social housing programmes such as the MCMVP tend to represent both a shock and a stress to the community itself, its surroundings and the city as a whole, with the potential to destroy the continuity and resilience of cities if not adequately planned and implemented. They characterise a rapid and possibly brutal transformation of urban fabric, due to the increase in population in an area, and consequent demand for public services and infrastructure. In addition, they derive from and can result in long-term stresses, since such settlements accommodate populations facing socio-economic struggles, and due to potential issues with the settlements (e.g. limited connectivity to the city), can lead to similar or new stresses (e.g. loss of job due to increased commuting distance).

The significance of using a self-managed social housing arrangement as a case study is depicted in three main aspects.

- **Relevance**: housing is a human right and, therefore, recognised as a priority by several international agencies and governments, being, for example, the first target on SDG related to cities (SDG 11, Section 2.3.2).

- **Representativeness**: self-management housing is not a new concept – populations have taken decisions regarding their dwellings for years. MCMV-E can significantly relate to a wide range of initiatives concerning poor and vulnerable populations that include these characteristics, with or without government participation, such as self-built and incremental housing developments.

- **Replicability**: drawing on its representativeness, the evaluation here made can be replicated, to some extent, in similar initiatives where people are empowered to actively partake in decision-making of their dwellings – from the redevelopment of single units, slum upgrading and, as it is the case, social housing programmes. In addition, the MCMV-E arrangement involves a comprehensive array of stakeholders, from government bodies in all levels, civil society (e.g. community associations, the beneficiaries themselves), private sector (e.g. construction companies, technical advisors), allowing other alternatives to be analysed including part or all these actors.
Naturally, it must be noted that, although MCMV-E does incorporate the features above, replicability of concepts should always be conducted with extra care, as for any other practice in urban development.

4.1. Background

The MCMVP is a massive social-housing programme being implemented by the national government in Brazil since 2009, having delivered 2.169 million units until March 2015 (Portal Brasil, 2015). Within the scope of the MCMVP, the MCMV-E entails the directing of funds for self-organised non-profit entities (*entidades*) for the conduction of self-managed housing settlements. Currently, the MCMV-E responds for approximately 1.5% of the total budget of the MCMVP (Rodrigo Gomes, 2014).

The MCMVP, although capable of delivering housing units for a long-time marginalised portion of the population, presents substantial room for improvement. The main issues identified are briefly described below (UN-Habitat, 2013; Lago, 2011):

- Definition of location of settlements, target group, project design and typologies in charge of the construction company, with very restricted participation of the beneficiaries.
- Use of standardised units throughout a country with continental dimensions, undermining adaptation to site-specific conditions in terms of architectural solutions, availability of local construction materials and responsiveness to local climate conditions and ecosystems.
- Restricted mixed land-use, or ‘official’ allowance for incremental initiatives, limiting potential for socio-economic actions in the settlements.
- Limited capacity-building opportunities.
- Inadequate engagement of the surrounding neighbourhoods in the process, or evaluation of the potential for integration of services, infrastructure, etc.

Due to this scenario, in some cases the MCMVP has actually led to a reduction of the resilience of the communities themselves, its surroundings and the city as a whole. For instance, the widespread use of gated-community development type constraints engagement with nearby communities, often resulting in high levels of segregation within the area. In addition, the lack of mixed-use settlements along with poor connection to the remainder of the city can incur in decreased economic opportunities for the dwellers and increased traffic congestion. Finally, the multitude of identified issues
can provoke the evasion of part of the beneficiaries back to informal settlements, reinitiating the cycle the programme is trying to break.

The MCMV-E presents an opportunity for community associations to self-manage the development of their settlements, allowing more autonomy in the decision-making process of the installations. Albeit it was not tailored to address the problems listed above, the MCMV-E is understood to have a strong potential to tackle some of the issues due to its collaborative nature. Most notably, it replicates, although in a more formal way, the building of tangible and intangible capabilities within a community, either via participation of the dwellers in community decision-making, mutual self-help initiatives or engagement of external stakeholders.

4.2. Minha Casa, Minha Vida – Entidades

The MCMV-E programme was created from the Law 11,977 from 7 July 2009, and has a focus on the lowest income level (Faixa 1) of the MCMVP, with a maximum gross monthly family income of R$ 1,600 (Brazilian Reais). It uses funds from the Fundo de Desenvolvimento Social (FDS, Social Development Fund), which was shaped in 1991 with the objective of financing investments in developments of social interest, such as housing, sanitation, urban infrastructure and community buildings.

*Caixa Econômica Federal* (Caixa) is the national bank responsible for structuring financing for the beneficiaries. Moreover, it provides technical evaluation of the projects and construction works, and have elaborated a handbook with information regarding the MCMV-E (Caixa, n.d.). Data relevant to this study are summarised below.

**Families interested in utilising the MCMV-E modality should be led by an entity:** a housing cooperative, community association, or non-profit private institution (e.g. in the form of community land trusts or condominiums). The entity is the overall manager of the project and can temporarily substitute the beneficiary families in contracting. In addition, families have to be registered in the CADÚNICO, a national programme aiming to portray the population’s socio-economic condition as well as to map low-income families, understand their needs and subsidise the implementation of social services that address their issues.

**The entity, in its turn, must be previously registered in the Ministry of Cities (Ministério das Cidades), under the Portaria nº 474.** This ordinance provides the various requirements for the registration of the entity, including:
• It cannot present any pending issues related to previous projects.
• It should contain, in its statute, the competences for (a) real estate trading; (b) contraction of loans/debts/obligations; and (c) use of real estate as collaterals.

The main tasks to be carried out by the entity comprise:
• To develop and present the housing project according to conditions and requirements regarding legal, social and engineering aspects.
• To assist with the selection of candidates, based on the programme requirements.
• To guide its associates regarding the necessary documentation, from the register process at CADÚNICO, to the financing paperwork.
• To sign the cooperation term with Caixa, as well as the financing contracts.
• To organise all involved parties, ensuring appropriate progress and consistency throughout the project implementation.
• To oversee and monitor works, both during construction and operation & maintenance phases.
• To present the necessary documentation and arrange legalisation of the enterprise with public bodies.

The selection of beneficiary families is based on certain guidelines, in order to ensure the most vulnerable groups are prioritised. Nationally, the following criteria should be considered:

• Families living in risk areas, or that have been displaced.
• Families with women as head of the family.
• Families with disabled members.

Moreover, several additional criteria are listed, however the entity can only choose up to three as their secondary principles. Some examples are cited below:

• Families that live or work within a certain distance from the new settlement (figure to be determined by the entity).
• Families with single parents.
• Families in situation of involuntary cohabitation.
• Families living in unaffordable housing, causing indebtedness.
• Families with members carrying chronic diseases.
• Participation of the family in the projects developed by the entity.
As it can be observed, the criteria encompass a wide range of aspects, including economic, social and health factors. Normally, the first families to engage in the project are encouraged to participate in the selection process of the remaining ones. The programme also includes the reservation of at least 3 per cent of the housing units to elderly people.

**Similar to other social programmes in Brazil, MCMV-E includes consideration of gender issues.** Not only families with women as head of the family are a priority in the selection of beneficiaries, but a woman as the head of the family can sign the contract regardless of the permission from her partner.

**In addition to criteria for the selection of beneficiaries, the Ministry of Cities observes some principles in the evaluation of the project, such as:**

- Better access conditions to public services.
- Environmental sustainability of the project.
- City/neighbourhood demographic growth because of the installation of big enterprises.
- Emergency or calamity situation in a specific area, declared by entitled government bodies.

**The maximum amount of units per settlement is limited depending on the size of the municipality,** varying from 50 in cities with less than 20,000 inhabitants, to 500 in cities with more than 100,000 inhabitants. The amount of units per municipality further depends on the assessment of the housing deficit of each locality, performed by the Ministry of Cities.

4.2.1. Organisational Structure

**In order to ensure an appropriate development of the project, MCMV-E considers the establishment of two committees: Comissão de Representantes (CRE) and Comissão de Acompanhamento de Obras (CAO).** The members of these committees should be elected on an assembly of the entity with the beneficiaries before the contracting of the funds.

