

Recommendations of Actions for Resilience and Sustainability

MAPUTO

Executive Summary



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The *Recommendations of Actions for Resilience and Sustainability* (RAR-S) proposed in this report, and the work undertaken to define them, are outputs of the “Making Cities Sustainable and Resilient Action: Implementing the Sendai Framework for DRR 2015-2030” (MCSR) at the local level. This MCSR action is a joint initiative of UNISDR and UN-Habitat and receives financial support from the European Commission (EC DEVCO). Its overall objective is to improve the understanding of, and capacity to, address disaster risks and build resilience at the local level, by supporting national and local disaster risk reduction (DRR) and climate change adaptation strategies, while focusing on building local capacities.

Since inception in April 2016, the MCSR action has supported over 25 local governments to confidently address the risk and resilience agenda in their cities, using adapted tools and methodologies while increasing capacities. This report details the findings and projected way forward for the city of Maputo, based on the resilience analysis and diagnosis channelled through the *City Resilience Profiling Tool* (CRPT). UN-Habitat and the Municipality of Maputo have led the implementation of the CRPT in the city and have successfully overcome challenges related to data collection and revision. The project has secured commitment from key actors that play a role in current and future steps.

This report details the findings, analysis, diagnosis, and commitment building, as well as the *Recommendations of Actions for Resilience and Sustainability* for the city of Maputo.

Barcelona City Council facilitated the project both through peer support to Maputo Municipality and through its ongoing support to UN-Habitat’s normative and operational work. Architecture without Borders supported this initiative under ongoing projects in the city of Maputo. Lastly, we extend our thanks the Municipality of Maputo and EC DEVCO for making this report possible, and encourage all project participants to continue being proactive in the city’s progress towards resilience.

Introduction

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As a pilot city of the “Making Cities Sustainable and Resilient” (MCRS) project, UN-Habitat has been working closely with the Municipality of Maputo over the past two years to create a comprehensive profile of the city and recommend actions to improve its resilience through the City Resilience Profiling Programme (CRPP) and its associated City Resilience Profiling Tool (CRPT). CRPP is grateful to the Maputo Local Government for its commitment to work as a pilot city of the MCRS project. While various initiatives focusing on different aspects of risk reduction and resilience have been previously conducted in Maputo, the municipality has openly accepted the implementation of the CRPT for its transversal approach that can lead to innovations in integrated resilience building among different sectors at the city level.

The CRPP provides a universal framework that utilises verifiable and contextualized city data to establish its resilience profile and form an analysis and diagnosis of its most pressing challenges. This profile and diagnosis provide a base for the creation of evidence-based and implementable Recommended Actions for Resilience (A4R) that are then incorporated into urban development strategies and existing management processes. This process is designed to support the local government to take an informed decision-making approach and in turn support long-term, resilient and sustainable urban development, in the Municipality of Maputo.

The Recommendations of Actions for Resilience and Sustainability Report (RAR-S) presents a culmination of the work conducted as part of implementing the CRPP in each pilot city. To both orient the reader and provide a truncated overview of the analytical process by which Actions for Resilience are developed, this chapter briefly presents the CRPP methodology. Description of the methodology is by no means exhaustive, but rather serves as a primer for the analytical findings presented in subsequent chapters. In other words, while the RAR-S report seeks to summarise the multifaceted implementation process, analytical and diagnostic efforts, and development of concrete recommendations for actions for building resilience in the pilot cities, it does not seek to provide detail for neither the methodological basis from which the CRPP was developed, nor the analytical process in its entirety given its extensiveness.

Building upon this brief methodological overview, this chapter provides an explanation of the scope and depth of analysis that is explored herein.

CRPP: Main Concepts

UN-Habitat’s flagship tool for urban resilience, the City Resilience Profiling Tool (CRPT), provides a cross-cutting diagnostic and action-oriented approach for resilience-based sustainable urban development. Its methodology is based on UN-Habitat’s definition of urban resilience, shown below, which encompasses a theoretical approach followed by a more practical description on what resilience-building efforts entail and target.

These definitions and understandings are important for cities implementing the CRPT and their collaborative partners as they outline the overall objective for the city. Without a shared understanding, catalyzing engagement of stakeholders and garnering buy-in from partners is challenging.

In addition to these definitions, the following Urban Resilience Principles were developed to guide the process of achieving urban resilience in cities. Note that these principles are embedded within the structure, design, and implementation approach of the CRPP.

Urban resilience is the measurable ability of any urban system, with its inhabitants, to maintain continuity through all shocks and stresses, while positively adapting and transforming toward sustainability.

A resilient city assesses, plans and acts to prepare for and respond to hazards – natural and human-made, sudden and slow-onset, expected and unexpected – in order to protect and enhance people’s lives, secure development gains, foster an investable environment, and drive positive change.



Principle 1 Dynamic nature of urban resilience

Resilience is not a condition but a state that cannot be sustained unless the system evolves, transforms and adapts to current and future circumstances and changes. Therefore, building resilience requires the implementation of context-specific and flexible plans and actions that can be adjusted to the dynamic nature of risk and resilience.



Principle 2 Systemic approach to cities

Recognising that cities are comprised of systems interconnected through complex networks and that changes in one part have the potential to propagate through the whole network, building resilience requires a broad and holistic approach that takes into account these interdependencies when the urban system is exposed to disturbances.



Principle 3 Promote participation in planning and governance

A resilient system ensures the preservation of life, limitation of injury, and enhancement of the 'prosperity' of its inhabitants by promoting inclusiveness and fostering comprehensive and meaningful participation of all, particularly those in vulnerable situations, in planning and various governance processes. Such an approach can ensure sense of ownership, thus achieving successful implementation of plans and actions.



Principle 4 Multi-stakeholder engagement

A resilient system should ensure the continuity of governance, economy, commerce and other functions and flows upon which its inhabitants rely. This necessitates promoting open communication and facilitating integrative collaborations between a broad array of stakeholders ranging from public entities, private sector, civil society, and academia to all city's inhabitants.



Principle 5 Strive towards development goals

Resilience building should drive towards, safeguard and sustain development goals. Approaches to resilience should ensure that efforts to reduce risk and alleviate certain vulnerabilities does not generate or increase others. It must guarantee that human rights are fulfilled, respected and protected of under any circumstances.

CRPP: Methodology and Alignment with International Agenda 2030

The implementation of the CRPP is characterized by four overlapping steps: 1) data collection, 2) analysis, 3) diagnosis, and 4) recommendations for actions for resilience.

In order to better understand how the data collected leads to derived actions, clarity regarding how these key implementation processes are pursued and relate to one another is required. The implementation process is discussed briefly in the section below.

To facilitate the data collection and analysis steps, the CRPT is structured in four SETs. Each SET serves a specific focus, through which information covering the entire urban system are mapped, analysed and inter-related. Data analysed throughout these SETs, and subsequently presented in this report, are derived from existing databases, official documents, research and publications, among other verifiable sources. While much of these data provide quantitative information to conduct evidence-based analysis of the city, findings are complemented by a qualitative sources gathered through workshops, expert readings, etc., in an attempt to capture the city's nuances and contextual realities. Together, quantitative and qualitative data collection and analysis lead to an in-depth diagnosis of the city, thereby providing a base for the development of Actions for Resilience.

