

# Recommendations of Actions for Resilience and Sustainability

# TERESINA

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Executive Summary

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for Resilience and Sustainability

# **TERESINA**

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## **Disclaimer**

This report has been written with the collaboration of an extensive inter/trans-disciplinary team and, as such, some of the terms have been translated directly from Portuguese.

# Introduction

# Introduction

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In 2019, the Municipality of Teresina, the Government of Brazil and the United Nations Program for Human Settlements signed a Cooperation Agreement for the implementation of the Teresina Urban Resilience Program. Through this agreement, for 2 years, the parties worked together to build technical capacity for urban resilience in the municipality and produced a strategic action plan for the city, called Recommendations on Actions for Resilience and Sustainability.

With the support of the City Resilience Global Programme (CRGP), the municipality implemented the City Resilience Profiling Tool (CRPT). The CRPT provides a universal framework that uses verifiable and contextualised city data to establish a resilience profile and create an analysis and diagnosis of its most urgent challenges. This profile and diagnosis provide a basis for the creation of evidence-based and implementable Actions for Resilience, which are designed to be incorporated into current urban development strategies and management processes of the city. This process is intended to support Teresina and its partners in making informed decisions and, in turn, support long-term resilient and sustainable urban development.

The aim of this report is (1) to better inform the Local Government, in this case the Municipality of Teresina, of the current state of the city with regards to resilience and ongoing related trends, based on conclusions derived from the CRPT implementation process described in this document; and (2) present a set of activities and actions, organised under three lines of action which, based on the project's theory of change, guides municipal public policies in response to the priority issues previously identified.

The introduction of this report briefly presents the CRPT methodology, which serves as the basis for the analytical findings presented in the following chapters. Although the report seeks to summarise the multifaceted implementation process, the analytical and diagnostic efforts, towards the development of concrete recommendations for actions to build resilience in Teresina, it does not seek to provide details of the methodological basis from which the CRPT was developed, nor of the analytical process in its entirety, given its extensiveness. Please refer to the CRPT Implementation Manual for a detailed description of the CRPT implementation process.

## CRGP: City Resilience Global Programme

**CRGP is UN-Habitat's flagship programme for Urban Resilience in partnerships with local governments.**

UN-Habitat's flagship tool for urban resilience, the City Resilience Profiling Tool (CRPT), provides a cross-cutting, action-oriented approach to resilience and 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 of what resilience-building efforts entail and target.

UN-Habitat defines urban resilience as, "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 evaluates, plans and acts to prepare and respond to threats - natural or man-made, sudden and slow onset, expected and unexpected - in order to protect and improve the lives of people, to ensure development, foster an investment environment and drive positive change".<sup>1</sup>

This definition and understanding of resilience outline the overall objective for each city implementing the CRPT. A shared understanding of resilience is crucial in catalysing stakeholder engagement and garnering buy-in from partners. In addition to the definition of urban resilience, the following Urban Resilience Principles, which are integrated into the structure, design, and implementation of the CRPT, guide cities in urban resilience development.

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<sup>1</sup> UN-Habitat CRGP, (2018).

# CRGP: Urban Resilience Principles



## Principle 1

### Dynamic nature of urban resilience

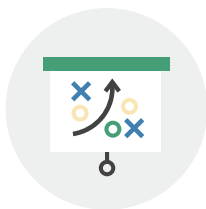
Resilience is not a condition, but a state that cannot be sustained unless the system evolves, transforms and adapts to current and future circumstances and changes. Therefore, building resilience requires the implementation of context-specific and flexible plans and actions that can be adjusted to the 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 a 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 do not generate or increase others. It must guarantee that human rights are fulfilled, respected and protected under any circumstances.

# CRPT: Methodology and alignment with the international Agenda 2030

The CRGP approach of working with cities to enhance resilience is characterised by four overlapping steps: (1) data collection; (2) analysis; (3) diagnosis; and (4) recommended actions for resilience. The methodological framework, discussed briefly below, and illustrated in Figure 1, explains how the data collected lead to actions, and how these key implementation processes are pursued and relate to one another.

The first three phases of implementation are facilitated through the application of the City Resilience Profiling Tool (CRPT). The Tool's flexibility and modularity enable it to be tailored to specific policy-driven, thematic, or vulnerability-derived demands, assisting cities both in tackling persistent systemic challenges and better informing strategies to address previously identified policy priorities. In Teresina, the tool modularity allowed for a baseline assessment, and an analysis and diagnosis around particular areas of concern for resilience in Teresina - hereinafter referred to as 'priority matters' - identified through several stakeholders consultation and dialogue workshops.

At the data collection phase, the programme adopted different techniques that combined workshops, to derive local knowledge and expertise, with desk research and in-depth indicators-based approach - known as Urban context and Performance - to assess the urban system and corroborate the findings derived from workshops.

The initial phase of data collection in Teresina fed the Urban Context which explores the development narrative through the city's historical background and its spatial, social, economic, and cultural context. Urban Context covers the administrative structures, characteristics and strategies, highlighting those related to resilience, and focuses attention on resilience-related challenges and opportunities, as well as the most plausible and serious risks of shocks and stresses the city faces. This is done through both desk research, individual interviews as well as focus groups discussions, and workshops.

Data gathered at this initial phase, as part of the Urban Context, were grouped and analysed by drawing on CRPT's three analytical lenses: the What, Why, and Who, which allowed the following:

- A thorough knowledge of the context's characteristics and attributes - the What lens, meaning the resilience of What;
- The identifications of shocks and stresses that have occurred in the past, continue to happen frequently in the present, as well as new and plausible ones in the future, their drivers and potential impacts – Why urban resilience;
- An initial understanding of local governance, administrative structures and stakeholders that can play crucial roles in shaping urban resilience in the city, these can be public actors at multiple levels of government, private entities, civil society organisation and community groups, to name but a few. This set of information is analysed through the Who lens – resilience by who and for whom.