**The CRE (representatives’ committee) is accountable for the financial management of the project,** including handling of resources and reporting to the entity itself and the community on the application of the funds. It is composed by at least three
members – one of them should be an entity’s director, whilst the others are future beneficiaries of the enterprise.

The CAO (construction oversight committee) is responsible for overseeing and monitoring the elaboration of the project and/or the construction works, along with the entity itself and the beneficiaries. It should also report to the entity and the community on the project progress. Likewise, it is composed at least by three members – one director of the entity and two beneficiaries; however, these cannot be the same as the ones composing the CRE.

In addition, a project usually relies on assistance from a technical advisory company, which should be endorsed by Caixa. These companies are composed by independent professionals – usually architects and urban planners, along with social scientists, social assistants, sociologists, psychologists, lawyers, amongst others. In Brazil, their history began in the 1990s, along with self-managed housing initiatives at the time. The services provided range from assistance in acquiring land, building of the association, project design, work oversight, participation processes and capacity-building programmes (Jesus, 2015).

4.2.2. Construction Schemes

The programme allows the contracting to be made either directly with individuals or with the entity as an intermediary. Different housing options and modalities are available for each option: individuals are allowed to build individual or scattered dwellings, or to redevelop units in an existing housing estate; entities can only build contiguous units, or redevelop existing units. In addition, the contracting via an entity, for example, allows the use of resources for hiring technical advisors, as well as building larger settlements and using particular land types (e.g. plots being transferred from the state to the entity).

In terms of performing the construction works, the following options are provided:

- Self-managed:
  - Self-construction: the beneficiary him/herself builds the dwelling.
  - Mutual self-help (mutirão): joint effort of a group of people to build the dwelling/settlement.
  - Direct administration: a construction company is hired and conducts the work under direct supervision of the entity.
• Co-managed:
  o Turnkey contract: the construction company is responsible for managing and conducting the building works.

For vertical constructions, i.e. more than one-storey high, the use of the co-managed alternative is compulsory, unless the entity provides evidences of its technical capacity.

4.2.3. Financing and Costs

The MCMV-E focuses on the lowest income level (Faixa 1) of the MCMVP, encompassing families with a maximum gross monthly income of R$ 1,600. At the launch of the programme, this was the equivalent of around three minimum wages in Brazil (around USD 500). By doing so, the government recognises the concentration of the housing deficit in the lower five minimum wage stratum (Rizek et al., 2014). Putting it to a context, in the City of São Paulo alone, it is estimated that 700,000 housing units are needed to address the deficit within this income level by 2024 (Parkin, 2014).

There are also measures that reveal the acknowledgement of the need for heavy subsidies to eradicate this deficit, as described below:

• People with credit issues are also allowed to register.
• The amortisation period is 120 months (10 years), with zero interest, thus the gross amount (valor bruto) payable per month per family amounts for the value of the housing unit divided by 120. However, the monthly net amount (valor líquido) to be paid by the beneficiaries corresponds to the higher of 5 per cent of the gross family income or R$ 25 (around USD 8). The difference is covered by the FDS, adding up to a maximum of around 90% subsidy.
• The grace period (período de carência) of the instalments is of 36 months after the signature of the contract – that is, payments usually only start after the completion of the construction works.
• If 100% of the instalments of a beneficiary group are paid in a particular month, 5% of the total amount paid by the group on that period will be redirected to the entity, with the objective to incentivise timely payment.

The total financial sum provided for a particular project unit corresponds to the operating value (valor de operação), i.e. the forecasted sales value or production cost. The maximum operating value depends on the federal state, the size and location of the municipality where the settlement is sited, and varies from R$ 49,000 to R$ 76,000 (around
USD 16,000 to USD 25,000). This difference is mainly due to the variation in the material and labour costs within the country. These figures are reduced by 8% in case of the contracting by self-management construction schemes, reflecting a production cost lower than sales value.

**The composition of the investment includes direct and indirect costs, each one with specific guidelines.** Direct costs, in short, entail price of land (which should not surpass 15% of the operating value), project design, social works and technical assistance (maximum of 8% of the operating value), and construction management. Indirect costs encompass the administration of the entity’s physical spaces (limited to 0.5% of the operating value), and taxes and fees associated with the running of the entity.

Table 1 presents an example of the financial arrangements of the programme.

**Table 1. Financial Arrangements (elaborated by the author)**

<table>
<thead>
<tr>
<th>Example: settlement with 100 units</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total project cost:</strong> R$ 3,500,000</td>
</tr>
<tr>
<td><strong>Operating value (per unit):</strong> R$ 35,000</td>
</tr>
<tr>
<td><strong>Direct costs:</strong></td>
</tr>
<tr>
<td>Land: R$ 525,000 (15% of operating value – max.)</td>
</tr>
<tr>
<td>Project design, social works &amp; technical assistance: R$ 280,000 (8% of operating value – max.)</td>
</tr>
<tr>
<td><strong>Indirect costs:</strong></td>
</tr>
<tr>
<td>Administration: R$ 17,500 (0.5% of operating value – maximum)</td>
</tr>
<tr>
<td><strong>Instalments:</strong></td>
</tr>
<tr>
<td>Monthly instalment (gross): R$ 291.67</td>
</tr>
<tr>
<td><strong>Family 1:</strong></td>
</tr>
<tr>
<td>Gross family income: R$ 400 (5% = R$ 20)</td>
</tr>
<tr>
<td>Monthly instalment (net): R$ 25 (since 5% of the family income is lower than R$25)</td>
</tr>
<tr>
<td>Amount covered by the FDS: R$ 291.67 – R$ 25 = R$ 266.67</td>
</tr>
<tr>
<td><strong>Family 2:</strong></td>
</tr>
<tr>
<td>Gross family income: R$ 1,500 (5% = R$ 75)</td>
</tr>
<tr>
<td>Monthly instalment (net): R$ 75 (since 5% of the family income is higher than R$25)</td>
</tr>
<tr>
<td>Amount covered by the FDS: R$ 291.67 – R$ 75 = R$ 216.67</td>
</tr>
</tbody>
</table>

**4.2.4. Social Works**

The requirements of the programme include socio-educational activities aiming to empower the community and contribute to the sustainability of the enterprise. These are responsibility of the entity, and should be developed throughout the project, as follows:
• Pre-construction: education on basic concepts of community organisation alternatives and possibilities for representation of the beneficiaries, management of the housing estate, budget administration and cost saving strategies.
• During construction: as a minimum, education on community organisation, environment, heritage, planning and management of household budget, and job generation and income.
• Post-occupancy: consolidation of the processes implemented during previous phases; completion of the activities conducted by the CAO and CRE; empowerment of the implemented organisations; evaluation of the conducted processes and associated products; information regarding the beneficiary satisfaction with the housing unit and local infrastructure, urban insertion, and social development of the community.

4.3. Assessment of Resilience Features

The evaluation of the potentials for increasing community resilience features of the MCMV-E was conducted in two phases.

First, a generic approach considering social, economic and environmental aspects was utilised. (The social aspect was further split into bonding, bridging and linking social factors.) Such approach was chosen in order to maximise the use of data available, without limiting its use in reference to pre-existing definitions of community resilience, and to allow an easier identification of the inherent connections of resilient features in distinct aspects.

Second, MCMV-E potentials were compared to community resilience features defined by three different initiatives. The programme was analysed in terms of to what level it can assist individuals and communities to achieve resilience characteristics according to the selected initiatives.

The evaluation considers coping, adaptive and transformative capacities (see Section 2.1.2), although with a focus on the latter two, as these better reflect the new developments on resilience. The lines within these two, and between them and coping capacities, are, nevertheless, somewhat thin, hence a significant overlap of features that apply to more than one of them is expected. Resilience aspects from the standpoint of the community itself as well as its surroundings and the city as a whole are considered to the extent possible, in line with the panarchy concept. Finally, drawing on the advocacy
towards ‘self-managed resilience’, emphasis was given to factors that allow community to understand their issues, develop indicators and take action on them.

