

URBAN RESILIENCE PROGRAMME

How Resilient is your city?

**Bonn, Germany
27th April 2018**

UN HABITAT
FOR A BETTER URBAN FUTURE





Workshop

- Introduction
- Activity with Mayor of Pemba, Mozambique
- The City Resilience Profiling Tool
- Urban Resilience Enhancers
- Activity
- Real stories from real cities
- Q&A
- Wrap-up

UN-Habitat Urban Resilience Programme

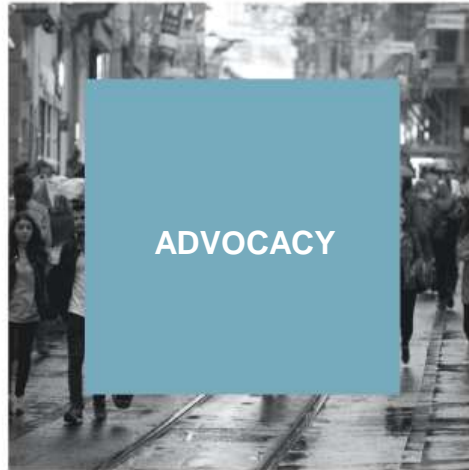
Amaia Celaya – Coordinator of Normative and Operational

Anna Karaan – Urban Resilience Officer

Craig Laird – Communications Specialist

OUR WORK

Our urban resilience initiatives include technical cooperation, advocacy and knowledge and aim to achieve a better urban future for all



Snapshot of your city

How resilient is your island city?

Name _____

Organization _____

City and Country _____

Contact email _____

Tell us about your city

1. Spatial dimension

[Brief description of the urban area and main assets, climate conditions and landscape]

2. Hazards and challenges

[What are the Hazards your city usually faces if any?]

[What is, from your perspective, the biggest challenge for your city?]

3. Population

[Brief description of population dynamics in your city: commuters, residential areas, use of public transport...]

4. Economy and livelihoods

[Brief summary of main economic activities in your city]

[Brief description of the distribution of economic activities in the city (areas, districts)]

5. Local Government

[Do you know if your city undertakes actions for Risk Reduction, Sustainability Measures and/or Resilience building?]

Thank you!

PEMBA MOZAMBIQU



STRINGER/AFP/GETTY IMAGE/FILE

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Partnerships

We forge partnerships with all the major actors working on urban resilience, including donors, local governments and their networks, humanitarian organizations, UN agencies and academia. One of our chief aims is to bring more cohesion and understanding around urban resilience thinking, in particular to local governments across the world. Partnerships therefore represent a significant advancement toward achieving that goal.

Collaboration
for Urban
Resilience

Global Alliance
for Urban Crises

RESCCUE

Risk Nexus
Initiative

**PARTNER
WITH US**

Urban Resilience
Institute

Making Cities
Resilient
Campaign

Arctic Resilient
Cities Network



Technical introduction to the City Resilience Profiling Tool

Thanks to LOCAL GOVERNMENTS
Tool developed with end-users

Thanks to DEVCO
“Making cities sustainable and resilient. Implementing the Sendai Framework for DRR 2015-2030 at the local level”

Thanks to WORKSHOP ATTENDEES
Iterative process and continuous learning

A black and white photograph of an outdoor market scene. In the foreground, a wire mesh fence runs across the frame. Behind the fence, several people are visible, some standing and some sitting. There are various items on the ground, including bags of produce and baskets. In the background, there are some buildings and trees under a clear sky.

WHAT IS URBAN RESILIENCE?

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**.