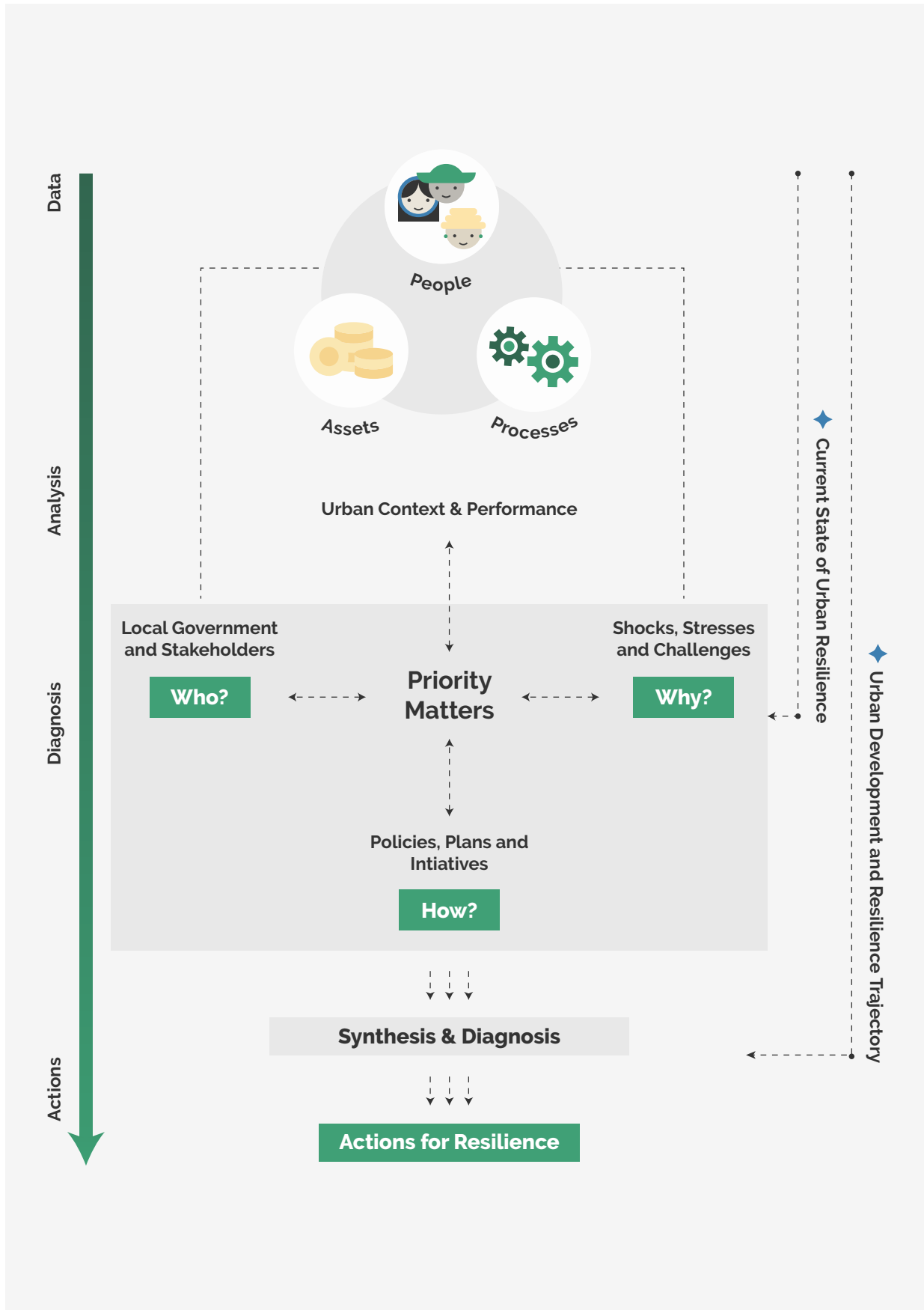


Figure: CRGP methodological framework diagram. Source: CRGP (2018).



The knowledge acquired through the Urban Context phase paved the way for an informative debate with and among different stakeholders through the Priority Matters workshops. The aim was to build consensus on areas of concern that need priority attention by the local government and stakeholders in order to enhance the city's resilience. To this end, Urban Context data were displayed and shared with workshop participants, and interactive systems mapping tools and techniques were utilised (see annex I – Risk and Priority Matters Workshops in Teresina). The system mapping allowed for the exploration of links - and their nature - between shocks and stresses that have occurred in the past and continue to pose serious risks for the city and its inhabitants, in addition to new plausible ones. Through this mapping, participants illustrated how combinations of shocks and stresses can drive the constitution of complex issues – Priority Matters - in light of existing contextual and emerging challenges such as climate change. The outcome of these workshop(s) was the identification of Priority Matters for building and enhancing the city's resilience. The majority of risks to the urban system converge and concentrate around these Matters, characterised by certain challenges or constraints, however, when addressed adequately, they also offer opportunities to maximise the outcome of targeted actions.

The next step was evidence-based validation, and characterisation of the workshops' findings. This step is completed through the CRPT's Urban Performance - an in-depth indicators-based approach. The CRPT provides an inventory of indicators to assess multiple elements and components of urban systems in terms of resilience. This phase of CRPT implementation was focused on collecting objective data, information and knowledge, localised through Urban Context and centred around specific Priority Matters for urban resilience (co-identified and co-prioritised in the priority matters workshop(s)). Furthermore, these data provide a basis to characterise (and quantify if necessary) some of the drivers of the identified Priority Matters as well as latter's effects and associated risks.

The analysis of indicator data, together with a review of existing, or under-development plans, policies and initiatives, answered the How lens, which aimed at examining how different priority matters and their drivers play out in light of existing, or under-development policies, plans and initiatives. The review provided Information on the existing development efforts, based on established policy and/or legal frameworks, which guide the future development of the city including those concerning risk reduction measures.

Synthesising the analysis outcomes of the four lenses – what, why, who, and how - led to the formulation of Urban Resilience Diagnosis, which draws a picture of the urban trajectories in terms of resilience and in the wider context of the priority matters identified, challenges and constraints encountered by the local government in Teresina, and ongoing urban and territorial development trends.

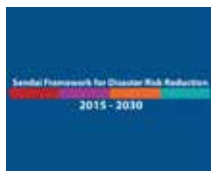
The Actions phase, also referred to as the Actions for Resilience (A4R) phase, entailed co-producing a roadmap with the local government and relevant stakeholders, based on the Diagnosis and potential trends of risk and resilience in the city, and with a view to initiating positive change through verifiable evidence.

At this phase of implementation, outcomes are prioritised and implementable Lines of Actions are identified and agreed upon with the local government and stakeholders, to address the Priority Matters.

Along each Line of Action, Recommendations for Actions for Resilience are developed 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 and ambitious in their expected impact.

## **Alignment with international frameworks and agendas**

CRGP's approach, and its CRPT tool were 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 CRGP's work with these frameworks enables the local governments who have implemented it to better understand, report, and deliver on targets.



## Sendai Framework for Disaster Risk Reduction

The Sendai Framework requires resilience at all levels of planning, local, regional, and national. The CRGP contributes to the overall objective of the framework in implementing cities, like in Teresina, by: reducing vulnerability to disasters and increasing preparedness for response and recovery, and contributing to the four priorities for action:

- **Priority 1:** Build knowledge based on evidence on disaster risk reduction;
- **Priority 2:** Strengthen governance frameworks against disaster risk through the adoption of plans;
- **Priority 3:** Invest in risk reduction and resilience;
- **Priority 4:** Expand the preparation of the stakeholders and an "early recovery" approach.



## Sustainable Development Goals

Urban resilience is related to key elements of sustainable urban development and to the objectives of the Post-2015 Sustainable Development Agenda, in particular with Objectives 1, 2, 3, 9, 11, 13 and 14, where reference is made to resilience, but also with other objectives where it appears implicitly. Resilience is an important component of many of the objectives set out in the entire preamble and paragraphs 7, 9, 14, 23, 29 and 33 of the Declaration to the SDGs. Cities implementing the CRGP's approach and tool, such as Teresina, are well-positioned to move towards the targets and indicators set out in the SDG framework.