4.3.1. Social

Social resilience is the element that has the most likelihood to be influenced by self-managed housing arrangements. This can be verified in the whole spectrum of social networks – within the community itself (bonding), with its counterparts (bridging), and towards government bodies (linking).

Bonding

The opportunity of engagement of the beneficiaries in the project management is one of the flagships of the MCMV-E. In self-managed processes, families are not just beneficiaries, but the main agents as decision-makers and, consequently, responsible for an adequate progress of the works (Lago et al., 2012). The potential for increasing resilience in this sense can be verified in three main fronts: social networking within the community, participation in the decision-making of the project, and capacity building programmes. All of them can be directly linked to adaptive and transformative capacities, since they empower people to proactively take decisions over matters of their interest, capacitate them to use existing assets with more proficiency, and pursue new assets if needed.

Social networking within the community can be a two-fold situation. Evaluation of cases in Kampala, Uganda, for example, have revealed that individuals on peripheral areas with stronger community cohesion and a greater attachment to place presented low levels of capacity in dealing with shocks (e.g. innovation and self-efficacy). Inner-city communities, on the other hand, although with little community cohesion, presented greater levels of individual adaptive capacities (Chelleri et al., 2015). Some sociologists argue that the overdependence on strong social ties can actually inhibit the ability of a community to work together, since it reduces its capabilities to develop, innovate and flourish through change – even the acceptance and integration of new residents can be a challenge in this sense (The Young Foundation, 2012). Weaker internal links can represent an extension of individual networks beyond the community, linking people at broader levels. This provides channels via which ideas, influences, or information flows can be used by people to acquire knowledge, finance and power, supporting them in achieving goals, such as improved housing, better job opportunities, activities and environmental sustainability (The Young Foundation, 2012).
The composition of the settlements and form of selection of beneficiary families in the MCMV-E, however, vary substantially. Although there is a possibility of families themselves participating in the process, building on the collective nature of the programme, there is no consistency in the level of engagement. A study conducted by NEPAC, evaluating participation in eight MCMV-E projects, for example, revealed that only in three projects the selection was made based on existing associations (most notably religious); in two of them the selection was done via cadastre of families, and in other three it was random (NEPAC-Unicamp, 2015). This means MCMV-E has the possibility of taking advantage of both scenarios: strong social ties by pre-existing groups, and new networks with different people/groups coming to the same settlement.

In terms of participation, having beneficiaries discussing and deciding on the specifics of the project, participating as part of the CRE and CAO and collaborating on the construction itself seem to be the most engaging opportunities (Lago, 2011). Besides having a say on the features of the housing units, the discussion of the use of communal spaces is appealing – for example, deciding together about maintenance of the current lots and community-organised music and holiday events (Osborn, 2013). The use of the mutual-help approach in the construction of the units is also one of the activities that most contribute to the building of a “sense of belonging, of collectivity, and of solidarity” (Camila Nobrega, 2015).

The reality in terms of the quality of participation, though, varies significantly. For instance, the study performed by NEPAC (2015) revealed that only two projects managed to reach satisfactory levels of internal decentralisation and engagement of the beneficiaries. Interestingly, in some cases, the problematic relationship of the families with their entity's leadership due to the centralisation of power has resulted in stronger linkage between the families themselves, considered one of the positive factors in cases especially where the housing estates are isolated from the city (Lago et al., 2012).

Nevertheless, beneficiaries tend to see the participation process itself in a satisfactory manner. According to the NEPAC study, for the projects in construction phase, the level of participation in the meetings is around 87%. For the projects that have already been completed, the levels of engagement tend to be reduced – around half of the dwellers still keep in contact with the managerial entity, whilst only around 28% still participate in meetings and assemblies. The aftermath of the participation process, nonetheless, is twofold. Some residents, particularly from settlements with the poorest levels of infrastructure and connection with the city, stated their interest in claiming for
better services has increased significantly. Overall, however, most of the residents reported that their interest in getting to know their neighbours, claim their rights, or participate in the movement did not change significantly.

However, the association between higher levels of participation and the satisfaction of the beneficiaries with the project is not so straightforward. Two factors seem to drive this outcome. First, the burden that the participation process can put into populations already extenuated from long workdays, including long commutes. Second, the view of the concentration of power by the entity leadership as bringing more agility to the processes, requiring less discussion time, and allowing families to have their house completed in a reduced period of time. This can be observed, for example, in the use of *mutirões*, i.e. mutual self-help initiatives. Historically, *mutirões* had been used for any activity related to housing construction, but naturally resulting in longer construction times. In MCMV-E, it has been mostly constrained to cleaning, property surveillance, bureaucratic tasks, or specific chores as part of construction (e.g. organising materials), representing only about 10% of the works, and are not always a synonym of high levels of engagement (Jesus, 2015).

**Capacity-building initiatives come mostly in form of the social works included in the programme** (see Section 4.2.4). They include activities such as environmental and property management, recycling, debates over gender, family, young, elderly and society issues, and promotion of projects as communal gardens and orchards, landscaping, sewing cooperative, vocational courses, amongst other alternatives for self-provision and income generation (Friedrich, 2013; Jesus, 2015). In addition, they can arise in the form of technical training for those who participate in the construction, or that are part of the CRE and CAO. The knowledge acquired in project management as part of the social works, for instance, can provide a more comprehensive grasp of the possibilities and limitations of the project. It also offers an opening for a better understanding on prioritisation of necessities, potential vulnerabilities, and potential for betterments in the future, whilst also bringing the political values of the organisation and the mobilisation linked to the social movement.

**Bridging**

The networking of a MCMV-E community is particularly relevant with four agents: surrounding communities, similar initiatives, construction companies and technical assistance groups. Although linkages tend to be initially limited to the entity-
level, engagement of individuals is also common. The widening of the network of the community is important in building adaptive and transformative capacities, by allowing people to capture assets from a wider spectrum of possibilities. As examples, good relationship with neighbours allow the use of additional public facilities, and better-planned settlements can be developed in cooperation with contractors and technical advisors.

**Regarding interaction with nearby communities, having an entity and its beneficiaries as the leaders of a housing project brings certain benefits.** When compared to usual models where construction companies take the lead, engagement between two similar entities tend to be much more straightforward. As neighbouring communities usually share analogous internal and external strains, associations joining forces in negotiating demands with the local government enhance bargaining power and the likelihood of having claims addressed (Lago et al., 2012). In addition, sharing of facilities (e.g. community centre and health facilities) and collaborative initiatives between associations, such as elderly, youth and child care centres, and black empowerment groups, have been observed (Jesus, 2015). Furthermore, MCMV-E settlements appear to offer less resistance to new investments in the surroundings than a slum or usual MCMVP settlement, as it has been verified in Viamão, Rio Grande do Sul (Lago, 2011). The rationale behind it is that people working actively towards developing a settlement is better accepted than groups awaiting full state assistance.

**The main issue in the interaction with its surroundings lies in the fact that most of the MCMV-E housing estates are built as gated communities.** This leads not only to physical segregation, but also social differentiation – residents of the settlement sometimes want to be separated from the ‘others’, i.e. people that still live in self-built houses (Jesus, 2015). The debate also lies in overcoming the trade-off between settlement vs city resilience: whilst the use of gated-settlement setups can mean a safer environment for the community, for example, it can mean higher levels of segregation on the city level.

**MCMV-E entities can also associate with other similar developments to share experiences and demand better services** (UN-Habitat, 2013). In the State of São Paulo, for instance, where a network of social housing movements has been in place for around 30 years, housing-related demands already encompass a series of ancillary requirements: basic infrastructure, buses lines, kindergarten, schools, health units, public and leisure spaces, bank branches, diversified commercial activity, aesthetics of the project, construction and architecture project quality, larger size. In Porto Alegre, where such
developments are more recent, requirements are narrowed down to a standardised housing unit and provision of transport (Lago, 2011). In both cases, the history of such initiatives also results in these regions representing most of the MCMV-E settlements.