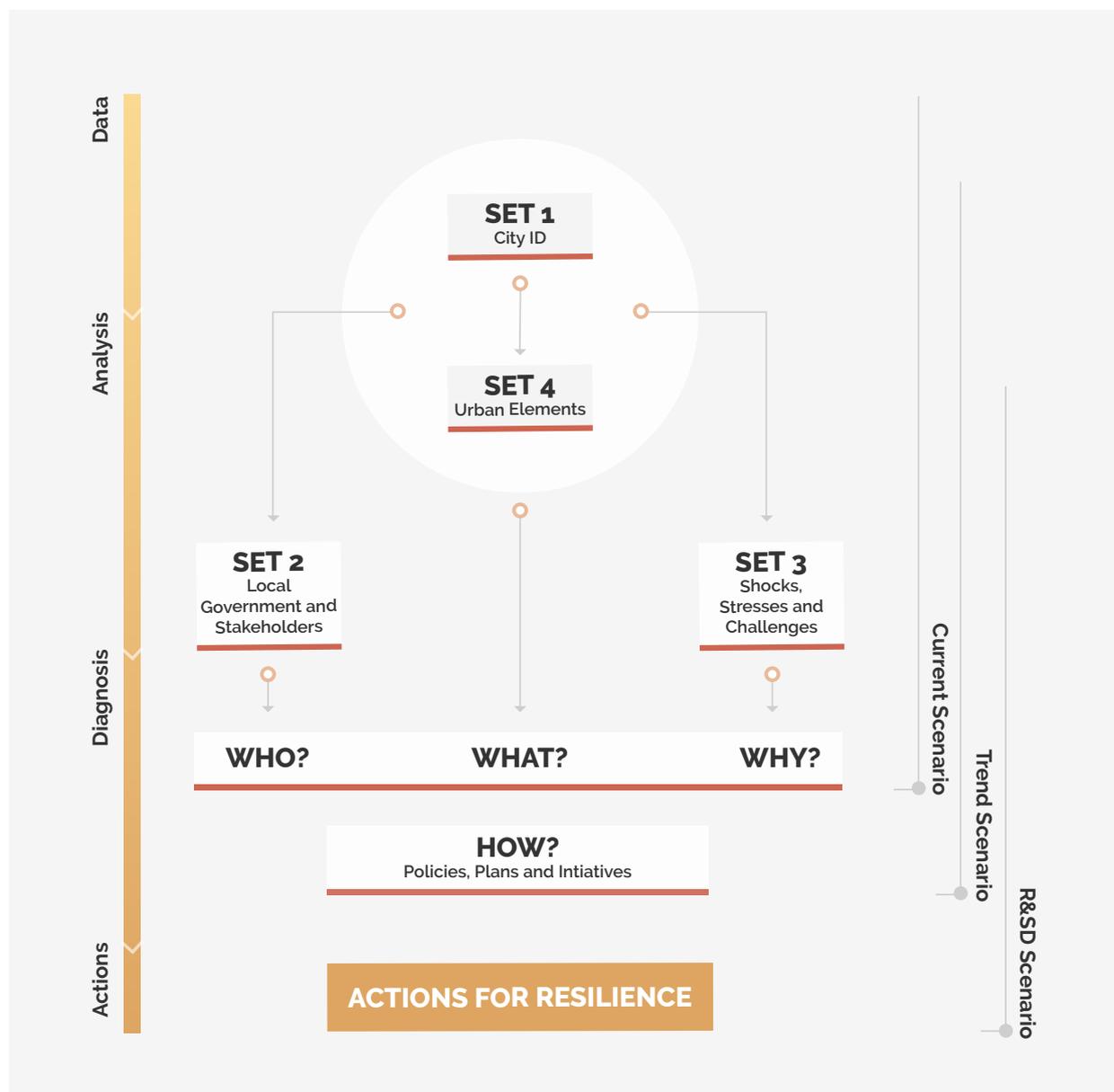


Figure: CRPP Implementation Process Diagram. Source: CRPP (2018).

As is illustrated in the diagram above, data is primarily collected in SET 1 – City ID, for context-related information, and in SET 4 – Urban Elements, for performance-related information. These data provide a basis to analyse the current strengths and weakness of the Urban System and its performance – the WHAT.

Following this synthesis of data comprising the WHAT, information gathered regarding key stakeholders (including the local government) and shocks, stresses and challenges (to which the city is found to be more or less vulnerable) are incorporated into the analysis.

In SET 2, stakeholder-related information is used to analyse the role and relationships of the different institutions and organisations acting in the city and determine the most influential actors – the WHO. This WHO is captured in Local Government and Stakeholder Analysis, which provides a brief mapping on the local government's structure, roles, and responsibilities. In addition, an overview is provided of key stakeholders from outside the local government (e.g. regional, provincial, national government, private companies, community organisations, NGOs, etc.).

SET 3 provides information regarding the existence, interactions, and prioritisation of the shocks, stresses and challenges in the city – the WHY. It is therefore the Shocks Analysis that examines the WHY by providing an overview of the various hazards faced by the city. This section assesses the various shocks, stresses, and challenges present in the city and summarizes the analytical processes conducted through which an identification and prioritization of shocks was determined, which includes whether or not, and to what degree, risk reduction measures have been established and the severity of impact or risk each shock category potentially poses.

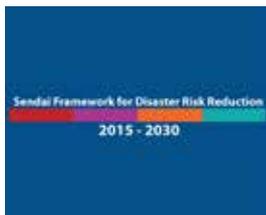
Information on the existing development efforts, based on established policy and/or legal frameworks, which guides the future development of the city (i.e. existing policies, plans and initiatives), provides a lens through which to apply findings derived from data collected in the aforementioned four SETs. This information is organised in an inventory that coherently maps these in relation to WHAT the issues are, WHO are able to act, and WHY action should be done, to determine current areas of focus, gaps and overlaps – to formulate HOW to act.

The result of these analyses is prioritised and implementable Lines of Actions or thematic areas of prioritisation, which are identified and agreed upon with the local government. Following a consolidation of CRPT analytical and diagnostic findings and integration of input from the local government and other key stakeholders, a focused, consensus-derived path towards resilience is formed. The Lines of Actions explore these resulting themes, presenting a culmination of collected data findings and preliminary analytical efforts, in combination with key stakeholder input derived from the several workshops conducted in conjunction with the local government. These Lines of Action can vary in scope but relate directly to both quantitative and qualitative information, representing a synthesis of each methodological step in the CRPT implementation.

From these Lines of Action, Recommendations for Actions for Resilience are developed and proposed in order to co-create a resilient and sustainable roadmap for the city. These Actions are intended to be both implementable and feasible, yet precise in targeting and ambitious in their expected impact.

This methodology was developed in alignment with globally agreed inter-governmental frameworks, namely: Sustainable Development Goals, Sendai Framework for Disaster Risk Reduction, Paris Agreement on Climate Change, World Humanitarian Summit - Agenda for Humanity, and the New Urban Agenda. Aligning CRPP with these frameworks enables the local governments who have implemented CRPT to better understand, report, and deliver on targets.

Sendai Framework for Disaster Risk Reduction



The Sendai Framework calls for resilience on all levels, from local to regional and national. CRPP contributes to the Framework's overall objective to reduce vulnerability to disasters and increase preparedness for response and recovery, including contributions to the Four Priorities for Action:

- Priority 1. Contribution: Building evidence-based knowledge on disaster risk reduction;
- Priority 2. Contribution: Strengthening disaster risk governance through the adoption of plans;
- Priority 3. Contribution: Investment in risk reduction for resilience;
- Priority 4. Contribution: Scaling-up of preparedness and a 'build-back better' approach in recovery.

Sustainable Development Goals



Urban resilience relates to key elements of sustainable urban development and the goals of the post-2015 Sustainable Development Agenda, notably in Goals 1, 2, 3, 9, 11, 13 and 14 where resilience is referenced but also in other goals where it is implied. Resilience is also a strong component of many of the stated aims throughout the preamble and paragraphs 7, 9, 14, 23, 29 and 33 of the Declaration to the SDGs.

Paris Agreement on Climate Change



Article 7 calls for strengthening of resilience to climate change in the pursuit of sustainable development. By engaging Local Governments in these efforts, resilience in cities contributes to the following principles of the Paris Agreement:

- Adaptation (dealing with impacts of climate change);
- Loss and Damage (minimizing loss and damage linked to climate change);
- Role of cities (building resilience).



World Humanitarian Summit – Agenda for Humanity

The core responsibilities defined at the World Humanitarian Summit have strong foundations in resilience thinking and building. The approach adopted by UN-Habitat to build resilience contributes to Core Priority 1D, 4A, 4B, 4C, and 5A.

New Urban Agenda



Advancing the urban resilience agenda and working globally delivers on a number of key goals of the New Urban Agenda agreed by Member States during Habitat III, most prominently:

- New resilient planning paradigms in urban systems
- Legal and regulatory frameworks to enable and govern urban development
- Analysing risks inherent in urban areas
- Promoting good practice in local economic, development strategies through marketing safer, resilient cities.

CRPP: Actions for Building Resilience

Actions for Resilience (A4R) constitutes the final product of UN-Habitat – CRPP’s urban resilience implementation process. The aim of this report is to better inform local governments, in this case the Municipality of Maputo, of the state of the city with regards to resilience, based on conclusions derived from of the CRPT implementation process previously described in this document. This document urges local government stakeholders to prepare, correct or apply initiatives (programmes, projects and plans) in a governance context that should be efficient, organized and transparent (with the local government leading the process) and within a safe and effective legal framework.

Actions for Resilience (A4R) aren’t necessarily built from scratch. Existing initiatives, policies and plans are taken into consideration, whether or not they are in progress/ adopted or not. Actions for Resilience are not only focused specifically on the field of urban planning, but rather value sectoral initiatives related to each identified stress, in addition to those related to territorial development or planning.

The methodology for developing A4R is robust, but flexible and versatile enough to allow its adaptation and replication in different contexts. It constitutes a guide for designing new initiatives or modifying those already being implemented to promote resilience and sustainable development of local governments, focusing on the particularities of specific contexts.

In short, A4R builds evidence to modify and improve existing initiatives, as well as proposes new initiatives from a resilient and sustainable approach.

The added value of A4R includes the development of a shared vision among actors, through a participation and consensus building process, and alignment with international agenda frameworks.

This document is divided into three chapters that describe the stages of developing A4R:

- Current Scenario: Identification and elaboration of the profile of the city.
- Trend Scenario: Potential impact of current plans, policies and initiatives.
- Resilient and Sustainable Scenario: Recommendations of Actions for Resilience and Sustainability.