## Paris Agreement on Climate Change

Brazil is a signatory of the Paris Agreement and, as such, Teresina has a shared responsibility to contribute to its goals. CRPT implementation should assist the city to work towards Article 7, which requires the strengthening of resilience in the face of climate change as a premise of sustainable development. Resilience in cities requires the involvement of local governments in the following principles of the Paris Agreement:

- Adaptation to the impacts of climate change;
- Minimisation of losses and damages related to climate change;
- Local resilience construction.



## World Humanitarian Summit – Agenda for Humanity

The main responsibilities defined in the World Humanitarian Summit are related to the construction of resilience. The approach adopted by UN-Habitat to build resilience, and showcased through the collaborative implementation of the programme's approach in partnership with cities like Teresina, contributes to priorities 1D, 4A, 4B, 4C and 5A.



## New Urban Agenda

Resilience is related to some of the key objectives of the New Urban Agenda agreed by Member States during Habitat III. Through the collaborative implementation of the CRPT, Teresina is supporting:

- a. New paradigms of urban planning for resilience.
- b. Legal and regulatory frameworks that allow adequate governance in urban development.
- c. Analysis of inherent risks in urban areas.
- d. Promotion of good practices related to the local economy and strategies to promote safe and sustainable cities.

# CRGP: Implementation Process in Teresina

## Teresina Urban Resilience Programme

The Programme's approach is, first, to generate metrics of urban resilience to establish a baseline (or 'profile') that covers the entire urban system in search of weaknesses, vulnerabilities and strengths, and to prioritise lines of actions, to develop concrete and actionable strategies for strengthened resilience. The approach follows a multi-sectoral, multi-hazard and stress, and multi-scale approach, and is based on the understanding that cities function as a set of integrated and interdependent systems, regardless of their size, culture, location, economy and or political environment.

The implementation process in Teresina was divided into two main phases. The first year of implementation (2020), concentrated efforts on data collection, analysis, diagnosis and proposition of Actions for Resilience. The second year concentrated on strategic actions, implementation roadmaps, financing and communication of the proposed lines of action. In this first year, three main products were produced from the programme's activities: The City Profile (City ID), consolidating the information from the Urban Context; the City Resilience Diagnosis (City Diagnosis), an analysis of data collection and urban performance findings, actors and processes; and, finally, the Urban Performance Indicators Benchmark Report. During the second year of implementation, two main products were delivered by the cooperation: the Recommended Actions for Resilience and Sustainability (RAR-S Report), a strategic planning document that guides paths towards a more resilient Teresina; and the RAR-S Implementation Roadmap, identifying short, mid and long-term strategies for enhancing implementation and building a monitoring framework.



**Image:** Teresina, Brazil. Source: David Jales.

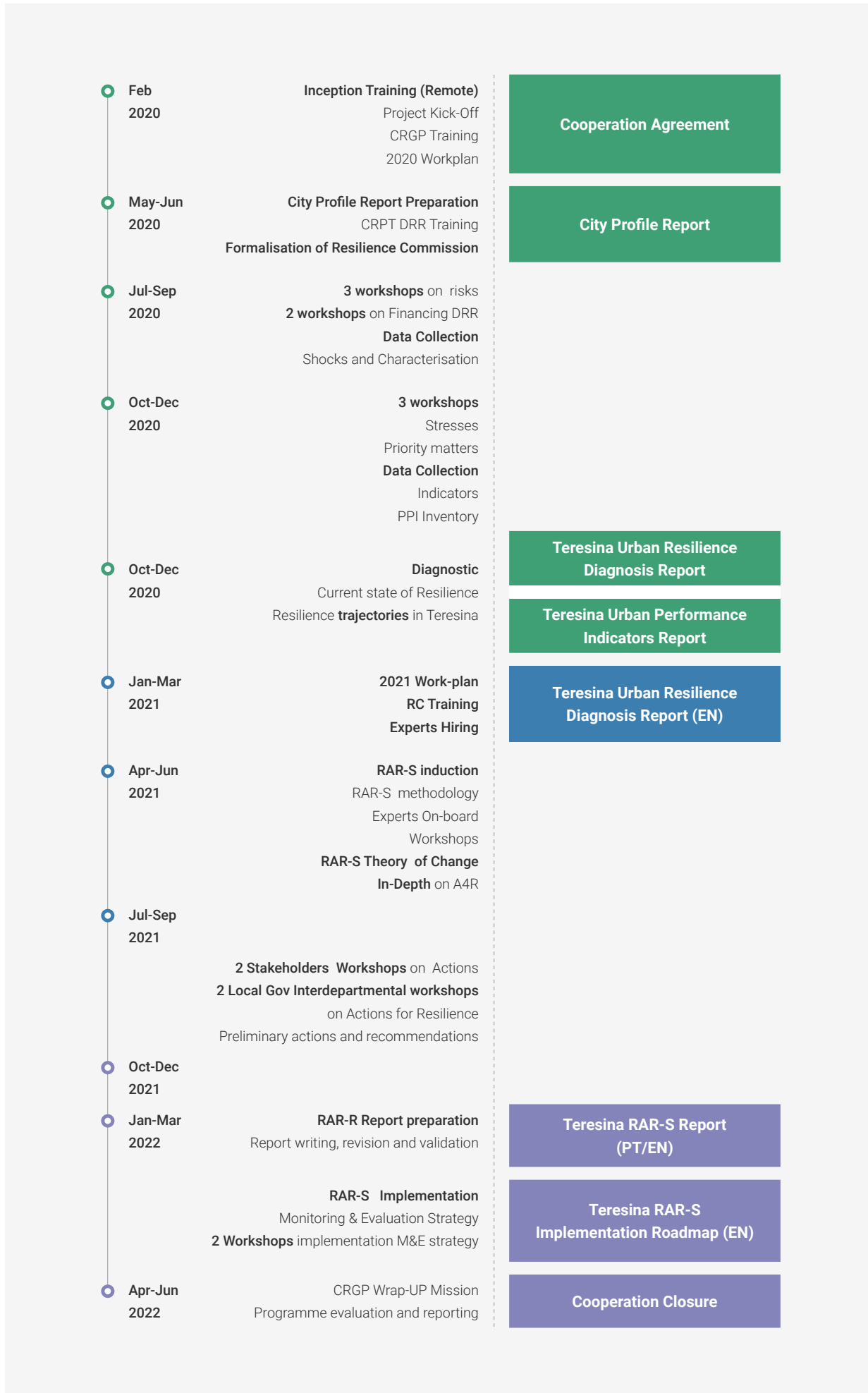


Figure: CRPT implementation in Teresina. Source: CRGP (2022).