**The influence over contractors is particularly important in enabling the entity and its beneficiaries to ensure the project reflects their needs and desired outcomes.** The level of authority in this case, however, varies considerably. In the NEPAC study, for example, six of the eight projects enjoy acceptable levels of decision-making autonomy over construction companies. As expected, self-managed options tend to provide higher authority levels for entities than co-managed ones (NEPAC-Unicamp, 2015). The debate between self- and co-managed schemes revolves around three main aspects (Jesus, 2015):

- Construction companies, due to their experience, can shorten construction time and compensate time lost with bureaucratic processes; settlements were entities exert full control over construction, though, usually have higher quality.
- Any issues during construction will be of responsibility of the contractor; however, experienced entities already possess sufficient technical capabilities in this field.
- With proper supervision, contractors will not be able to obtain unreasonable profits; although this is already normally the case in MCMV-E, there are ideological concerns related to the difference of interests of the company and the entity.

**In general, there is a tendency for entities to opt for direct administration arrangements combined with mutual self-help.** As mentioned above, this model still faces great resistance and has not been fully incorporated by the programme, since there are questions regarding the capacity of the families and entities in the management process, particularly in relation to the project risks. Moreover, it is not uncommon that the project works in a similar fashion as if the entity was just a client of the contractor, whilst the latter enjoys advantages in taxation. This arrangement, understandably, reflects in the development aftermath – little difference is seen between projects presented by poorly empowered entities and the ones by construction companies (Lago et al., 2012).

**Adequate technical support is understood to be an essential factor for successful projects in the MCMV-E.** Better outcomes are clear for all construction schemes, including turnkey projects (NEPAC-Unicamp, 2015). The relationship of technical assistance agencies and self-managed housing movements in housing initiatives dates back to the early 1990s, more particularly in São Paulo (Observatório das Metrópoles, 2011). In Rio de Janeiro, where such initiatives are still in earlier stages of evolution, these entities
have been of great aid in going through the bureaucracy still prevalent in the contracting process (Osborn, 2013). Where effective monitoring of the works prevailed, improvements were verified in all project phases, from the definition of the layout, to the utilised materials and the solution of construction issues. Where entities did not have such support, there are cases of reports of work conditions analogous to slavery and structural problems due to the poor quality of construction (NEPAC-Unicamp, 2015).

**Linking**

The relationship of the community and the entity with formal institutions, in particular government bodies, is vital for the building of transformative capacities. The MCMVP, in its core, is drawn on a decentralisation process, providing autonomy to local governments in the institutional and legal realms to set up initiatives in housing and other urban related matters (UN-Habitat, 2013). In theory, the greater closeness of the local government to the entity and to project brings the possibility of a more tailored relationship, enhancing the openness for the negotiation of demands, for example. In addition, a good engagement with the local government, including its support in negotiating land, can be of significant aid by, for example, establishing credibility for the entity towards the land owners, since self-managed housing initiatives remain relatively unknown (Lago et al., 2012). In reality, however, the low technical and political capacity of most municipalities has not led to substantial levels of support in this regard (UN-Habitat, 2013).

There are two determining factors driving such relationships in practice:

- **The continuity of self-management experiences in the same region**, particularly relevant in incorporating new demands other than the housing unit itself in terms of infrastructure and public services. This happens since the history of such initiatives make local governments better aware of their specific needs.

- **The connections of entity leaders**, either indirectly via a strong ‘umbrella’ movement, or directly with politicians and governmental institutions. For instance, entities linked to national movements tend to have more insertion in the government via its national associate (NEPAC-Unicamp, 2015).

National housing movements do indeed portray a significant level of bargain power, as it can be observed in the outcomes of negotiations with the national government. In October 2015, for example, amidst discussions over the launching of the third phase of the MCMVP given political and economic issues Brazil was facing, there
was a promise MCMV-E settlements would be prioritised. Additionally, upgrades in the demand selection and the debureaucratization of the programme were ought to be included in the new edict. The demand for an increase in the funding assigned to MCMV-E and an increase in the standard unit size, however, are to be defined posteriorly (Gomes, 2015). In addition to the connections of the main leaders, occupations are the main form of the movements to gain momentum. Just in the city of São Paulo, there are around 15,000 families living in this condition in association with one of the movements, for example (Parkin, 2014). In these cases, there is pressure towards either allowing the settlement to be constructed in the occupied area, or the designation of a different plot.

4.3.2. Economic

**MCMV-E provides a great array of opportunities for increasing economic resilience.** In the pre-construction phase, for example, there is a priority for people that work close to the new settlement, or currently live in unaffordable houses, and there is a possibility (although limited) of beneficiaries selecting the location, taking into consideration the proximity to jobs. During the construction, capacity-building programmes allow residents to apply the newly acquired knowledge in their professional lives. Post completion, in addition to taking advantage of the actions from previous phases, residents can engage in economic activities within the settlement or in public services (e.g. new schools or health facilities) made available nearby the settlement (Observatório das Metrópoles, 2011).

**Improved economic conditions are reflected on different spatial levels.** For example, better economic prospects can minimise potential post-occupancy issues, such as people leaving the settlement looking for better opportunities and coming back to the housing ‘market’, not an uncommon occurrence in the normal MCMVP. Furthermore, the reduced total cost of the unit, and the subsidies provided by the government, minimise the economic burden of the beneficiaries, which can result in higher individual power purchase and increased income for local shops.

**Above all, the factor that most affects the economic resilience of MCMV-E is access to affordable and decently located land.** Such issue can lead to higher overall project costs, reduced portion of the budget being directed towards the construction itself, and selection of land that is poorly connected to the city and distant from job opportunities. The majority of the housing deficit in Brazil is in middle- and big-sized cities, where land is not only expensive, but also scarce. In addition, entities have much less power than
construction companies, leading to the well-known consequence of moving towards cheap land in underserviced outskirts of the city. Some specialists mostly blame real estate speculation (often generated by the MCMVP itself), which has an interest in lobbying for the increase of the financing amounts by Caixa, and hide speculative practices by construction companies. These, in its turn, generate profit from stocking land and using for development for higher-income level families in MCMV (Lago, 2011). This issue is reflected on how far from their previous house the residents now live – around 60% state that the new plot is far or too far from their previous one, which might represent added burden in terms of commuting to their jobs. Nevertheless, 62% of the residents reported to be satisfied with the location of their new homes (NEPAC-Unicamp, 2015).

The MCMV-E provides some options to minimise land-related issues. The development of scattered and smaller units, or the renovation of abandoned buildings (usually already squatter-occupied), can be feasible alternatives to accessing land in better locations. Most of big cities in Brazil have informal settlements and abandoned buildings in central areas. São Paulo, for example, has the second tallest squatter-occupied building in Latin America (22-storey high), and large abandoned areas of former industrial facilities (Parkin, 2014). This has a significant potential to boost economic and social resilience when beneficiaries are already attached to the place and their neighbours, and are located closer to their employment and/or to city infrastructure and public services. On a different note, there are also cases of property owners giving preference in selling land to MCMV-E settlements, as they recognise the social value of the programme (Jesus, 2015).

Not all communities, however, have such a strong focus on using land that is more central. Some groups state they rather live in the suburbs, where they can better create a sense of neighbourhood. In addition, being distant from the city centre does not necessarily incurs in segregation; conversely, being in the city centre does not necessarily means people have access to services, usually due to lack of affordability (Jesus, 2015). The attention is turned, then, into demanding for a better coverage of public services (Observatório das Metrópoles, 2011). In this regard, the assessment of the sustainability of such approach in terms of suburbanisation/sprawl and cost-benefit of extending infrastructure is critical. Usually, the density of remote settlements tends to be lower – land is cheaper thus there is less pressure for the development of a high number of units. This increases infrastructure costs and can be made further complex if settlements are located out of the boundaries of existing built-up areas.
Although economic activities within the settlement have only been made legal recently, informal practices are commonly a source of income for part of the residents. With the legalisation, some settlements are considering shops in the first floor of buildings since the project inception. In a case in the city of Suzano, State of São Paulo, for example, the project included a community bakery, and mixed-use areas with commerce and services (UN-Habitat, 2013). Following completion, commercial units produced are transferred to the entity and cannot be sold by the residents. The profits of the operation of these (e.g. rental) should be directed to cover maintenance costs of the housing estate, increasing the financial capacity of the entity (UN-Habitat, 2013).