Risk Reduction

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Development

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URBAN RESILIENCE

**Humanitarian
Action**

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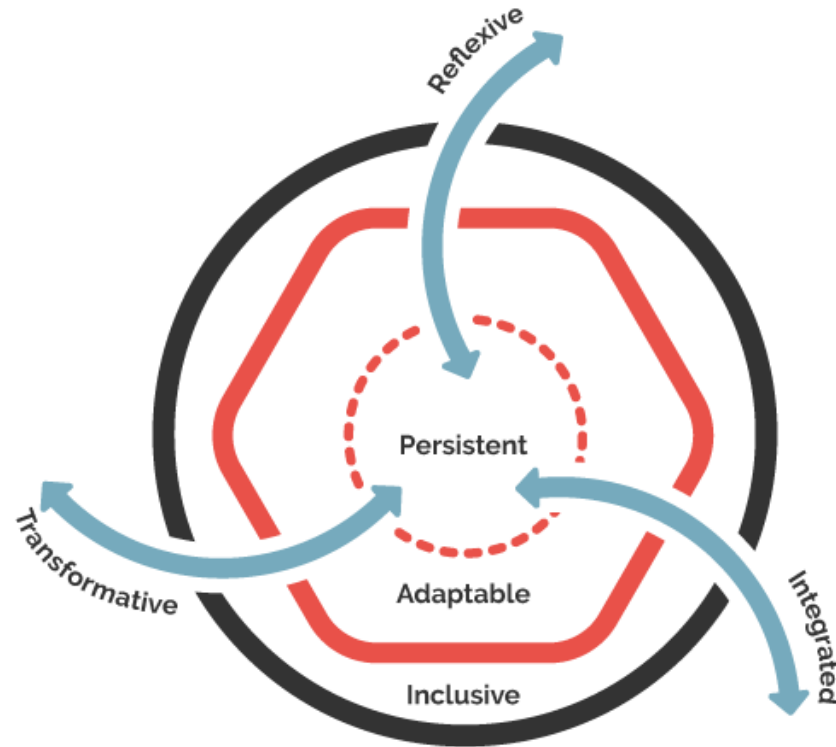
Sustainability

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URBAN RESILIENCE CHARACTERISTICS