# Report Structure

The organisation of this report does not necessarily follow the steps mentioned above in the methodological framework. It is rather structured around the main findings as a result of the different activities conducted as part of the implementation process - namely data collection, analysis and diagnosis. The report is comprised of four main interrelated chapters: Chapter 1 - Urban Context, Chapter 2 - The current state of Urban Resilience in Teresina, Chapter 3 - Urban development and Resilience Trajectory in Teresina, and Chapter 4 - Synthesis and Diagnosis.



## Chapter 1: Urban Context

Urban Context presents an overview of the findings of both CRGP desk research and stakeholders participatory workshops. It brings together qualitative and quantitative data on various aspects including historical background, population and demographics, spatial dimensions, local economy and livelihood, the composition of local government and municipal departments, and present resilience related challenges and opportunities.



## Chapter 2: The Current State of Urban Resilience

The current state of Urban Resilience in Teresina displays the main priority matters for urban resilience in Teresina that were co-identified and co-prioritized through stakeholders participatory workshops, validated and further characterised through indicators-based urban performance assessment. Particularly, this analytical chapter illustrates the different combinations of shocks and stresses that are shaped by present urban challenges (see chapter 1 - Challenges and opportunities) leading to the emergence of each priority matter. It further presents the characterisation of each priority matter through an urban performance assessment, which relies on CRPT indicators to evaluate the strengths and weaknesses of different urban elements linked to priority matters.



## Chapter 3: Urban Development and Resilience Trajectory

Urban Development and Resilience Trajectory in Teresina presents ongoing context-related trends, namely climate change, the unfolding impacts of the COVID-19 pandemic, and urban development trends that have the potential to directly or indirectly promote or undermine resilience building. To this end, the chapter illustrates the result of an extensive review of policies, plans, initiatives and risk reduction measures in place or under-development that have the potential to influence, on different levels, priority matters for resilience in Teresina.



## Chapter 4: Synthesis & Diagnosis

Synthesis and Diagnosis brings together the findings of the three previous chapters with the aim of drawing a picture of the urban trajectories in terms of resilience to the priority matters identified, challenges and constraints encountered by the local government in Teresina, and ongoing urban and territorial development trends. It is hoped that this analysis synthesis will establish the ground for a well-informed roadmap to be jointly co-designed by CRPT's Actions for Resilience experts, the municipality of Teresina, and local stakeholders to strengthen urban resilience and sustainability.



## Chapter 5: Recommended Actions for Resilience and Sustainability

Actions for Resilience presents a roadmap co-produced with the local government and relevant stakeholders, based on the Diagnosis and potential trends of risk and resilience in the city, to initiate positive change through verifiable evidence. Furthermore, it recommends a number of activities and necessary inputs along three main Lines of Actions: 1. The institutionalisation of urban resilience in city planning and local operations; 2. Improving urban management mechanisms for sustainable urban development; 3. Building a strong and resilient local economy.

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# Executive Summary

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In 2019, the Municipality of Teresina, the Government of Brazil and the United Nations Program for Human Settlements signed a Cooperation Agreement for the implementation of the Teresina Urban Resilience Program. Through this agreement, for 2 years, the parties worked together implementing the City Resilience Profiling Tool to build technical capacity for urban resilience in the municipality and produce a strategic action plan for the city, called Recommendations on Actions for Resilience and Sustainability.

The aim of this report is (1) to better inform the Local Government, in this case the Municipality of Teresina, of the current state of the city with regards to resilience and ongoing related trends, based on conclusions derived from the CRPT implementation process described in this document; and (2) present a set of activities and actions, organised under three lines of action which, based on the project's theory of change, guides municipal public policies in response to the priority issues previously identified.

## The Urban Context

Teresina: one of the fastest-warming intermediary cities in the world is using its resources wisely for building resilience and sustainability.

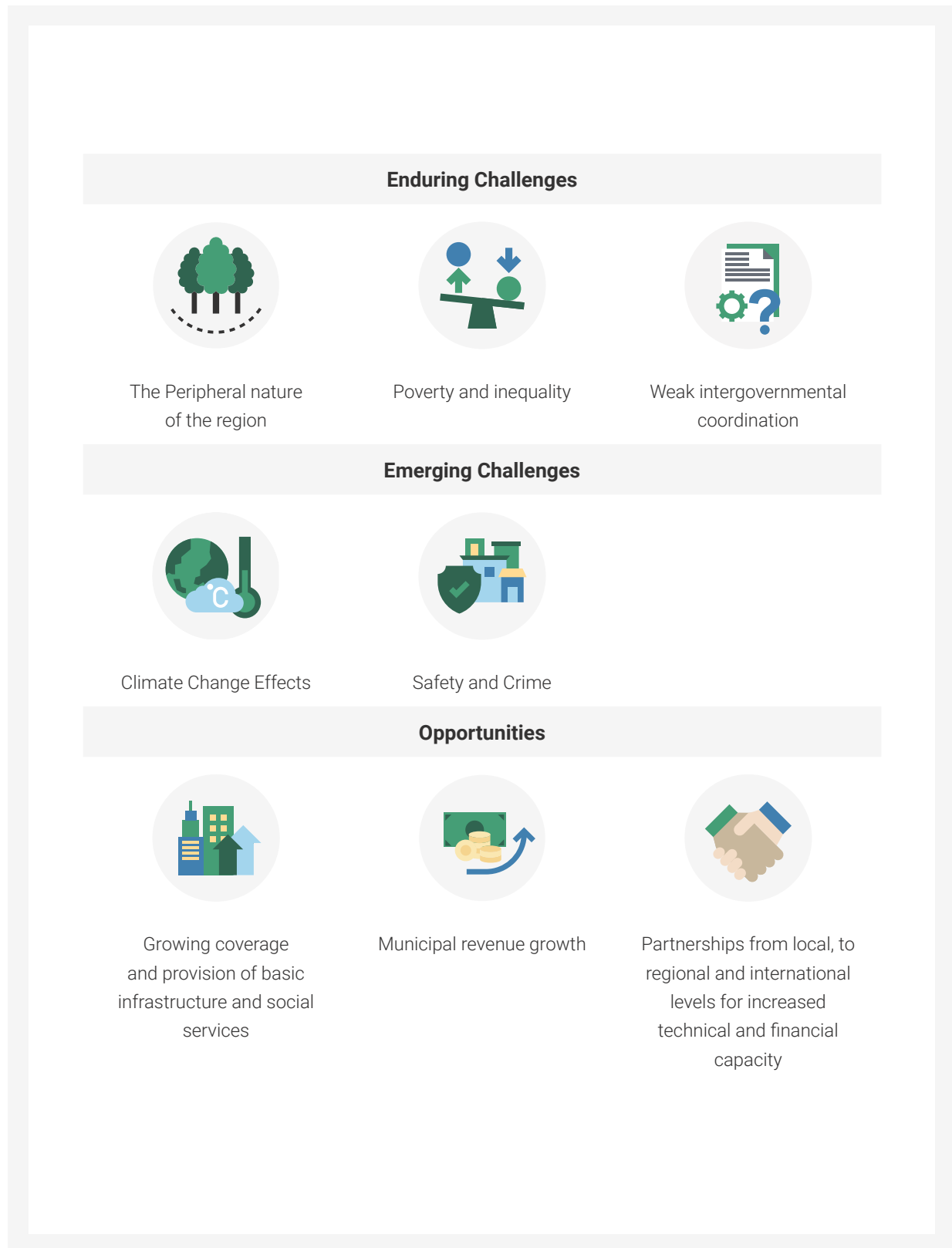


**Figure:** Location of the city of Teresina. Source: CRGP (2022).

<b>Country</b>	Brazil
<b>State</b>	Piauí
<b>Location</b>	Northeast region
<b>Climate</b>	Tropical group (A) with Savanna climate (Aw); the arid period from, September-December and the rainy season from January to April
<b>Area</b>	1392 km <sup>2</sup>
<b>Population</b>	864.845 (2019)
<b>Language</b>	Portuguese
<b>Local GDP/cap.ta</b>	USD 3.889,09 (2017)