Finally, economic improvements in the surroundings of settlements are reported to be conducted since construction phase. This includes, for instance, new shops and services, in expectation to the influx of people (Lago, 2011). Sometimes, the community association itself manages the services in its surroundings (such as kindergartens) (Lago, 2011). Nonetheless, once again the use of gated-community layouts can incur in substantial setbacks, by limiting the amount of people to which businesses are exposed.

4.3.3. Environmental

Compared to socio-economic factors, environmental aspects appear to be the lowest priority at the MCMVP, at least directly. Understandably, the former have been the focus since these characterise more urgent matters as budget is severely limited. Nevertheless, the better infrastructure provided by MCMV-E settlements does present lower environmental impacts and contribute to health improvements, for example through improved waste disposal and potable water access.

Another major role played by MCMV-E is the prioritisation of families living in risk areas, or that have been displaced, most notably due to environmental issues. Assistance (either from municipality of technical agencies) in selecting the plot of land is also an important factor for providing a setting that is not hazard-prone. Both of these actions are of great relevance in the increase of the community coping capacities, since it reduces the vulnerability of the included families.

Available studies regarding MCMV-E barely touch upon environmental aspects. There are no comments on environmental impact assessments usually necessary for licencing such installations. Still, new developments do consider some environmental sustainability aspects, such as the use of solar water heating systems in detached houses, and the promotion of schemes to reduce water consumption. These measures are
established for Faixa 1 modalities, and allow the costs to be deduced from the cost per unit built (UN-Habitat, 2013). In Suzano, these criteria were addressed with the optimisation of the use of natural lighting and ventilation, systems of rainwater recycle and structural ceramic blocks, reducing the need of concrete and steel (UN-Habitat, 2013). In the settlement Quilombo da Gamboa, in the city of Rio de Janeiro, as a result of discussions with the future inhabitants, the housing complex will include features such as solar shading and cross ventilation to allow for a liveable climate (Majcen, 2015). Nonetheless, building codes fail to mention explicitly the attention to local environmental conditions, although traditional knowledge and community intelligence can be a great resource to adapt infrastructure.

4.3.4. Comparison to Community Resilience Initiatives

Based on the evaluation above, the potential for MCMV-E to assist in the attainment of community resilience features defined by three different initiatives was assessed. The different features provided by each programme were listed, and MCMV-E potential level was classified as follows:

- **High**: MCMV-E provides the potential to improve resilience significantly.
- **Moderate**: MCMV-E provides the potential to improve resilience to some extent.
- **Low**: MCMV-E does not provide considerable potential to improve resilience.
- **NA**: not attainable – no information regarding this topic was available.

In addition, the characteristics of MCMV-E that enable the achievement of each community resilience feature are described in the “Comments” column, grounded on the actual outcomes of the programme so far, as depicted in the previous sections.

**Red Cross**

Table 2 below presents MCMV-E potential to assist in achieving resilient features defined by the Red Cross in its “Understanding community resilience and program factors that strengthen them” report (IFRC, 2012).

<table>
<thead>
<tr>
<th>Topic</th>
<th>Potential</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>A resilient community is then the one that...</td>
<td></td>
<td></td>
</tr>
<tr>
<td>...is knowledgeable and healthy</td>
<td>High</td>
<td>Participation processes and capacity building programmes.</td>
</tr>
<tr>
<td>...is organised</td>
<td>High</td>
<td>As above.</td>
</tr>
</tbody>
</table>
Table 3. MCMV-E potential to improve resilience according to community resilience features defined by the Canadian Centre for Community Renewal (2010)

<table>
<thead>
<tr>
<th>Topic</th>
<th>Potential</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>...is connected</td>
<td>Moderate to high</td>
<td>Connections with neighbouring communities and similar entities, technical advisors, municipalities; can be jeopardised due to use of gated-community layouts.</td>
</tr>
<tr>
<td>...has infrastructure and services</td>
<td>High</td>
<td>Settlement infrastructure quality is usually higher than other social housing programmes, and collaboration regarding demanding better public services is common.</td>
</tr>
<tr>
<td>...has economic opportunities</td>
<td>Moderate to high</td>
<td>Project location is decided in conjunction by entity/beneficiaries, and job commuting time is one of the priorities; capacity-building programmes provide new technical skills; possibility of mixed-use provides alternative for occupation.</td>
</tr>
<tr>
<td>...can manage its natural assets</td>
<td>Moderate</td>
<td>Better sanitation, environmental management education.</td>
</tr>
</tbody>
</table>

**Canadian Centre for Community Renewal**

Table 3 below presents MCMV-E potential to assist in achieving resilient features defined by the Canadian Centre for Community Renewal in its report “The Community Resilience Manual” (2010).

<table>
<thead>
<tr>
<th>Topic</th>
<th>Potential</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Leadership is diversified and representative of age, gender, and cultural composition of the community.</td>
<td>Moderate</td>
<td>CREO and CAO include beneficiaries as members, but issues of gender, age and culture do not seem to be considered.</td>
</tr>
<tr>
<td>2. Elected community leadership is visionary, shares power and builds consensus.</td>
<td>High</td>
<td>Especially with the aid of advisors, participation processes are known to provide successful outcomes.</td>
</tr>
<tr>
<td>3. Community members are involved in significant community decisions.</td>
<td>High</td>
<td>Participation is the core of the programme.</td>
</tr>
<tr>
<td>4. The community feels a sense of pride.</td>
<td>High</td>
<td>Engagement of beneficiaries and better quality of the development increase sense of commitment and ownership. As for #4.</td>
</tr>
<tr>
<td>5. People feel optimistic about the future of the community.</td>
<td>High</td>
<td>Engagement of beneficiaries, previously linkage between members and ideology of the programme promote collaboration.</td>
</tr>
<tr>
<td>6. There is a spirit of mutual assistance and co-operation in the community.</td>
<td>Moderate to high</td>
<td>As for #4 and #6.</td>
</tr>
<tr>
<td>7. People feel a sense of attachment to their community.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. The community is self-reliant and looks to itself and its own resources to address major issues.</td>
<td>Moderate</td>
<td>Budget constraints and possible solutions are discussed in participation processes. Programme heavily depends on government subsidies.</td>
</tr>
<tr>
<td>9. There is a strong belief in and support for education at all levels.</td>
<td>Moderate to high</td>
<td>Capacity-building programmes are a priority, and one of the main demands regarding public services in the neighbourhoods is related to schools.</td>
</tr>
<tr>
<td>10. There is a variety of economic development* organisations in the community such that the key economic development* functions are well served.</td>
<td>Moderate to high</td>
<td>Some capacity-building programmes focus on providing technical skills, and commercial units among other services are allowed within the settlement.</td>
</tr>
<tr>
<td>11. Organisations in the community have developed partnerships and collaborative working relationships.</td>
<td>High</td>
<td>Cooperation is observed in capacity-building programmes, tasks related to construction works, and creation of associations for childcare, for example.</td>
</tr>
<tr>
<td>12. Employment in the community is diversified beyond a single large employer.</td>
<td>Moderate</td>
<td>The opening of shops and other services within and around the settlement can diversify employers.</td>
</tr>
<tr>
<td>13. Major employers in the community are locally owned.</td>
<td>Moderate</td>
<td>As for #12.</td>
</tr>
<tr>
<td>Topic</td>
<td>Potential</td>
<td>Comments</td>
</tr>
<tr>
<td>----------------------------------------------------------------------</td>
<td>-----------</td>
<td>---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>14. The community has a strategy for increasing independent local ownership.</td>
<td>Moderate</td>
<td>The programme has incorporated the opening of commercial units and provision of other services, such as health care.</td>
</tr>
<tr>
<td>15. There is openness to alternative ways of earning a living and economic activity.</td>
<td>Moderate</td>
<td>As for #14.</td>
</tr>
<tr>
<td>16. The community looks outside itself to seek and secure resources (skills, expertise, and finance) that will address areas of identified weakness.</td>
<td>High</td>
<td>The programme is built on assistance from national and local government, advisory groups, other similar initiatives, and surrounding neighbourhoods.</td>
</tr>
<tr>
<td>17. The community is aware of its competitive position in the broader economy.</td>
<td>NA</td>
<td>Not applicable.</td>
</tr>
<tr>
<td>18. The community has an economic development* plan that guides its development.</td>
<td>NA</td>
<td>Capacity-building activities are planned as part of the programme, but there is no specific economic development plan.</td>
</tr>
<tr>
<td>19. Citizens are involved in the creation and implementation of the community vision and goals.</td>
<td>High</td>
<td>Participation of beneficiaries is the core of the programme.</td>
</tr>
<tr>
<td>20. There is on-going action towards achieving the goals in the economic development* plan.</td>
<td>High</td>
<td>Capacity building activities are conducted in all stages of development – from pre- to post-construction.</td>
</tr>
<tr>
<td>21. There is regular evaluation of progress towards the community’s strategic goals.</td>
<td>High</td>
<td>Participation processes can ensure constant feedback of programme developments.</td>
</tr>
<tr>
<td>22. Organisations use the economic development* plan to guide their actions.</td>
<td>NA</td>
<td>There is not specific economic development plan.</td>
</tr>
<tr>
<td>23. The community adopts a development approach that encompasses all segments of the population.</td>
<td>High</td>
<td>Although programme is focused on the lowest-income level population, beneficiaries are selected with basis on several factors.</td>
</tr>
</tbody>
</table>