Building the Current Scenario: Identification and elaboration of the profile of the city

The Current Scenario is characterised through data derived from quantitative and qualitative multidisciplinary indicators (SMART¹: specific, measurable, achievable, relevant and timely), field visits, and local knowledge. In parallel, an analysis should be conducted regarding how the current governance system functions in the city.

The indicators that reveal shortcomings in the urban system are grouped by themes, which, combined in a multidisciplinary way, form a composition of stresses and specific to the context. In this scenario, the impacts of the most recurrent shocks and affected behavior of the city are analysed: prevention and response measures are taken into consideration.

The compilation of these data serves as a snapshot of the characterisation of the city.

The urban system’s vulnerability to shocks prevents the achievement of the resilient scenario. The internal weaknesses of the urban system prevent the achievement of the sustainable scenario.

¹ United Nations Development Programme (UNDP). (2009).

Handbook on planning, monitoring and evaluating for development results. Pg – 63

Building the Trend Scenario: Potential impact of current plans, policies and initiatives

The Trend Scenario is built upon the Current Scenario, analysing the expected effects on the urban system of current initiatives (policies, projects, programs and plans), whether they have been approved or not. The value of this analysis lies in its ability to propose potential corrections to certain negative trends or to include previously ignored issues into forecasting efforts. The Trend Scenario is the trigger for the formulation of Recommendations for Actions for Resilience. Likewise, the Resilient and Sustainable Scenario is derived from applying the Actions for Resilience to the Trend Scenario and therefore presents a realistic transformation process of the urban system.

Building the Resilient and Sustainable Scenario: Formulation of actions for resilience (A4R)

The Actions for Resilience and Sustainability are organised according to the stress(es) they seek to address, their ability to be implemented, and the territorial scope they to which they apply. Although the first two categorisations offer a multitude of realistic actions to achieve a resilient urban system, through identifying the territorial scope, actions can provide changes to the urban system that support the incorporation of long-term sustainability in the city.

Conceptual framework

The concept of urban resilience and sustainability is complex and multidimensional. The approach to evaluating the resilience of an urban area is informed by the systemic relationships between different urban sectors and stakeholders and the different lenses through which urban issues can be understood.

The main concepts related to the achievement of resilient and sustainable cities are: the underlying economic system, poverty, social segregation, social inequality, environmental degradation, lack of coverage and access to basic services, and urban metabolism management. At the same time, from these concepts, related stresses are derived; for example, social segregation occurs due to: the lack of social networks at both the neighbourhood and urban scale, the lack of inter-institutional cooperation and between citizens and administrations, an inadequate legal or regulatory framework justice, real or perceived insecurity, the proliferation of precarious settlements, territorial imbalances, and degraded peripheries.

Stresses are also characterised through the combination of different themes, a combination that defines the particularities of a specific city. The uniqueness of each city is established through a composition of transversal or cross-sectional elements and interconnected stresses, a dynamic that should be taken into consideration when implementing different initiatives.

CRPP: Implementation Process in Maputo

Engagement in Maputo to implement CRPP and its resilience-building methodology as a pilot city began in the last quarter of 2016 and was solidified in mid-2017 through a Memorandum of Understanding (MoU) prepared in joint collaboration by UN-Habitat and the Municipality of Maputo. During this period, UN-Habitat selected a City Focal Point who, after undergoing training on urban resilience and CRPT, particularly in data collection and analysis, would directly implement CRPT in coordination with the Municipality. The municipality assigned two (2) Municipal Focal Points to directly support the efforts of CRPT. UN-Habitat performed 4 field visits to further engagement and training with key city partners.

CRPT was implemented in Maputo following the overlapping process of data collection, stakeholders' engagement, analysis, diagnosis and recommendations for action. The Focal Points led data collection efforts through data mining, technical meetings and multi-sector workshops. The workshops in particular aimed not only to populate necessary

data, but also to engage and train municipal technicians and councillors, as well as other relevant stakeholders, on urban resilience and its transversal nature.

From the progressive stages of data collection stems the City Snapshot, which provides a general contextual overview, as well as the Resilience Profile, which includes performance and stakeholder analysis. These were brought together in a diagnosis, which was presented and verified during the Diagnosis Workshop held in November 2018. The main outcomes of this workshop are the Lines of Action, on which the Actions for Resilience and Sustainability recommendations are based. In March 2019, the proposed actions were presented to the relevant stakeholders through the Actions for Resilience Workshop to reach a consensus on a roadmap towards Maputo's resilient and sustainable urban development. These efforts culminated in an official launch of the City Profile and Actions for Resilience at the end of March 2019.

Figure: Timeline of CRPP Implementation in Maputo. Source: CRPP (2019).



- Milestone events
- Other workshops / training missions
- Major stages in implementation
- Maputo participation in events

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Logic of the Current Scenario: Data Collected and Analysis

The result of the analysis carried out in Maputo presents, as a snapshot, the Current Scenario; that is, the city's current situation regarding resilience. This is completed by an analysis and mapping of the actors and the governance framework, along with external / exogenous events (shocks), internal / endogenous ongoing pressures (stresses) and conditioning factors identified as priorities in the city.

For the statistical analysis, the a series of indicators are grouped into eight thematic groups (Urban Elements) offering sectoral information, namely: Built Environment, Supply Chain and Logistics, Basic Infrastructure, Mobility, Social Inclusion and Protection, Municipal Public Services, Economy and Ecology.

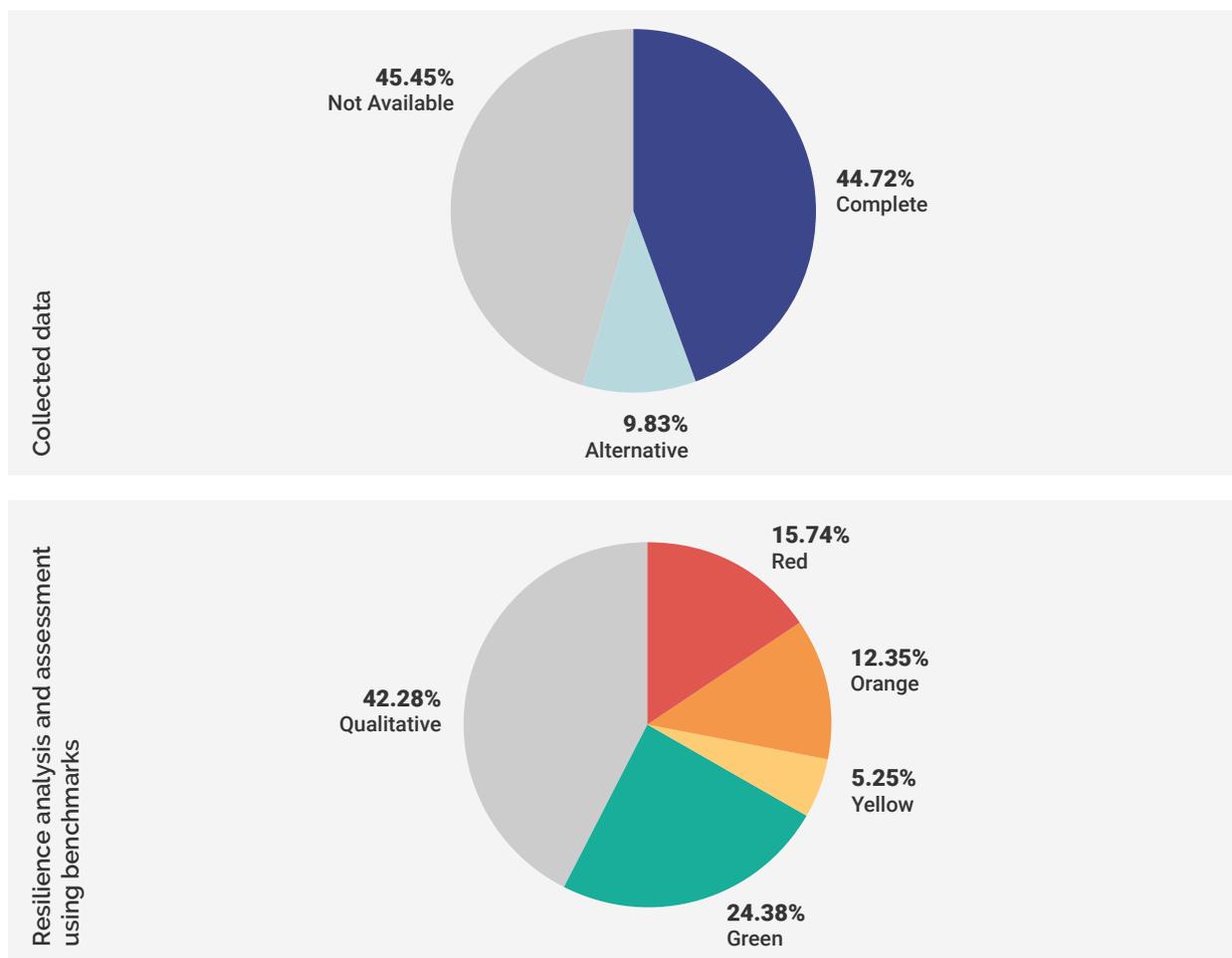


Figure: Visualisation of results after data collection and resilience assessment. Source: CRPT (2019).