# Teresina's Challenges and Opportunities



**Figure:** Teresina's Challenges and Opportunities. Source: CRGP (2022).

# Resilience Building Priority Matters

Teresina's priorities for strengthening resilience are delineated to address key matters where multiple risks converge in light of enduring and emerging urban challenges.

In a series of workshops for building local knowledge and expertise held by UN-Habitat's City Resilience Global Programme, the Teresina Resilience Commission defined with other urban actors the priorities of the city for resilience building.

## Priority Matter 1

### Water Cycle Management

The water cycle, also known as the hydrological cycle, is the phenomenon of water circulation between the biosphere, atmosphere, lithosphere, and hydrosphere. In cities, this natural water cycle is affected and modified by urbanisation, industrialization, and population growth, and is made more complex by the need to properly manage water supply, drainage, and sewage collection.

Water cycle management is concerned with the management of both natural and urban water cycle in Teresina. This priority matter addresses different types of shocks and chronic stresses in the urban system for building climate resilience.

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#### Drivers of Water Cycle Mismanagement

- Disruption of Hydrological Dynamics
- Mismanagement of Urban Metabolism

The lack of sustainable methods for managing urban metabolism, particularly solid waste, wastewater, and stormwater systems, undermine further the urban water cycle management with serious implications for the city's ecological balance, increasing the potential of more risks to emerge.

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#### Key Data

Due to rapid urbanisation phenomena and lack of affordable housing, 7.8% of the urban footprint is located in hazardous and risk prone areas.

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#### Associated

- Fluvial, Pluvial and Flash Floods
- Landslide
- Waterborne Diseases
- Infrastructure Failure

Processes of urbanisation, shaped by poverty and inequality, have altered the natural water flows leading to an increase in the frequency of multiple shocks with severe socio-economic impacts.

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#### Key Data

Percentage of homes with inadequate structure is around 20%, and percentage of critical infrastructure with inadequate structures is almost 10%.

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## Priority Matter 2

### Ecosystem Balance

The ecosystem imbalance refers to disturbances in the balance of a natural ecosystem due to natural or anthropogenic causes. In the urban context, some of the main causes of this process are the accelerated territorial expansion over the natural environment, the contamination of water bodies, the pollution of the atmosphere, soil erosion, and deforestation, among others.

In Teresina, the ecosystem imbalance is largely related to vegetation losses severed by rapid and unsustainable urbanisation patterns, leading to increasing heat island in context of high vulnerability to global warming; and water contamination driven mainly by untreated sewage discharge, and leading to biodiversity loss and plant infestation.

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#### Drivers of Ecosystem Balance

- Vegetation Loss
- Environmental Pollution
- Wildfires

The effects of this issue are becoming quite evident in Teresina through various events, mainly biodiversity loss, and insects, animals, and plants infestation, which in turn caused both marked public health problems and considerable socio-economic impacts.

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#### Key Data

From 2001 to 2019, the urban perimeter lost approximately 40% of the tree cover. Between October 2019 and October 2020, 385 fires were identified in Teresina by satellite imagery.

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#### Associated Risks

- Urban Heat Islands
- Insects, animals, and plant infestation

On the local level, Teresina is currently in the bidding process for the development of its Climate Action Plan, which will incorporate the construction of trend scenarios, mitigation strategies, and adaptation to the impacts of climate change.

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#### Key Data

While the proportion of public open space per 100.000 inhabitants (57 ha/100,000hab) and urban green area per capita (13,43 ha/1,000hab) are considered positive indicators, there is a current trend in vegetation loss and the percentage of open areas within the urban footprint (46%) should be increased.

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## Priority Matter 3

### Economic Performance

Teresina historically suffered the consequences of the peripheral nature of its location which has been most of time far away or at the fringes of major national economic hubs and their sphere of influence. It therefore never has never had any major strategic industries and relevant infrastructure.

Lack of well-connected national and interregional networks of transportation and supply chain, and an ongoing national economic crisis, have undermined the city's economic development and growth.

It is noteworthy that the COVID-19 pandemic intensified some drivers, especially the informal economy, and risks associated with low economic performance in Teresina, with a retraction in economic activities and, consequently, in municipal revenues and an increase in unemployment rates.

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#### Drivers of Economic Performance

- Limited business attractivity
- Informal economy
- Weak economic diversity

The city and the region are under-served by well-connected national and interregional networks of transportation and supply chains, which in turn have undermined the city's economic development and growth. The Brazilian financial crisis of 2015 exacerbated economic performance further in Teresina, with effects mostly evident in commercial and industrial activities.

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#### Key Data

Market connectivity in Teresina is quite low, with the rate of commercial banks per 100,000 inhabitants being 6.13. The rate of informal employment in the city is 44,7%, with 50,1% Males and Females 49,9%. The manufacturing share of local city products is merely 5.7%

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#### Associated Risks

- Social unrest
- Unemployment
- Local revenue losses

Historically the city has suffered the consequences of its peripheral location, which has been mostly far away or at the fringes of major national economic hubs and their spheres of influence. Therefore, it has never had any major national strategic industries and relevant infrastructure.

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#### Key Data

The total unemployment rate in Teresina is 13,7%, which is higher than the national estimate, but lower than regional figures. 22.5% of total local government revenue in Teresina is own-sourced.