*CED (Community Economic Development) was substituted by ‘economic development’ for the purpose of this assessment. Description of CED is provided in Section 3.2.

**USAID**

Table 4 below presents MCMV-E potential to assist in achieving resilient features defined by USAID in its report “Community Resilience: Conceptual Framework and Measurement” (Frankenberger et al., 2013).

<table>
<thead>
<tr>
<th>Topic</th>
<th>Potential</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Community Assets</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Human Capital</td>
<td>High</td>
<td>Increase of social capital, in particular via engagement processes and capacity-building programmes.</td>
</tr>
<tr>
<td>Financial Capital</td>
<td>High</td>
<td>Government subsidies, improved economic conditions mainly due to increase in social capital and capacity building.</td>
</tr>
<tr>
<td>Natural Capital</td>
<td>Moderate</td>
<td>Better sanitation, along with initiatives in terms of better management of environmental resources.</td>
</tr>
<tr>
<td>Physical Capital</td>
<td>High</td>
<td>Usually results in better construction quality, and more bargain power in demanding for better public infrastructure.</td>
</tr>
<tr>
<td>Political Capital</td>
<td>Moderate</td>
<td>Increases recognition of such movements in government, but level of influence depends on individual connections of leaders or indirect relationships via ‘umbrella’ movements.</td>
</tr>
<tr>
<td></td>
<td>to high</td>
<td></td>
</tr>
<tr>
<td><strong>Social Capital</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bonding</td>
<td>High</td>
<td>Increased via social networking, participation, capacity building.</td>
</tr>
<tr>
<td>Topic</td>
<td>Potential</td>
<td>Comments</td>
</tr>
<tr>
<td>-----------------------------------</td>
<td>-----------</td>
<td>------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Bridging</td>
<td>High</td>
<td>Collaboration with surrounding communities, similar initiatives, construction companies and technical assistance groups.</td>
</tr>
<tr>
<td>Linking</td>
<td>Moderate  to high</td>
<td>As for ‘political capital’.</td>
</tr>
<tr>
<td><strong>Collective Capacity of</strong></td>
<td>Moderate  to high</td>
<td>Depending on nature of association – if representative of a community association, higher potential is expected.</td>
</tr>
<tr>
<td><strong>Customary Institutions</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Community Social Dimensions</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Preparedness</td>
<td>Moderate</td>
<td>Improvement in socio-economic conditions increase overall preparedness, however there are no mentions to capacity-building programmes towards preparedness to specific shocks.</td>
</tr>
<tr>
<td>Responsiveness (adapt and</td>
<td>High</td>
<td>Increase in social and economic conditions improve overall responsiveness and potential for adaptation and transformation.</td>
</tr>
<tr>
<td>transform in face of shocks)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Learning and innovation</td>
<td>High</td>
<td>Via participation, capacity-building programmes and collaborative initiatives.</td>
</tr>
<tr>
<td>Self-organisation</td>
<td>High</td>
<td>Core feature of the programme.</td>
</tr>
<tr>
<td>Diversity (various ways of</td>
<td>Moderate</td>
<td>Different construction schemes are possible, with different levels of engagement.</td>
</tr>
<tr>
<td>performing an activity)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inclusion</td>
<td>High</td>
<td>Focus on vulnerable groups.</td>
</tr>
<tr>
<td>Aspirations (vision of the</td>
<td>High</td>
<td>Due to improved social and economic conditions.</td>
</tr>
<tr>
<td>future)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Collective Action</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Capacities</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Disaster risk reduction</td>
<td>Moderate</td>
<td>People in risky areas have a priority in the programme.</td>
</tr>
<tr>
<td>Conflict mitigation</td>
<td>Moderate</td>
<td>Participation and engagement processes do include conflict mitigation to some extent, but there is no mention to specific tools in this regard.</td>
</tr>
<tr>
<td>Social protection (share of</td>
<td>High</td>
<td>Collaborative initiatives within the community and with neighbouring settlements are conducted in various fronts (childcare, debates over social issues, etc.).</td>
</tr>
<tr>
<td>resources, e.g. childcare, saving</td>
<td></td>
<td></td>
</tr>
<tr>
<td>groups)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Natural resource management</td>
<td>Moderate</td>
<td>Better sanitation, environmental management classes.</td>
</tr>
<tr>
<td>Management of public goods and</td>
<td>High</td>
<td>Improved political power, alone or in conjunction with other entities, and increased awareness regarding claiming communities’ rights.</td>
</tr>
<tr>
<td>services</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

4.4. **Concluding Remarks**

**MCMV-E entities tend to find particular management models in accordance to the availability of resources, technical assistance, previous knowledge on administration and political objectives.** Overall, better engagement levels are associated with entities that, although with different trajectories, have a similar approach towards fighting for the right of decent housing and urban renovation. For these entities, MCMV-E is much more than about housing itself, it is a strategy to strengthen the movement, and consequent struggle to improve citizenship rights. The self-managed idea is central to these institutions, and the participation is built through a combination of participative methodologies envisioning the engagement of the families (NEPAC-Unicamp, 2015). In addition, adequate technical assistance for the project, along with previous experience of the entity in the field of self-managed housing, represent the main determinants towards successful outcomes.
Participation, however, is different from socialisation of power. Although family involvement is present in all projects, since it is a programme requirement, it varies significantly in its understandings, levels and outcomes. Without meaningful participation and power sharing, however, MCMV-E loses its rationale, since its focus is not only on building a house, but empowering families as part of a collective process and a resource to solve problems that arise (NEPAC-Unicamp, 2015).

Also noteworthy are actions towards women empowerment, endorsed by not only MCMVP but also other social programmes in Brazil. First, it is reflected in the inclusion of families with women as head of the family as a priority in the selection of beneficiaries. Second, in the possibility of a woman signing the contract as the head of the family, regardless of a permission from her partner.

Concerning physical aspects, MCMV-E has revealed a significantly better product than the traditional MCMVP. The average unit size, for example, is 50 m² for the former and 40 m² for the latter, and along with customised communal facilities, increase the connection of families to the place (Observatório das Metrópoles, 2011). Moreover, self-managed initiatives usually reveal more attention of residents to aesthetics, portraying the contentment in being part of the settlement, for example by deciding to paint the settlement in a colour that makes it stand out from the surroundings (Observatório das Metrópoles, 2011). The sense of proud is also observed with the name the settlements are referred to – previously called ‘conjunto habitacional’ (housing estate), which carries a negative connotation associated with previous social housing projects, the settlements are now called ‘conjunto residencial’ (residential estate) (Jesus, 2015).