After the initial analysis, 55% of the indicators were collected. This percentage is reasonable considering that this is the first time such a survey has been carried out, and on many occasions, given data limitations, it was not possible to answer the exact question. However, this also reinforces the need for the City Council to systematically carry out data collection from the various sectors and update these data over time; available and up-to-date information helps in decision making and the prioritisation of actions.

Regarding resilience, Maputo still has a lot of work to do. Only approximately 25% of the results indicate that the City is performing well or reasonably well in terms of resilience. In addition, more than 40% information was unavailable at the time of this analysis, indicating the true performance is potentially worse than available evidence suggests. Once all the results have been analysed, there are some conclusions that are shared by all Urban Elements:

- There is a general lack of reliable data and information to help evaluate the performance of each sector. There is a need to improve the system for collecting, analysing and updating existing information in the City Council so that the institution can make use of it to improve revenue, identify new interventions, prioritise actions and negotiate with other stakeholders.
- Although there is very up-to-date legislation (both at the National and Municipal levels), it is necessary to disseminate legislation updates among the Municipality's technicians and to work more on their effective compliance.
- It is still common today to confuse the concepts of resilience and emergency. There is a misconception that a resilient city is one that responds to emergencies promptly, regardless of its ability to recover after a disaster, or that a resilient city "is lucky because emergencies hardly ever happen".

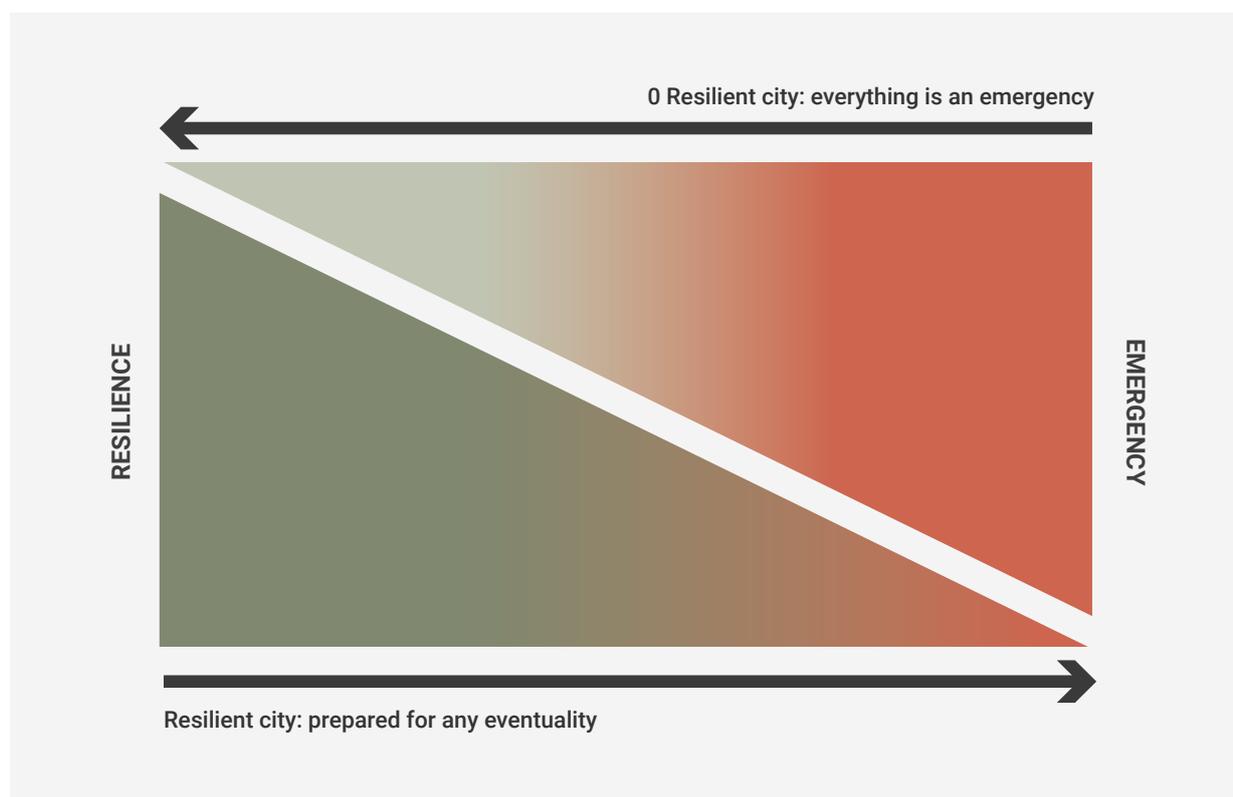


Figure: Resilience and emergency. Source: CRPP (2019).

The following are the main conclusions of each of the Urban Elements:

Built Environment

- Rapid growth of Maputo, which makes territorial planning difficult
- Proliferation of informal settlements, where 70% of the city's population lives
- 35% of housing is located in hazardous and environmentally sensitive areas (with the consequent degradation of ecosystems)

Supply Chain & Logistics

- Heavy reliance on higher-priced commodities (mainly food) from neighbouring South Africa.
- Inadequate domestic road network.

Basic Infrastructure

- Inefficient or unreliable water and electricity networks. High levels of drinking water waste and insufficient use of rainwater.
- Poor wastewater treatment (health and environmental problems), with 50% of the population without access to safe treatment services.
- Coal (63.5%) and firewood (14.9%) remain main domestic fuels (perpetuates environmental deterioration).
- Environmental problems derived from the insufficient application of "3R" (reduce, reuse, recycle).

Mobility

- High level of congestion due to various factors (informal economy, etc.).
- Need of improving the urban environment and enhancing walking (e.g. sidewalks).
- Unclear regulatory and institutional frameworks, insufficient to meet demand.

Municipal Public Services

- There are heritage and cultural activities, but access to such activities is uneven across the city (instance of social inequity).
- High level of insecurity in the city (mainly in the outskirts); it is necessary to increase coverage of public lighting.
- Malaria and HIV are key public health issues.

Social Inclusion and Protection

- Limited involvement of Civil Society Organizations (CSOs).
- Overburdened schools (high demand, overcrowded facilities).
- Sanitary facilities of the city under great pressure (exacerbated by the proliferation of malaria cases at certain times of the year).
- Little attention provided to people with special needs (accessibility problems, etc.).

Economy

- High level of informal employment (52%).
- High unemployment (28.9%), especially among young people (39.7%).
- Inequality (at both municipal and national level).
- Low revenue from land use and real estate.

Ecology

- High levels of pollution
- New initiatives that encourage the maintenance of ecosystems have started to emerge, which should be monitored and enforced by the Municipality.

The methodology undertaken as a part of this analysis presents the results visually, using colours to reflect the measurable performance for a particular supporting indicator: 'red' represents the most critical indicators, 'orange' and 'yellow' reflect intermediate situations and 'green' suggests a satisfactory situation.