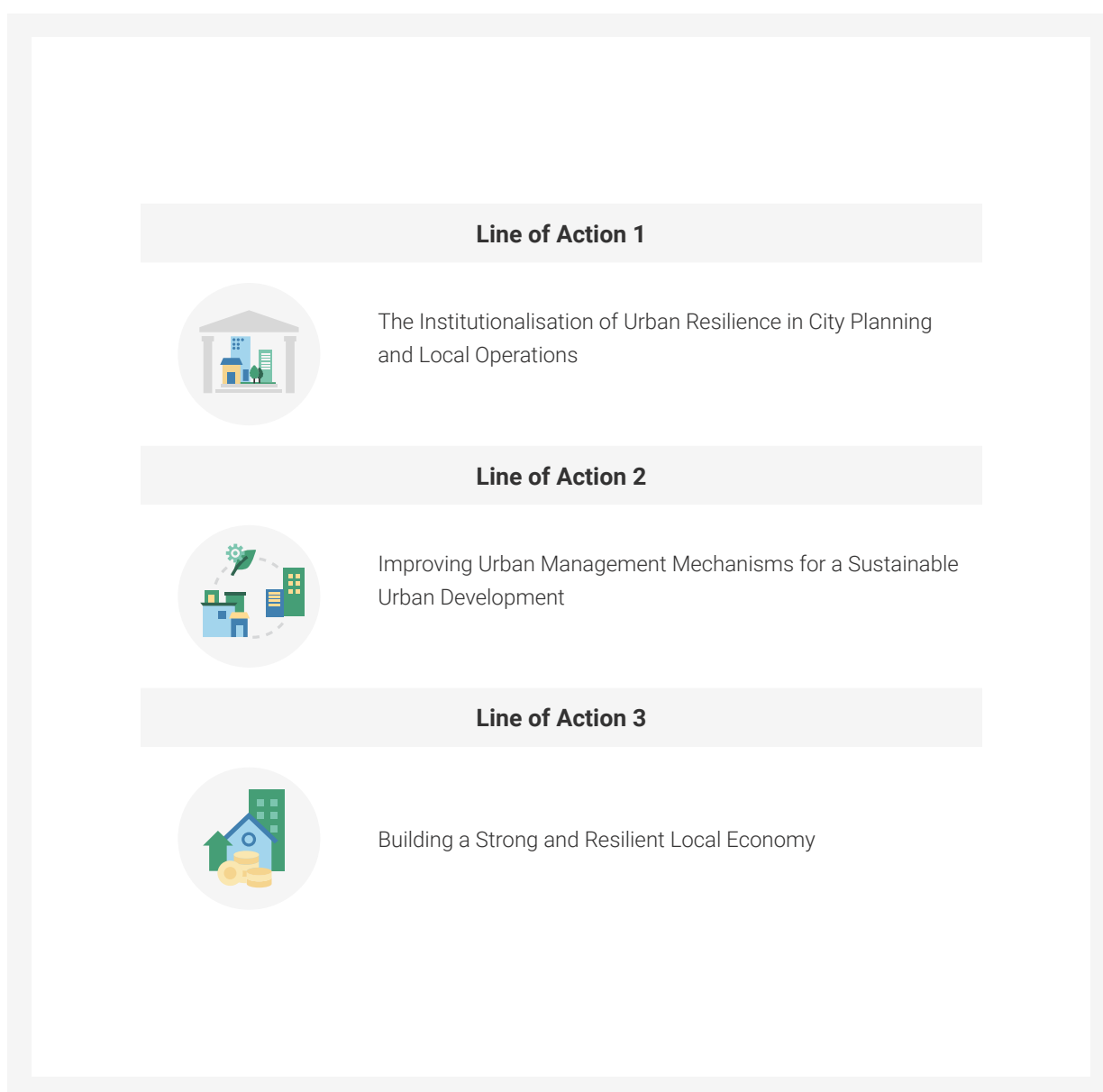
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# Recommended Actions for Resilience and Sustainability

Developing a resilient and sustainable city requires implementing actions that address the most pressing matters.

The development of Recommended Actions for Resilience and Sustainability is the fruit of collective reflection among various stakeholders including local, regional, national and international actors; as well as different sectors of the government, civil society and private entities. This reflection was built on a thorough understanding of the cause and effects of risks and their drivers, the contextual factors constraining decision making and action in Teresina, and the matters that needed prioritisation and comprehensive actions. The multi-stakeholder collaboration enabled the development of a Theory of Change, focused on seeking points of intervention to maximise the impacts of the recommended actions and activities in Teresina for the 3 priority matters: Water Cycle Mismanagement, Ecosystem Imbalance, and Economic Underperformance.

The Recommended Actions for Resilience and Sustainability present a roadmap for the city to act on its priority issues by proposing activities that can bypass contextual challenges, seize the city's opportunities and leverage sustainable development outcomes and enhance urban resilience thinking inside the local government. It brings forward the city's vision for a more resilient future, with its desired goals to address each priority issue, the path from prioritisation to effective policy making, and the Lines of Actions to deliver on these goals.



**Figure:** Recommended Actions for Resilience and Sustainability. Source: CRGP (2022).

## Line of Action 1

# The Institutionalisation of Urban Resilience in City Planning and Local Operations
















Despite the active role of the local government in Teresina in leading the processes of resilience diagnosis and building consensus around a set of actions, there remains a risk of actions not being implemented (due to staff turnover, election cycles, etc.) as planned over the long run, unless resilience thinking is well embedded in the day-to-day work of the municipality and integrated into municipal departments policies, decision making and way of working.

Throughout the project implementation, a need to create a framework of a shared understanding of urban resilience was commonly agreed by all the stakeholders involved, including municipal departments. The aim was to implement the actions in an effective and efficient way, and sustain the municipality and local actors' commitment to the goals and objectives of this project - strengthening the city's resilience - beyond the project's lifetime.

As a main line of action, institutionalising resilience thinking and planning across the local government is comprised of a series of organisational, capacity building and awareness-raising activities, such as the formalisation of the role of the Resilience Committee and allocating the necessary resources for its tasks, promoting debates on economic development, mobility and environmental topics, and engaging the youth in the promotion of resilience thinking, among others.

### Inputs for Line of Action 1

↓ The Institutionalisation of Urban Resilience in City Planning and Local Operations			
↓ Recommended Action: Mainstream resilience thinking and considerations across local policies, decisions making, projects and activities			
Activity Type	Activities	Why	SDGs
<b>Strategic Activities</b>	1.1 Set up a comprehensive strategy for international municipal action.	Municipal international action can be a mechanism to increase urban resilience through spaces of learning and opportunities, creating robustness for local capacities. In order to take full advantage of international cooperation and to institutionalise it in the city's development framework, it is necessary to define a strategic plan, which will establish an expected perspective of impact and sustainability.	 
<b>Organisational Adjustments</b>	1.2 Institutionalise the role of the resilience commission to foster cross-departmental and cross-sectoral efforts around resilience building and RAR-S implementation.	Institutionalising urban resilience demands a holistic approach, considering all urban systems and its interdependencies. In order to institutionalise resilience thinking inside the local Government it is important to consolidate the Resilience Commission as a permanent Council for Urban Resilience.	   