Overall, the MCMV-E arrangement provides great potential to improve community (and self-managed) resilience features. Such possibilities cover social, economic and environmental aspects, although socio-economic factors tend to be predominant, as these represent more urgent issues to be tackled. In addition, the programme presents a moderate to high potential to assist the beneficiaries in achieving community resilience characteristics defined by existing initiatives in the field. The main driver for such potentials lies in the collaborative nature of the programme: it allows not only physical structures but also management and capacity-building activities to be tailored according to the particularities of the community and its individuals.
5. Conclusions and Way Forward

The sections below provide conclusions regarding (a) urban and community resilience and (b) resilience and self-managed social housing initiatives, in particular MCMV-E. In addition, it offers a way forward depicting challenges and possibilities regarding the application of urban and community resilience.

5.1. Urban and Community Resilience

The evolution of the conceptualisation and use of urban resilience reveals remarkable insights. Its concept has been broadened from an emphasis on endurance of functions, through a focus on adaptability of systems, towards transformative capabilities in the face of uncertainty and unpredictability of events (Keck and Sakdapolrak, 2013). Interestingly enough, this evolution has not ruled out the need for the employment of more traditional approaches – and it is highly unlikely it will within the foreseeable future. The combination of both traditional and emerging practices, and/or the utilisation of a point in between these two, depending on local circumstances, appear to be an enduring rule for implementation of such initiatives.

Overall, the most notable progress concerns the perspective over the disturbances cities and populations face. From being identified as sudden, unidimensional and out-of-ordinary events, delineated by time and space, crises have been recognised as intrinsic to the complexities of the world we live in, and actually necessary for our evolution (Medd and Marvin, 2005). In addition, there is a recognition that different people, communities and cities affect and are affected differently by such threats.

Along with new outlook on crises, the incorporation of adaptive and transformative capacities has led to the reassessment of time and spatial scales. The horizons regarding both time and space have been widened, encompassing both short- and long-term developments, processes and outcomes; and expanding in- and outwards from the city, with the acknowledgment of the interaction and two-way influence of the city towards its sub- and supra-systems.

The new perspective on urban resilience better reflects the complex, discontinuous, nonlinear and unpredictable environment we live in – and recognises we should embrace change and evolve from it. In this study, I advocate that engaging and empowering people, individually and collectively, as a continuous process, to ‘self-manage’ their resilience, is the approach that can provide the best
outcomes in such circumstances. The concept that better portrays this idea in the literature is ‘community resilience’.

The improvement of resilience in communities is in the struggle for stability, recovery, adaptation and transformation. In this sense, resilience refers more to communities’ inherent capacities than to the external resources they can obtain. In addition, it is often during crises that the most positive qualities thrive, including those that had not been previously acknowledged, in particular in terms of individual strength and collaborative work towards a common good (Uriarte Arciniega, 2013).

5.2. Resilience and Self-Managed Social Housing

MCMV-E is indeed capable of providing an ample range of opportunities for the increase of the resilience of its beneficiaries. In a scenario of crisis and change, that entails socio-economic issues, lack of adequate housing and moving to a new settlement, the collaborative nature of the programme allows people to utilise such context to improve their capabilities and broaden their access to tangible and intangible assets.

Similarly, resilience can serve as an argument towards expanding self-managed housing initiatives. Such programmes still face great resistance. From the media, for example, housing movements are usually labelled as “political activists”, and are attacked especially when there is squatting or land occupation involved (Jesus, 2015). Politically speaking, having an entity as the leading actor minimise the possibility for the state ‘marketing’ such developments. In addition, the construction industry usually holds significant political strength, and tends to limit the opening for cases where profits are diminished. Resilience as a concept, by highlighting the social, economic and environmental benefits of the programme, and as ‘brand’, given its increasing attention globally, can therefore strengthen the discourse and acceptance of self-managed alternatives.

Notwithstanding its strengths, MCMV-E can be improved – not only in terms of tackling identified issues, but also to boost even further some of the facets that have already shown satisfactory accomplishments. Although some enhancements focus on internal matters (between the entity and the families), the majority of the suggestions are related to macro-economic and institutional contexts, such as the provision of adequate technical assistance and facilitation of access to land. These conditions are usually beyond the control of the core group, and require a combined effort
from the entity itself and various levels of governments. Some of the potential improvements are described below.

**Improve quality of participation and capacity building**

Being the core of the MCMV-E, improving the quality of the participation of the families and associated capacity building must be an aspect of permanent **endeavour**. This is, evidently, a difficult task, considering it mostly derives from the direct interaction of the beneficiaries with the entity, hence with limited influence from external actors. In addition, the programme is understood to already provide adequate guidelines in this regard, however of difficult monitoring and enforcement by the local government, for example. That said, a progressive engagement of third-party advisors has shown to be the best option to ensure appropriate levels of engagement and provide options for further developments.

The major trade-off debate in this sense is the equation of time vs effort vs social capital of the families, without hindering the project outcome (Camila Nobrega, 2015). For instance, although the use of mutual self-help can be the most affordable option for low-income people, it can be an overwhelming exercise, since it requires big time and physical efforts. Yet, “the rush to build doesn’t go well with the development of people, with the time required for self-management to become real” (Camila Nobrega, 2015). This balance has to be dealt with in a project-by-project basis, naturally with the participation of all involved actors.

**Actions are also necessary to ensure engagement on the long-term, in particular after completion of construction works.** This is important to avoid the repetition of socio-economic problems beneficiaries faced previously, and that has resulted in evasion in some MCMVP settlements. The continuity of capacity building programmes is crucial in this sense. The option for legalising collective ownership (where units can only be inherited or sold back to the cooperative) is also a demand of some specialists and social movements (Osborn, 2013). This option can ensure commitment of existing and new families, and provide a better control over the valuation of the land. It is important to highlight, though, that the strong tradition of individual property rights in Brazil render this initiative difficult to be imagined politically (Osborn, 2013).

**Facilitate access to land or property**

**Broadening the possibilities for land or property acquisition is the matter that requires the most comprehensive actions.** Options abound, but require high levels of
political commitment, either by using innovative land management and urban planning instruments (e.g. land value sharing or downzoning), or by supporting entities in acquiring their assets. Ideally, and above all, the expectations and needs of the beneficiaries and the community should be taken into account in conjunction with the potentials and needs of the city, to ensure the best possible balance between individual, community and the city resilience. For example, beneficiaries looking at building houses can opt for an isolated plot of cheap land, overburdening the municipality with infrastructure costs. On the other hand, it can be a case where the municipality offers a small plot in a central area, however with no room for communal spaces.

Within the prospects given by the MCMV-E framework, the options are narrowed to the production of scattered smaller-scale developments and the revamp of existing units. In general, these need a strong backup by the local government to become realistic in terms of financial feasibility. In addition, the local government can provide support by enhancing credibility of the entity towards landowners, negotiating or donating land, etc.

The Brazilian City Statute (Estatuto da Cidade), established in 2001, provides different tools aiming to provide land access and equity in large cities. It is acknowledged worldwide for its progressive approach in promoting the social function of urban land and the right to decent housing. It includes instruments such as the compulsory land parcelling and building, progressive property taxes for underutilised properties, reservation of land for social purposes (Zonas Especiais de Interesse Social - ZEIS), regularisation of consolidated occupations, and compulsory use of unexploited lots (UN-Habitat, 2013). The effective use of the City Statue is also a top demand by national housing movements (Gomes, 2015).

Other forms of land value sharing mechanism, such as land pooling and land readjustment or betterment charges and exactions for social housing can also be applied. The practice of land banking, on the other hand, as suggested by some authors, must be considered carefully, since in several cases “it leads to corruption, and it does not address the shortage of land supply, but rather aggregates it” (Nohn, 2015).

There are several examples that illustrate solutions using some of the alternatives above within the MCMV-E. The revamp of abandoned public buildings, for instance, has taken place in Rio de Janeiro and São Paulo (Padilha, 2015). Public land has been donated for this initiative in Rio, in the settlement Quilombo da Gamboa (Majcen, 2015), and in
Suzano, where part of the land was actually previously occupied by part of the beneficiaries (UN-Habitat, 2013). In Guapé, State of Minas Gerais, the municipality not only assigned land for MCMV-E but also led the process of selecting families for the settlements (Processo de inscrições do programa Minha Casa Minha Vida Entidades já está sendo realizado, 2015). Similarly, in Belo Horizonte, also in Minas Gerais, public hearings are being promoted in order to decide if public building should be donated for the programme (Audiência Pública debate doações de terrenos a entidades do Minha Casa, Minha Vida, 2015). In addition, in São Paulo, a housing movement was able to negotiate the transformation of one of its occupations into a settlement (Parkin, 2014).