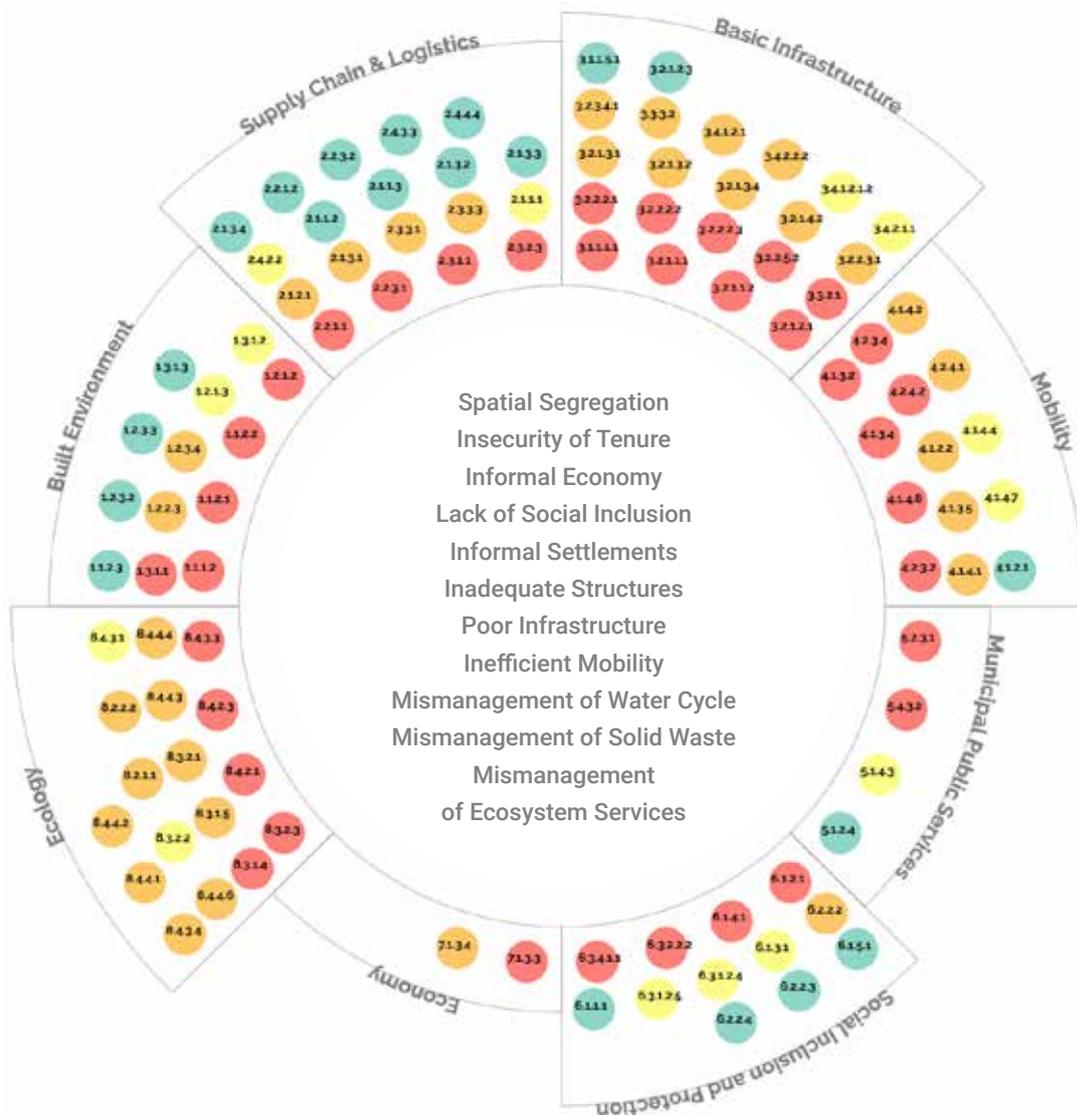


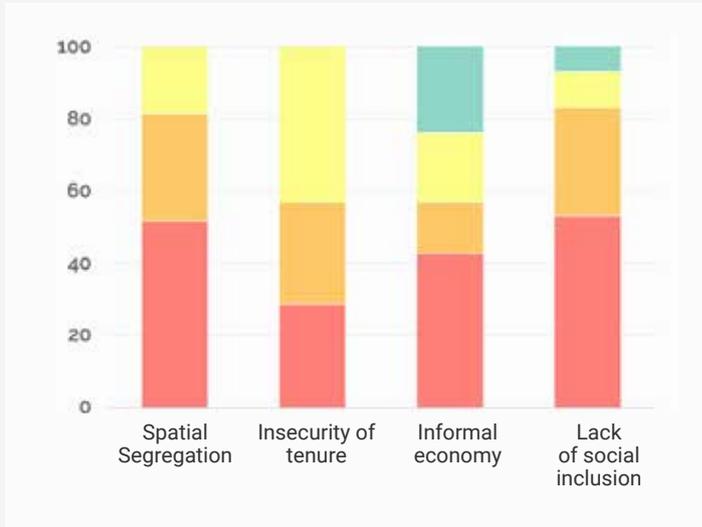
Figure: Maputo's Current Scenario. Stress identification from the study of Urban Elements. Source: CRPT (2019).

As a result of this statistical analysis, and following the CRPP methodology, the city's stresses were identified. These are defined as chronic and continuous dynamic pressures originating within an urban system with potential for cumulative impacts on the system's ability to achieve its objectives. Identified stresses were grouped into three 'major' stresses or endogenous issues that condition the city in terms of resilience, namely:

1. Rapid and unregulated urbanisation
2. Socioeconomic inequity
3. Inefficient management of urban metabolism

Within each of these areas ('major stresses') there are defined stressors (stress factors). Stresses and stressors have been confirmed by the Municipality in a series of workshops and conversations involving senior officials carried out throughout the implementation process.

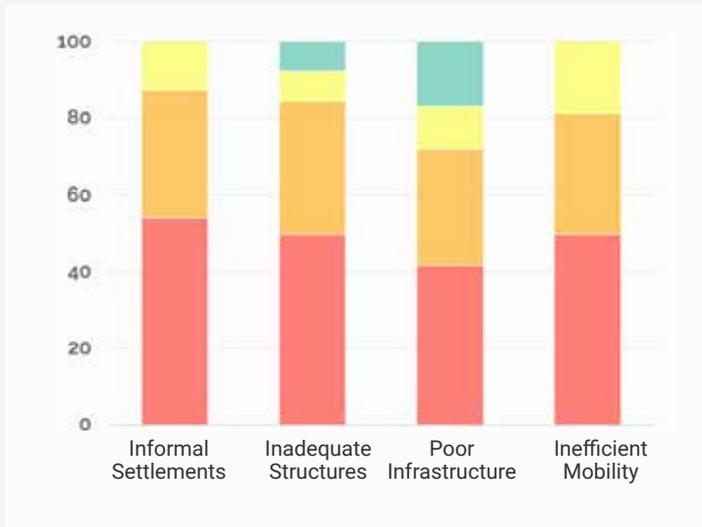
Socio-economic inequity



Socio-economic inequity

- Spatial Segregation - zonification
- Insecurity of tenure
- Informal economy
- Lack of social inclusion

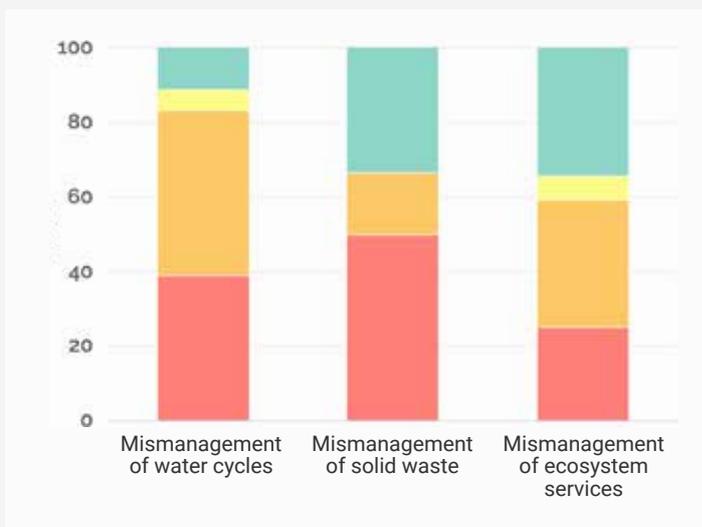
Rapid and Unregulated urbanization



Rapid and Unregulated urbanization

- Informal Settlements
- Inadequate Structures
- Poor Infrastructure
- Inefficient Mobility

Miss-management of urban metabolism



Miss-management of urban metabolism

- Mismanagement of water cycles
- Mismanagement of solid waste
- Mismanagement of ecosystem services

Figure: Relationship of negative performance of CRPT indicators and the generation of stressors by each respective stress. Source: Prepared by CRPP with information from the CRPT data collection process (2019).

There also exist exogenous or external causes that clearly affect the city. They are called shocks , defined as uncertain, abrupt or long-onset events that have the potential to impact the purpose or objectives of an urban system). Five shocks were identified as priorities in Maputo:

Natural: Drought, Heatwave, Flood and Cyclone.

Biological: Malaria

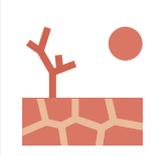
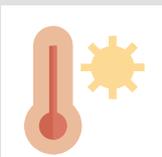
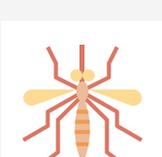
	Drought
	Heatwave
	Flood
	Cyclone
	Malaria

Figure: Priority Shocks in Maputo. Source: CRPT (2019).

In order to prioritise shocks in Maputo, the following criteria were considered:

- a. The evaluation of the impact each shock generates on the population, resources and processes
- b. Frequency of events and their impacts on different areas of the city and its population.
- c. Analysis of how the different Shocks act on the different elements and components of the urban system, considering the interdependencies between these constituent parts of the urban system.
- d. Projections of climate change trends in Maputo and how these trends may aggravate the impacts of identified shocks.

It should be noted that Maputo City and the development of its Resilience Profile with UN-Habitat served as a case study for the Global Users Copernicus Change Service (Glorious) Project, developed by Lobelia for Isardsat. Thanks to data provided by European satellites and based on defined and calibrated models, it was possible to obtain key information on climate change trends in the city. These trends indicate rising temperatures and the likelihood of storms and floods that may affect the incidence of malaria.

Identified stresses, stressors and shocks must to be placed in the general context of Maputo Municipality governance structure and processes in order to take into account contextual constraints, which are crucial to structuring action-oriented strategies. Contextual constraints are in fact conditions that, when properly directed or oriented, can be harnessed to reinforce the resilience of the city.