<b>Capacity Building Activities</b>	<p><b>1.3</b> Continuous training and capacity development programmes for private entities and stakeholders to enhance their technical skills, operations and resource management towards more sustainable outcomes.</p>	<p>There is a need to increase the degree of sensitivity, knowledge on the subject and capacity of the companies and their workers who interact with urban development. Also, the administration collaborates and contracts with private companies the execution of various programmes and actions constantly. These companies and their workers must have the best training available to improve the results of the services they offer and whose client is often the administration. Given that the result of these actions and the economic benefits are not immediately perceived, it is necessary for the administration to promote and lead continuous training programmes that increase the degree of general training in environmental matters in the private sector.</p>	    
<b>Awareness Raising Activities</b>	<p><b>1.4</b> Strengthen the role of youth in innovation and advocacy for resilience and climate change adaptation.</p>	<p>Integrating resilience thinking should be a cross-sectoral and at the same time inclusive process, incorporating the voice of youth to promote innovation and a new vision on public administration efforts towards a sustainable future.</p>	  
	<p><b>1.5</b> Promote high-level debates for discussing economic development, mobility and environmental nexus.</p>	<p>In order to achieve proper societal adherence for specific urban policies, it is necessary to integrate different stakeholders, such as the civil society and the private sector, in discussing the role of mobility, land use and environmental policies in building urban resilience.</p>	   
	<p><b>1.6</b> Public Awareness Raising for Urban Resilience.</p>	<p>A resilient system ensures the preservation of life, the limitation of injury, and the enhancement of its inhabitants' "prosperity"; promoting inclusiveness and fostering not only comprehensive but also meaningful participation of all, particularly those in vulnerable situations. This approach can ensure a sense of ownership and support implementation of plans and actions.</p>	  






## Line of Action 2

### Improving Urban Management Mechanisms for a Sustainable Urban Development












Water cycle mismanagement and ecosystem imbalance - identified as priority matters - are driven by the rapid urbanisation process, the precarious basic infrastructure systems, and unsustainable development practices. In order to address and mitigate these issues, the local stakeholders and actors sought a holistic line of action centred around enhancing the sustainable urban development of Teresina.

Accordingly, three main actions were recommended which aim to promote a compact and sustainable urban form, sustainable green and blue infrastructure, and coherent urban planning and implementation. Each recommended action consists of a series of awareness-raising, capacity building, organisational enhancement, and strategic activities. Activities range from participation in international groups and programmes, the execution of training and continuous improvement programmes for the city officers and practitioners, the creation of a fund for the capture and management of land value gains, the execution of Transit Oriented Development programmes, to the creation of a single agency to coordinate the different aspects related to the water cycle management, to name but a few.

#### Inputs for Line of Action 2

↓ Improving Urban Management Mechanisms for a Sustainable Urban Development			
↓ Recommended Action: Shifting Towards a Compact and Sustainable Urban Form			
Activity Type	Activities	Why	SDGs
<b>Strategic Activities</b>	1.1 Establishment of Transit Oriented Development Programme.	Reduce the risks of disasters and enhance the city's resilience, by limiting land consumption which result in altering natural terrains, and destruction of natural water systems, which in turn raise the risks of flash and fluvial floods in the city. Contribute to building more sustainable urban form, by maximising the urban density, and residential, commercial, and leisure spaces near public transport corridors, consequently, reducing the use of private cars, and strengthen economic viability through the concentration of commercial land, and activities, and services Also, the greater attractiveness of these areas results in an increase in the value of the land that can be captured by the city to improve the quality of urban spaces. Saving significant public spending on providing new infrastructure for low density developments.	 
<b>Organisational Adjustments</b>	1.2 Creation of the Fund For The Capture and Management of Land Value Gains.	This fund can be used to finance several activities that can facilitate strengthening sustainable urban development, namely: training programmes for municipal staff; awareness-raising campaigns on sustainability and resilience.	  



<b>Capacity Building Activities</b>	<b>1.3</b> Training and continuous improvement program for City Officers and Practitioners.	A major bottleneck in the implementation of sustainable urban planning policies, plans and initiatives lies in the technical qualification and implementation chain from planning to execution. The municipality needs continuous staff training for optimal, up to date and innovative ways of implementation of legal frameworks from start to end.	   
<b>Awareness Raising Activities</b>	<b>1.4</b> Establish partnerships with professional associations and academia for promoting the city's master plan and innovative practises for its implementation.	To ensure effective and efficient implementation through gaining the public support and enabling adjustments whereby public concerns are heard and addressed properly and timely.	 
<b>↓ Recommended Action: Improving urban metabolism through green and blue infrastructure</b>			
<b>Strategic Activities</b>	<b>2.1</b> Refining Teresina's Urban Revegetation Strategy.	The city must improve its revegetation strategy through proper tree planting on the streets and greening of building surfaces, through techniques such as green walls and green roofs, which will improve environmental quality and population's life quality as well as contribute to the function of the urban metabolism.	  
	<b>2.2</b> Development of a permeabilization and soil de-sealing strategy.	The implementation of green infrastructure strategies and the de-sealing and permeabilisation improves the city's drainage system, reducing the occurrence of floods and landslides, as well as the pollution of water streams due to stormwater runoff.	 

**Organisational Adjustments**

**2.3** Improvement and expansion of Teresina's recycling system to reduce water and soil contamination.

Beyond environmental protection and public health benefits, an efficient municipal waste collection and recycling system can help in energy and natural resources saving, reducing waste disposal volume, decreasing air and soil pollution, mitigating greenhouse gas emissions, and boosting the circular economy.



**2.4** Creation of a Municipal Unit for the Management of the Water Cycle in the City.

The water cycle mismanagement has been identified as a priority matter in the city, driven by a multitude of factors explained in detail in chapter 3. Addressing these multi-faceted issues requires bringing many actors and levels of the government together, and reducing multiple and overlapping work streams which in many cases lead to inaction or counteracting. This new unit inside the municipality, specifically within the department of planning (SEMPPLAN) can take on the responsibility of overseeing the plans, projects and actions of the various bodies involved in water cycle in Teresina; facilitating information and knowledge sharing among all actors, ensuring consistency and coherence of plans and actions, and avoiding mal-functioning.



**Awareness Raising Activities**

**2.5** Establish a guided visits and tours programme to key infrastructures, sites of interest, and pilot initiatives for sustainable and resilient developments.

In a city under the constant threat of flash-floods, it is essential to increase awareness and knowledge about nature-based solutions, such as green and blue infrastructure, as well as infrastructure and the functioning of the city in general, both for the general public, for administration technicians and from private companies. One of the most powerful and effective actions that can be carried out is the presentation and dissemination of existing projects, initiatives and experiences based on nature-based solutions that can serve as a model and inspiration for new initiatives. The visits and guided tours are in this sense a very powerful way to achieve this objective.



↓ Recommended Action: Enhanced Intra-governmental Coordination for Coherent Urban Planning and Implementation

**Organisational Adjustments**

**3.1** Increase inter and intra-departmental coordination throughout the policy cycle.

To reduce inconsistency between policy and projects planning goals and implementation outcomes, thus avoiding inefficiency and ensuring best delivery of goals and objectives.



**Capacitação**

**3.2** Development of Urban Planning and Implementation Guidebook, Checklist and Technical Manuals.

Teresina has an extensive administrative municipal organisation; thus, it is necessary to standardise a set of common criteria aligned with the general objectives of the city among the different administrative bodies. These guidelines will be officialised through documents such as guidebooks, checklists and technical manuals, which will allow the proper implementation of municipal policies and plans.