**Empower entities**

*Ensuring entities retain the capabilities to adequately perform the activities they are entitled to is unarguably essential.* Of particular relevance are their responsibility and accountability towards the government and the beneficiaries, as well as the autonomy of the association towards contractors.

There are two main ways entities can be empowered: using technical advisors and engaging with similar initiatives. The association of technical assistance with successful outcomes in self-managed housing has already been highlighted in various fronts, such as project design, financial management, construction quality and engagement levels. Enhancing networking of similar initiatives, e.g. for peer-to-peer learning and collective negotiations, have also been recognised as improving entities capabilities – via the exchange of experiences and by joining forces in demanding better public services for their settlements. Different levels of government should then incentivise the creation of more technical assistance groups specialised in self-managed housing, also providing means to build their capacity. Moreover, local governments, Caixa, and even technical advisors should encourage the linkage of associations, as simply as by raising awareness of the different projects occurring in the same area.

Positive influence can also be attained via direct support from the local government. The municipality can assist in the acquisition of land, decision on location, development and enforcement of master plans, as well as providing support to technical advisors and enhancing networking, as depicted above, amongst others. In its turn, this brings the need to enhance government’s capacity, which can be achieved by hiring technical staff; using support from supra-local levels; and delegating some duties (such as
in situ work supervision) to independent advisory groups – whilst monitoring their performance.

**Expand social and economic interaction of individuals**

As important as encouraging the interaction of similar associations is enhancing connection of MCMV-E settlements with their surroundings. Although this does happen in the entity level to a good extent, the barriers created with the ample use of enclosed condominiums and the limited mixed-use of the settlements can critically jeopardise social and economic interaction in the individual level.

**Ideally, the use of gated-community layouts should be carefully revised whenever possible.** Although the definition between different settlement arrangements is mostly a joint-decision between entity, beneficiaries, and technical advisors, the local government can influence the process by engaging in the early stages of the project, or developing master plans discouraging this type of development. Alternative provisions have been observed, for example, in the case of the settlement Quilombo da Gamboa, where the beneficiaries decided on the development of two interior courtyards for collective use, one providing direct access to the street so that residents are connected with the outside neighbourhood (Osborn, 2013). The Florestan settlement in São Paulo, in its turn, includes a community centre with its doors facing the street (Jesus, 2015). Another option would be the development of a different frontage for the settlements, for instance: instead of walls, it can include shops open to the public streets, activating the urban edge of the cluster.

**There is also the possibility of addressing these issues even after the consolidation of the development.** Some of the existing spaces can be converted and/or new structures can be created to accommodate commercial activities, for example. Such rearrangement has been done for the Örtagården area, in Malmö, Sweden. Its “Million Program” developments during the 1970s used a similar structure as the MCMVP, and struggled with issues resulting from disconnected community functions and increased isolation. A project developed between 2006 and 2009 initially entailed the conversion of the ground floor of a building into commercial units. Soon it progressed to the construction of a new pavilion just for this purpose, along with communal spaces that created better connection with the surroundings. The diversity of the businesses was also ensured throughout the process. The positive outcomes of the project have been widely recognised, and have led to further developments (e.g. a main square) since then (Wikstrom, 2013).

**Others – incremental practices**
Programmes such as MCMV-E evidently have several limitations, especially financially wise, hence more 'sophisticated' upgrades in settlements should be thought in an incremental manner. Environmental sustainability aspects, for example, have limited space in the initial settlement provisions, but can be progressively incorporated as the community’s capabilities improve and it overcomes more urgent issues. Nevertheless, awareness regarding potential direct and immediate environmental impacts must be observed from the earliest project phases. Similarly, housing units can also be upgraded incrementally. Developments in this regard have been conducted by at least one entity in south of Brazil, which included an option for expanding the units in their project, as the initial unit itself could not be modified (Friedrich, 2013). It must be pointed out that, although fostering incrementalism provide these advantages, it requires assistance and supervision, meaning well-equipped municipalities and engaged advisory bodies.

5.3. Way Forward

Resilience is still an incipient field in the urban context. Evidently, it is in constant progress, and the full range of potentials and limitations of its applicability are yet unclear. Thus, when compared to more consolidated practices, additional perseverance will likely be required for the achievement of the desired goals. A continuously iterative process, including development, implementation, review and update of applied strategies, is deemed crucial.

First and foremost, resilience is about governance. At the same time, we expect governments and organisations to do things for people, but we mistrust them to deliver (Multinational Resilience Policy Group, 2015). Resilience is already built on a daily-basis – when people engage in improving environmental conditions in their neighbourhood, participate in responsible consumption or human rights initiatives, and so on (Uriarte Arciniega, 2013). In this sense, governments have to be institutions that support communities to perform things for themselves, enabling them to be in charge and strengthening what already works well. For example, authorities need to back measures that (a) invest more in social infrastructure, (b) expand public/government engagement, (c) align leadership practices with local priorities, (d) collaborate across boundaries to match initiatives with geographical shape of risks and opportunities, and (e) improve governance to strengthen communities abilities (Multinational Resilience Policy Group, 2015).
Nevertheless, the new vision on urban resilience, embracing long-term developments in a wide range of social, economic and environmental factors, might represent a challenge in terms of political acceptance. The intra- and inter-linkages of such aspects, and with a variety of other fields of urban practice, make the quantification of outcomes problematic. In addition, the intrinsic long-term nature of such developments will usually surpass normal political cycles, undermining political commitment. Having limited political support, in its turn, means less funding and restricted provision of professionals, who are already in very limited numbers in this field. In this sense, the traditional approach towards urban resilience has advantages, since it provides more concrete results, and in shorter periods.

Making use of the attention that has been given to resilience whilst combining its concept with other developments seems to be the most feasible way to make such practices more viable. This can be envisioned as a two-way process: in the case of self-managed social housing, for example, ‘increasing resilience’ can serve as an argument to encourage the utilisation of self-managed housing; likewise, housing itself, usually being more easily politically accepted, can indirectly assist in boosting resilience practices. The same approach can be considered for developments such as the provision of schools, hospitals and basic infrastructure. Albeit more sectored in principle in these cases, there must be an effort to maintain the holistic view on resilience.

The abovementioned challenges and potentials reveal that circumstances revolving around the implementation of urban resilience do not differ substantially from most city-related practices. The constant struggle for political support and resources is a daily occurrence in various fronts, from sustainability to social works. This reinforces the importance of combining different developments aiming to strengthen arguments towards a common goal.

Above all, we should be reminded of the obvious: different people, as individuals, groups or institutions, think and act differently, and have access to widely different tangible and intangible assets. Generic and purely top-down approaches, without consideration of inherent heterogeneities in needs, priorities, visions, power balances, and consequent trade-offs and synergies, lead, in the best-case scenario, to limited efficacy in practice. Minimising such a problem is only possible via the engagement of the different stakeholders, who should be the most interested in building their own resilience. Efforts must be directed to both initiating more resilience practices where basic
resources are not available, and in assisting the improvement of initiatives that are already in place.

Of great importance in the involvement process is the level of engagement people can actually handle, or are willing to handle. The most vulnerable groups in any society are already overburdened by their daily routines, and increasing the load with additional activities can actually result in a reduction on their resilience. Information on the possible levels of commitment, necessary resources and expected outcomes should be made clear and easily accessible to facilitate people’s decision-making. In addition, continuous assistance, monitoring and reassessment of conditions, aiming at a progressive development, is vital.

Finally, the unpredictability of future circumstances requires thoughtful implementation of resilience strategies – or any other plans, for that matter. People, expectations, hazards, risks, resources, capabilities, requirements, perceptions and ideas change. Allowing for flexibility, adaptability, and continuous progress, whilst taking into account associated limitations and competencies, appears to be the most feasible way forward.
6. Bibliography


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