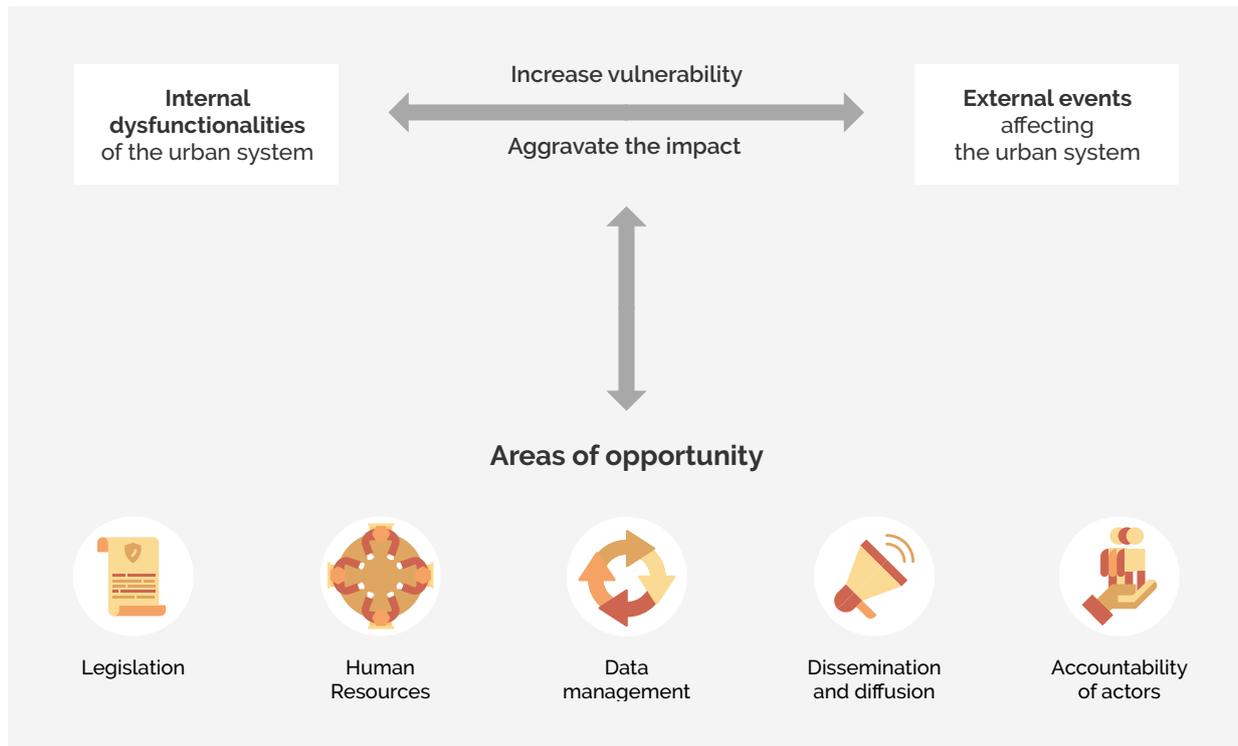


Figure: Linking Shocks and Stresses with other constraints or conditions. Source: CRPT (2019).

From the analysis of governance and of relevant actors involved in the implementation of initiatives, key information was obtained including, but not limited to:

- Local Government and National Government remain highly connected despite the existence of decentralisation policies, which consider Local Government (municipalities) as autonomous bodies.
- There exists significant influence and levels of participation of relevant institutions in development efforts in the city, including partners in development and cooperation, such as the World Bank, AfDB, foreign governments, and the United Nations.
- The lack of effective coordination between actors operating at the local level is a constraint to the sustainable management of funds allocated to the implementation of various initiatives, increases the redundancy of interventions and functions.
- There is a significant need to strengthen coordinated action as well as communication processes between actors.
- General data on the role of actors in risk reduction and their relationships is limited. Available data, however, indicate relatively dominant roles of national agencies and bodies in the development and implementation of risk reduction measures and strategies.
- There seems to be a good level of coordination between national and local actors in terms of emergency response and humanitarian disaster relief. However, little data is available on how these actors are interconnected and cooperate on long-term risk mitigation measures.

The Logic of the Trend Scenario: Legal and Regulatory Framework

Building off of the Current Scenario, the Trend Scenario can be developed, through assessing how the application of existing policies, programs, initiatives and projects would affect the resilience of the city – simply put: if it would improve, worsen or remain the same.

Therefore, the Trend Scenario emerges when applying the policies, plans and strategies prepared and / or approved to the Current Scenario, as these documents "direct" the path by which the city will be headed.

As figure *Process of building a Resilient and Sustainable Scenario* shows, application of existing plans, policies and projects to the Current Scenario would change the situation of the city completely: it would considerably increase the number of 'green' indicators, or areas within which the city is operating in a satisfactory situation.

However, it is not the lack of plans, policies and strategies that holds Maputo in its present state. Mozambique is a country with very advanced legislation and Maputo is a city where numerous studies, research, plans and strategies have been carried out. To this point, as a part of this analysis, 79 existing documents from all administrative levels and states of approval of were compiled and evaluated, including documentation related to sector planning, development, and territorial planning.

After a first review of the documentation, it is clear that:

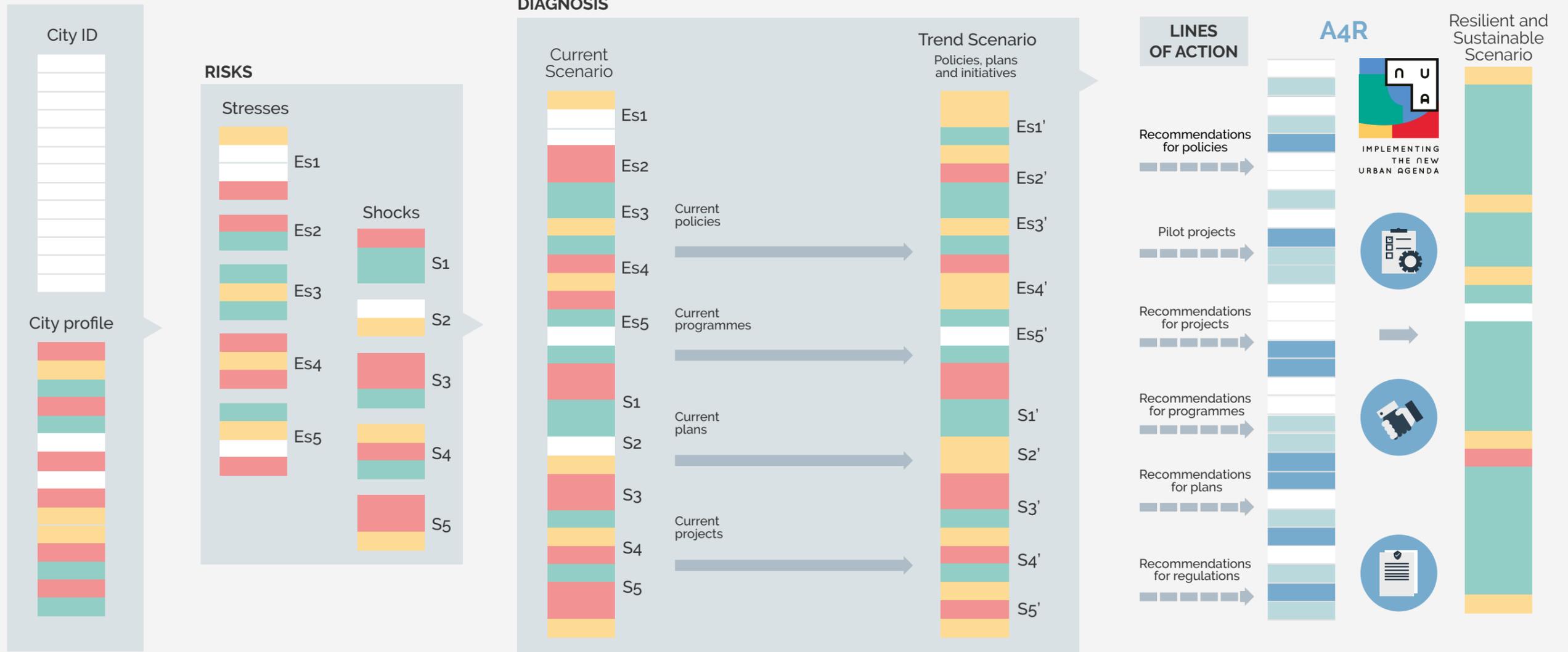
- 12 of the documents are local.
- Only 7 of the local documents have been officially approved.
- The stresses analysed appear in several of the documents.
- Some existing policies, strategies and legislation are not implemented and in some cases are not well known, even by those working in relevant sectors.