## Line of Action 3

### Building a Strong and Resilient Local Economy



Unemployment, low productivity, weak market connectivity and lack of economic diversity were all identified as factors driving the economic underperformance in Teresina. In order to address this priority issue, which has been exacerbated by the COVID-19 pandemic, a third line of action was agreed upon to focus on building a strong and resilient local economy.

This line of action is broken down into four recommended actions that, respectively, aim to finance economic development, enhance urban mobility management, promote city-rebranding for enhanced investment attraction and innovation, and enhance access to markets and opportunities. Each recommended action comprises a series of awareness-raising, capacity building, organisational adjustments, and strategic activities, such as staff capacity building for increased municipal revenue, the creation of a Local Mobility Agency for Operations, enabling City-to-City cooperation, the creation of a Local Economic Development Agency (LEDA) for territorial marketing, the creation of a committee to gather different stakeholders to work around science, technology, innovation and education, promoting innovation in the city, and the integration of the informal sector.






### Inputs for Line of Action 3

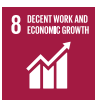

↓ Building a Strong and Resilient Local Economy			
↓ Recommended Action: Enhanced Efficiency of Municipal Management and the Financial Sustainability of the Local Government			
Activity Type	Activities	Why	SDGs
<b>Strategic Activities</b>	<b>1.1</b> Update and enhance municipal mechanisms of monitoring and evaluation of services effectiveness and efficiency.	The Urban Resilience Diagnostic showed deficiencies in monitoring data from municipal public services. This lack of data also coincides with relevant points raised by the Resilience Commission, such as difficulties in implementing urban projects and incompatibilities of technical capacity and demand for public services. This monitoring is critical to generate baseline and respond to problems of lack of technical capacity for adequate municipal services.	 
<b>Capacity Building</b>	<b>1.2</b> Enhance municipal staff's skills for more improved and more efficient municipal tax collection.	The Resilience Commission consultation process clarified that the municipality already has projects for tax management modernisation, as well as secured resources. However, the administrative capacity to implement these resources and follow up on the programmes is still lacking. Modernising tax management responds to the need to increase own revenue sources to finance sustainable development and mitigate fiscal crises.	

↓ Recommended Action: Enhanced urban mobility management for higher productivity and social-spatial inclusion

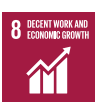

<b>Ajustes Organizacionais</b>	<p><b>2.1</b> Create a Local Mobility Agency for Operations and Integrate Mobility Planning into the Macro-Area of Planning and Environment.</p>	<p>STRANS' current management model does not meet the need for agility in the coordination and supervision of municipal transport, be it traffic or public transport. It is thus recommended to update the model following the successful example of other cities, with a Local Transportation Agency, and integrating the mobility planning units with the other urban planning sectors under the Secretariat of Planning.</p>	  
	<p><b>2.2</b> Creation of an intersectoral committee for coordinated management of urban mobility and logistics.</p>	<p>The challenges of local and regional interconnectivity are key drivers of low local economic performance. It is necessary to create a local agenda that resumes the discussions of a Logistics Plan for the RIDE Grande Teresina, and that advances in projects that improve regional mobility.</p>	 

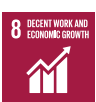

↓ Recommended Action: City Rebranding for Enhanced Investment Attraction and Innovation

<b>Strategic Activities</b>	<p><b>3.1</b> Prepare for the Future of Work.</p>	<p>To cope with ongoing global trends of digitalisation and the consequent shifts in work, industries and business, and prepare for the future of work while ensuring just and inclusive opportunities for all, and reducing inequality in access to work, opportunities and resources.</p>	 
<b>Organisational Adjustments</b>	<p><b>3.2</b> Set up a Local Economic Development Agency for Territorial Marketing (LEDA).</p>	<p>The municipality has struggled to implement its strategic economic development actions due to limitations in its organisational structure. The economic development department lacks the necessary resources and competencies to enable projects and coordinate the various actors required to leverage economic development strategies. Thus, the creation of a LEDA (Local Economic Development Agency) is proposed to overcome administrative limitations, facilitate knowledge exchange, conduct studies and coordinate multiple actors for context-specific economic development strategies.</p>	  

<b>Capacity Building</b>	<b>3.3</b> Set up City-to-City local economic development cooperation for knowledge transfer.	Cooperation with cities that have been dealing with similar issues and already established their LEDA-like agencies can prove very useful in finding new and innovative ways in addressing issues related to local economic development, and knowledge and skills exchange. Such corporations also allow cities to learn from each others' experiences - what works and does not work for a LEDA agency, whereby cities can avoid experimenting with new policies and projects that have proved unsuccessful in similar contexts, thus saving significant resources.	 
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↓ **Recommended Action: Enhancing Access to Markets & Employment Opportunities for the Informal Sector**

<b>Strategic Activities</b>	<b>4.1</b> Commission a comprehensive study, in collaboration with academia and non-profit organisations, to understand and characterise the informal sector.	The Brazilian informality rate is around 40%, while the state rate was almost 60% for the second half of 2021 being the 4th highest in the country. Thus, in the Brazilian context, no sustainable economic development is possible without a special focus on this sector. To develop better projects and with the appropriate target audience, it is necessary to conduct specific research that understands the particularities of this sector.	 
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<b>Capacity Building</b>	<b>4.2</b> Position the Popular Bank (Banco Popular) as the anchor for providing support to SMEs and informal sector integration.	The Popular Bank has been identified as a key institution, the gateway to strengthening vulnerable economic sectors. It had and continues to have an essential role during the economic crisis caused by the pandemic of COVID-19, proving to be a powerful policy for strengthening economic resilience. Its strengthening offers an area of opportunity to integrate this group into training programmes, improved access to credit, professionalisation, formalisation and facilitating access to rights and benefits. However, it has limited credit provision, which needs to be reassessed especially after the post-covid financial crisis period. Also, the diagnosis showed that their operating capacity is limited, requiring greater technical capacity to increase the supply of micro-credit, associated also with better management mechanisms. A resilient city must be inclusive, and thus accommodate vulnerable sectors with appropriately tailored programmes.	 
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**Awareness  
Raising**

**4.3 Run**

awareness-raising campaigns, in collaboration with the civil society, on access to credits, grants and skills.

Although the municipality offers specific services aimed at the micro and small entrepreneurs, as well as support for formalisation and assistance to informal workers, their awareness and access to the service is still limited. The service does not have an adequate targeting and outreach strategy, which is necessary for efficient service delivery. It is also convenient to unify several services offered separately, to facilitate public's adherence.



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

[www.unhabitat.org/urbanresilience](http://www.unhabitat.org/urbanresilience)

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## Ações Recomendadas para a Resiliência e Sustentabilidade

### TERESINA

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Este relatório apresenta o Sumário Executivo das Ações Recomendadas para a Resiliência e Sustentabilidade de Teresina, com a finalidade de apresentar um roteiro estratégico de construção de capacidades no governo local para um futuro urban mais resiliente e sustentável em Teresina, Brasil.