Therefore, we can say that the purpose of this analysis and proposed Actions for Resilience:

- This is not about creating new laws; it is a question of effectively applying those that already exist.
- It is not a matter of preparing another study or analysis; it is about seeing the applicability of those that have already been conducted considering aspects that, perhaps, were left aside: for instance, the sustainability and real capacity of the Municipality.

Based on this perspective of analysing the existing strengths that the Municipality possesses, efforts that are successfully performed in the priority areas (identified stresses), and an understanding of the importance of the sustainability of any intervention, Actions for Resilience (A4R) are proposed. These are grounded actions that envision the shared responsibility of various key actors and aim not to improve the resilience of the city overnight, but from the inside out.

Figure: Process of building a Resilient and Sustainable Scenario. Source: CRPP (2019).



Logic of the Resilient and Sustainable Scenario: Actions for Resilience

The proposed Actions for Resilience are organised into three distinct types of action, taking into account the realities of Maputo's Municipality, according to the feasibility and immediacy with respect to their possible implementation.

Proposals are therefore organised taking into account the intersection of various perspectives or approaches.

Considering the degree of participation / responsibility that the Municipality has or may have in implementing actions. The three types of action are defined as follows:

1. Direct Implementation:

The Municipality can implement these actions directly, as they depend on its own decision and / or competence. This group constitutes all the measures proposed by the administration, already approved at local level.

Example: Placement of elements that prevent parking on sidewalks to promote their recovery for pedestrians, especially pedestrians belonging to the most vulnerable groups (people with reduced mobility, children, elderly, etc.).

2. Agreement:

The Municipality can induce actions through consultation with other relevant actors or agents, maintaining leadership capacity and / or lobbying proactively to ensure that this measure is implemented. For these actions, the capacity, power, and interest of other actors, such as those from the private sector or civil society organisations, is relevant.

Example: In introducing segregated collection of waste, it is necessary to identify the possible actors interested in the collection of various waste types.

3. Advocacy:

Actions requiring and advocacy approach are those that are not already legally approved or those made at a different level than the local level. These include issues that directly affect the Municipality, but for which the local government has no legal mechanism to perform the action. The local government can only exert pressure or advocate for implementation, as these actions depend on higher level institutions and require legal or competence changes.

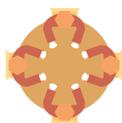
Example: Definition of the metropolitan region at the administrative level, which would require/enable the identification of services and shared competences (e.g. transportation, waste, water, etc.), an effort which sits outside of the purview of the local government and requires high level institutional cooperation.

Considering some existing conditions as areas of opportunity to be leveraged, taking advantage of the past experiences, learning from them and looking to the future with a new perspective. These areas of opportunity are:



1. Legislation:

At the present moment, in relation to existing legislation, existing and / or planned and / or approved plans and policies.



2. Human Resources:

The existing Municipality staff, its structure and organisation (looking at the need for coordination between some departments / directions as well as to avoid overlap or duplication of efforts).



3. Information Management / Institutional Memory

The “memory” or information management capacity that the Municipality has (linking the two previous conditions), as people may be transient but institutions remain.



4. Replication of Best Practices:

Successful experiences or actions that are in progress or have already taken place, with the aim of continuing or replicating them.



5. Accountability of the actors:

The role of the Municipality as “city manager”, sharing duties and responsibilities with residents and the private sector.

Based on the identification of stresses and shocks made in the Current Scenario, four critical lines of action were defined to frame the proposed Actions for Resilience. The four lines of action are: Urban Informality, Urban Transport and Mobility, Urban Metabolism Management, and Management and Recovery of Critical Ecosystems.

The criterion for defining these critical lines of action includes the possibility to generate action to address complex, interconnected issues that are difficult to differentiate. For instance, Urban Informality may emerge from a lack of infrastructure or the informal economy of spatial segregation and land tenure challenges.

Along with the critical areas three integrating actions are identified: the Revitalization of the Municipal Archive, the Revision Urban Structure Plan (PEUMM) and the Establishment of a Resilience Unit (UR). These actions come from an analysis of opportunities in areas such as legislation, human resources, information institutional memory, the replication of excellent initiatives and the involvement of actors.

Integrating Resilience Actions

In addition to the proposals presented by the critical area of activity, three actions considered of great importance were proposed impact on the different areas covered and, in some way integrating all of the above. These actions can be implementation and direct responsibility of the Municipal Council and represent a mechanism for support for the implementation of the other proposed actions:



Revitalization of the Municipal Archive

There is little awareness of people's transience within institutions compared to the impact of that transience on an institution's operations. Hence the importance and necessity of leaving a record of the conducted activities, consistently updating records, and ensuring knowledge of the existence of recorded information (in order to be able to provide data when necessary) is maintained.

In recent years, the structure and organisation of the Municipal Archive has improved considerably. Improvement of facilities and training of technicians was recognised by CEDIMO (National Center for Documentation and Mozambique Information). The Municipal Archive is now able to support the rest of the municipal departments in some key areas, for example:

- Legislation management, dissemination of legislative updates and interdepartmental training. Provide support to the Municipality's Legal Office.
- Documentation of best practices; providing reliable information to prepare proposals and request for support from other actors.
- Create the Municipality's institutional memory and disseminate it in such a way that the feeling of belonging to Maputo City makes the residents more committed to their city and ensures the sustainability of the actions implemented.



Review of the Urban Structure Plan (PEUMM)

The Urban Structure Plan (PEUMM) is a tool that guides the spatial and territorial organisation of the Municipality. According to the Spatial Planning Law spatial and territorial plans have a ten-year term. Maputo City is now in an excellent position to address the PEUMM review and update as there is a greater awareness of the risks to which the city is exposed, and the problems posed by climate change. The shocks and stresses presented in this report as a result of the collection and analysis of indicators and the reading of documents and miscellaneous legislation should guide the review of the PEUMM.

- The PEUMM was approved in 2008. Revision and update of the PEUMM, in accordance with the deadlines established by law, should incorporate the major trends observed and new challenges facing Maputo. This action is a great opportunity to establish the direction towards which the city should move in the future.
- Opportunities for collaboration with national and international organisations should enable Municipality to successfully address the challenges the city faces.



Creation of a Resilience Unit (UR)

Resilience is an approach, a “way of looking” that the City Council and municipal departments must share, although it takes time to adjust to this new vision. The City of Maputo faces a complex situation with regard to exposure to shocks and stresses. Having a Resilience Unit that helps incorporate resilience criteria and an awareness of working in a coordinated manner would improve problem solving and reduce the negative impacts of shocks and stresses to which the city is exposed.

- The creation of a Resilience Unit (UR) has been proposed within the Maputo City Council structure, which would provide a forum for the vision of Urban Resilience and support its dissemination to the rest of the Municipality. Terms of Reference (ToR) for the UR were produced and should be discussed and analysed by the Municipal Council to determine the appropriate fit for a potential UR.

Critical Lines of Action



Urban Informality

This critical line of action is closely linked to rapid urbanisation combined with little to no regulation, a dynamic detected as a stress in the diagnostic phase. Taking holistic actions addressing urban informality can improve the situation of informal settlements while simultaneously improving the status and coverage of basic infrastructure.

It should also be noted that intervention in urban Informality will reduce socioeconomic inequalities. To this end, inclusive policies must be successfully developed that contribute to the economic development of the inhabitants of informal areas, thereby improving their ability to access basic services.

Linked to Municipal Archive

Example action 1:

Continuity of the working methodology implemented in the Architects Without Borders project with the Municipal Council in Chamanculo C neighbourhood²- the work of this organisation is best practice that must be replicated. It primarily involves the Municipality and residents living in the areas under intervention. A future phase, wherein the private sector, that must provide services and basic infrastructure once the urban layout has been regularised, will allow for better access to this type of services. This proposed action is also one of direct implementation, as it assumes the continuity or replication of a working methodology that has already been (and is being) successfully implemented, efforts that should also be recorded in the archive (if it is to be replicated in the future). It is also an action that involves the commitment of the three city actors, (City Council, private sector and citizens) which helps to ensure the sustainability of the intervention.

Linked to the Urban Structure Plan Review (PEUMM)

Example action 2:

Review and update of the Municipal DUAT / identification of inconsistencies and legal voids – this action was identified within the framework of the NGO Architects without Borders project; when the Municipality's own technicians (who are familiar with the problems and consequences these inconsistencies and legal voids) conveyed that this action should be seen as a priority as it would have a major impact on this issue. This is a direct implementation action, which should take advantage of existing legislation to update it as well as the knowledge and experience of the Municipality's staff in this area.

Linked to the creation of a Resilience Unit (UR)

Example action 3:

Involvement of new actors – the UR as a coordinating element to support involvement of other institutions in this working methodology (NGOs, academia and others). Considering the currently available GIS database being developed under the SEC-GD³ Project - Urban Action Plan George Dimitrov's Strategic Improvement Plan – UR could promote updating the database and making it available to other Municipal departments. It is a direct implementation action that would require the coordination of human resources from different Municipal departments and other independent institutions.

² Architecture without Borders (AWB). (2018-2019). HABITAT PROJECT - "Defending the right to access to the city through participatory urban reorganization and access to the DUAT title in the informal neighborhoods of Maputo". Partners: Maputo City Council and the Mozambican Bar Association (Institute for Access to Justice). Funders: Council of Barcelona, Fundación SELAVIP, Council of Pamplona, Generalitat Valenciana and Italian Cooperation.

³ SEC-GD Project: Department of Urban and Territorial Planning of the Universitat Politècnica de Catalunya • BarcelonaTech. Local partners: Maputo Municipal Council and the Faculty of Architecture and Physical Planning of the EMU. Contact: Maputo. etsab@upc.edu. arwen.p.gumbao@upc.edu/Financed by Ajuntament de Barcelona and the Cooperation Center of the Polytechnic University of Catalonia • BarcelonaTech.



Transport and Urban mobility

The state of urban mobility in Maputo is a problem and consequence of the characteristics of the city (e.g. the existence of informal settlements with inadequate streets, the scope and scale of the informal economy, etc.). To get a full picture of the problem, one has to look beyond the municipal territory and recognise the interdependence / relationship that Maputo has with Matola City and Marracuene District. The Municipality of Maputo has undertaken various initiatives, such as the definition of Gran Maputo, which includes the municipalities of Maputo, Matola and Boane and a part of Marracuene District and the establishment of the Metropolitan Transport Agency, which operates under the responsibility of Ministry of Transport and Communications.

All actions undertaken so far to improve mobility within Greater Maputo (from city centre to small neighbourhoods and vice-versa) have emerged from the Municipality's coordinated work with other actors (cooperation partners, NGOs, ministries and other administrations). Despite the path taken, it is necessary to continue working in this area to reduce mobility challenges, while at the same time promoting the environment and generating better possibilities for the socio-economic development of the region's inhabitants.

Linked to Municipal Archive

Example action 1:

Support in consolidating the legal identity of METROPOLITAN AREA / REGION (as a supra-municipal entity) and for the sharing of other areas of responsibility (garbage collection, provision of drinking water, etc.). This action will bear fruit in the medium to long term. This is an action of agreement involving the collaboration and coordination of various partners of the Municipality (who have already received initial support from the Barcelona Metropolitan Agency and UN-Habitat); but it is also an advocacy action. The Municipality of Maputo, together with the other administrations that make up Greater Maputo should advocate for an "official" definition of this administrative step, which is included in the legal framework, as it will pave the way for other cities in the country facing similar situations in service sharing (Beira-Dondo, for example).

Linked to the Urban Structure Plan Review (PEUMM)

Example action 2:

Legislating the parking situation on city sidewalks - this aspect of mobility is often forgotten, but every citizen should be protected. The proposed action aims, under the leadership of the Municipal Council, to ensure the safety and traffic of pedestrians on the sidewalks, especially considering the problems currently facing the most vulnerable people (people with reduced mobility, children and the elderly). Legislation addressing parking on the sidewalks already exists but is not enforced. This is a direct implementation action that involves the three city actors (City Council, private sector and citizens), wherein each actor has their share of responsibility. However, there also exists an opportunity to work with other partners (NGOs, Ministry of Education and Human Development, etc.) to educate and raise awareness of new generations and thus ensure the action's sustainability (by changing attitudes).

Linked to the creation of a Resilience Unit (UR)

Example action 3:

The Resilience Unit shall be a coordinating entity that shall ensure that mobility issues are addressed from a people-centre approach. These themes should be focused on and worked on collaboratively with other matters, as the urban fabric (e.g. how best the urban fabric can be modified to minimise mobility problems); gender (do safe transport systems exist for women and girls?); effects on CO2 and other gas emissions and consequently the public health impacts on Maputo residents as a result of mobility.



Management of Urban metabolism

This critical line of action aims primarily to improve water cycle management, including the treatment of solid waste. Although the competencies of the provision and management of water and solid waste management belong to different scales (national and local), action design can be approached from a joint perspective to harness synergies, try to generate opportunities, and at the same time to foster socioeconomic development.

Linked to Municipal Archive

Example action 1:

Support in consolidating the legal identity of METROPOLITAN AREA / REGION (supra-municipal entity) and for the sharing of other areas of responsibility (garbage collection, provision of drinking water, etc.). This action will bear fruit in the medium to long term. The current Metropolitan Transportation Agency focuses only on mobility issues and needs expand its scope to include other services essential to the urban metabolism such as water cycle management.

Linked to the Urban Structure Plan Review (PEUMM)

Example action 2:

Require the placement of elements to ensure rainwater collection and use in new buildings to be approved by the Municipality - This proposed action is for the Municipality to ensure effective compliance with the Ministerial Order of 7 October 2005 for the Minister of Public Works and Housing: obligation to provide rainwater catchment systems in public buildings of new construction. This requirement can be extended to new private buildings to minimise the use of drinking water for irrigation and other similar uses as well as the consequences of large amounts of water running down the streets (gutter clogging, etc.). This is a direct implementation action that involves the establishment of specific legislation (of municipal competence) as well as its compliance (HR of the Municipality).

Linked to the creation of a Resilience Unit (UR)

Example action 3:

Begin separate collection of organic / non-organic waste for composting (mainly in markets) - The Municipality has already established a Strategic Plan for this sector, which presents a comprehensive overview waste collection challenges. The proposed action falls under the purview of this guiding document, being clearly of direct implementation, while greatly benefiting from the involvement of citizens and the private sector. Organic waste collected in the markets may be turned into revenue to the Municipality (by selling the product as processed manure) as well as a reinforcement for "machambas" activities (which serves as the economic livelihood for many families). UR could act as the responsible party within the Municipality and oversee coordination and planning between departments.



Management and Recovery of Critical Ecosystems

This line of action stands out for its transversality. All existing legislation and documentation related to the previously discussed lines of action also address environmental issues and the need to maintain ecosystem balance.

In Mozambique, there are various national strategies, policies and laws, such as the Climate Change Mitigation and Adaptation Strategy and its successive, derivative initiatives.

In addition, Maputo's Municipality has already spent time working with various partners in different fields related to the care and maintenance of the various ecosystems existing in its territory. Further work in this area is needed to improve the state and management of ecosystems through the coordination of initiatives and political and citizen awareness.

Linked to Municipal Archive

Example action 1:

Working with the Ministry of Education and Human Development (MINEDH) to include ecosystem care issues in the school curriculum. The history of ecosystem degradation in the city cannot be changed. However, there is still in time to slow down the environmental deterioration and to recover some of the destroyed ecosystems. The proposed action envisions the institution responsible for education (MINEDH) to include key environmental issues in the school curriculum including activities outside the classroom. These key issues could include, but not be limited to, the explanation of existing fauna and flora and the consequences of their disappearance. The Municipal Archive could make existing environmental information available from the past decades up until the current situation. The creation of public exhibitions and the involvement of academia can help raise and reinforce awareness.

Linked to the Urban Structure Plan Review (PEUMM)

Example action 2:

Ensure the protection of environmentally sensitive areas (Katembe and Ka-Inhaka) through their identification in the revision of the PEUMM and establishing specific legislation to protect targeted areas. This direct implementation action assumes the legislation (LOT - review of the PEUMM after 10 years) and aims to learn from what has occurred and, where possible, seek to mitigate ecosystem deterioration.

Linked to the creation of a Resilience Unit (UR)

Example action 3:

Support the initiatives of civil society organisations to clean up beaches and other sensitive areas through the allocation of staff and equipment. It is an agreement action, in which the Municipality must leverage the capacities of CSOs using the supportive resources available to the Municipality. These types of action may complement the action linked to the Municipal Archive by joining education-oriented efforts with a more global and sustainable approach. The UR would have a role coordination between the institutions involved (the departments of the Municipality, CSOs and others).

A municipal agenda should be elaborated and prioritised related to the design and implementation of the Actions for Resilience (A4R), based on the previously defined areas of opportunity. The agenda should be shared and establish the need for comprehensive, sustained interventions over time beyond the political cycles of the Municipality. It is necessary to emphasize that, along with the process of implementing Actions for Resilience, Maputo has, as its biggest challenge, the alteration of its urban model, a process which is imperative to formalise the Resilient and Sustainable Scenario to which it aspires.

Finally, it should be pointed out that the proposed Actions for Resilience are a first exercise from the Maputo City Council. The Municipality has a very experienced and knowledgeable technical team and is best suited to promote these Actions for Resilience.

Maputo City is invited to modify its urban model from a resilient lens, and in collaboration with other key stakeholders in the city, ensure this urban model is sustainable.

Find out more about the **City Resilience Profiling Programme**
and **UN-Habitat's partnerships** with other cities at:

www.unhabitat.org/urbanresilience

info@cityresilience.org

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Recommendations of Actions for Resilience and Sustainability

MAPUTO

This report details the findings, analysis, diagnosis, and commitment building, as well as the Recommendations of Actions for Resilience and Sustainability for the city of **Maputo**.