SYSTEMIC APPROACH



WHAT

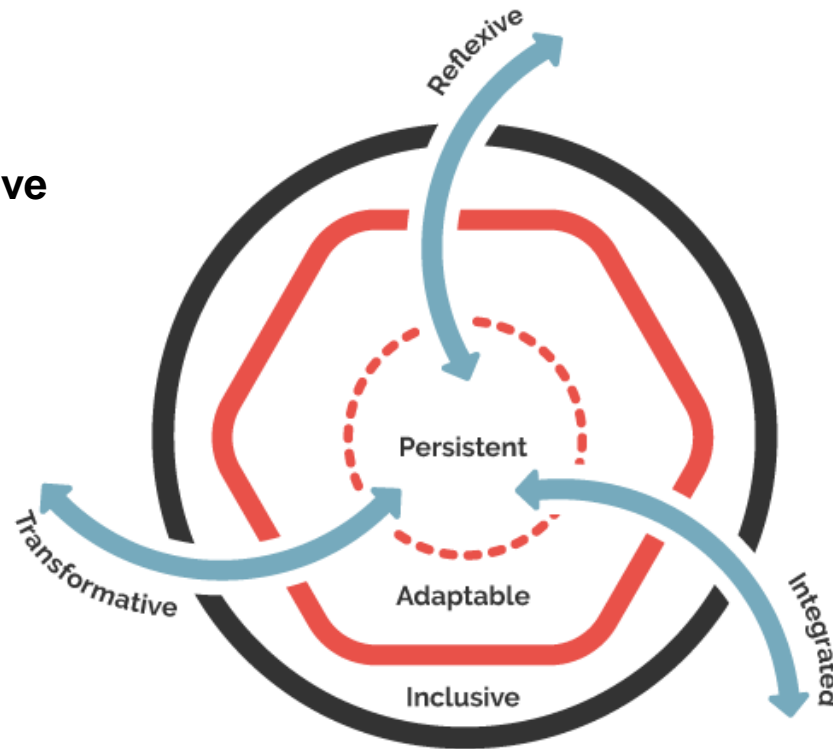
Persistent
Adaptable
Inclusive

HOW

Integrated
Reflexive
Transformative

WHAT
Persistent
Adaptable
Inclusive

HOW
Integrated
Reflexive
Transformative



URBAN RESILIENCE CHARACTERISTICS

SYSTEMIC APPROACH

PERSISTENT

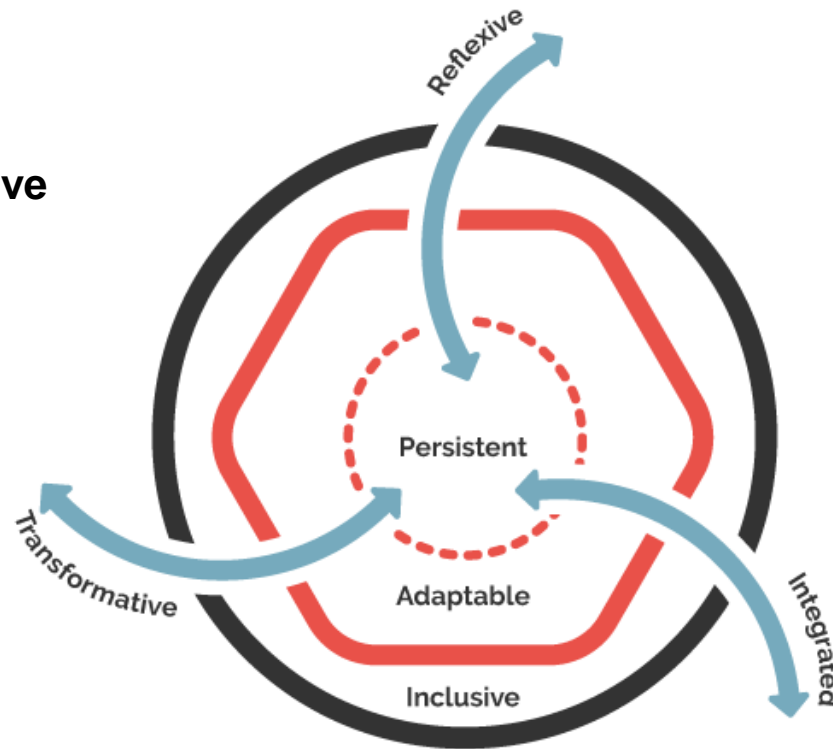
A persistent city **anticipates** impacts in order to prepare itself for current and **future shocks** and **stresses**. It builds **robustness** by incorporating coping mechanisms to withstand disturbances and **protect people and assets**. It encourages **redundancy** in its networks by generating spare capacity and back-ups to maintain and restore basic services, ensuring reliability during and after disruption.

WHAT

Persistent
Adaptable
Inclusive

HOW

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Reflexive
Transformative



URBAN RESILIENCE CHARACTERISTICS SYSTEMIC APPROACH

ADAPTABLE

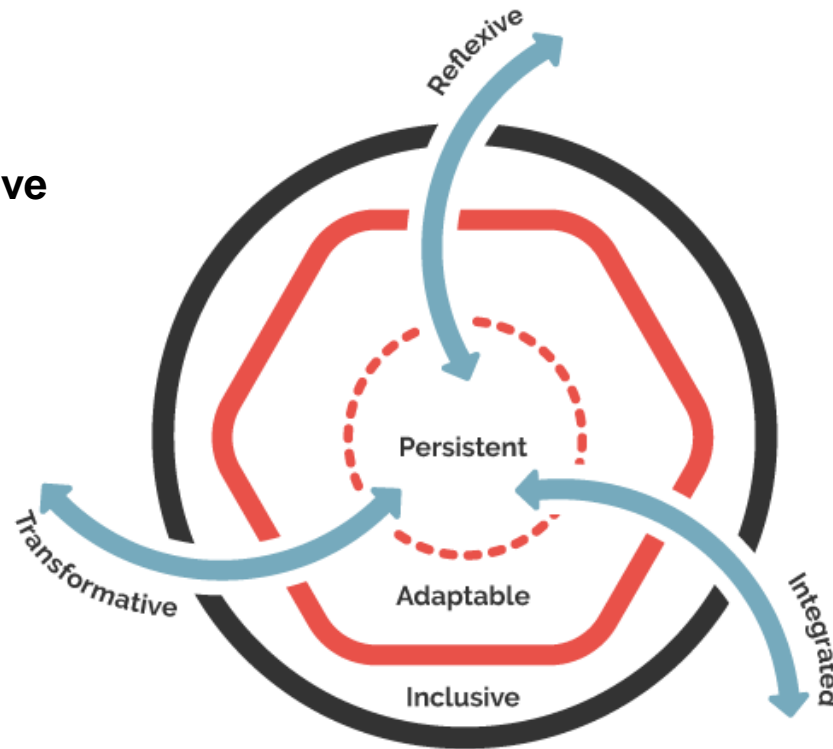
An adaptable city considers not only foreseeable risks, but also accepts **current and future uncertainty**. Going beyond redundancy, it **diversifies** its services, functions and processes by establishing alternatives. It is resourceful in its capacity to repurpose human, financial and physical capital. It pursues a flexibility that encourages it to **absorb, adjust and evolve** in the face of changing circumstances, dynamically responding by **turning change into opportunity**.

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URBAN RESILIENCE CHARACTERISTICS

SYSTEMIC APPROACH

INCLUSIVE

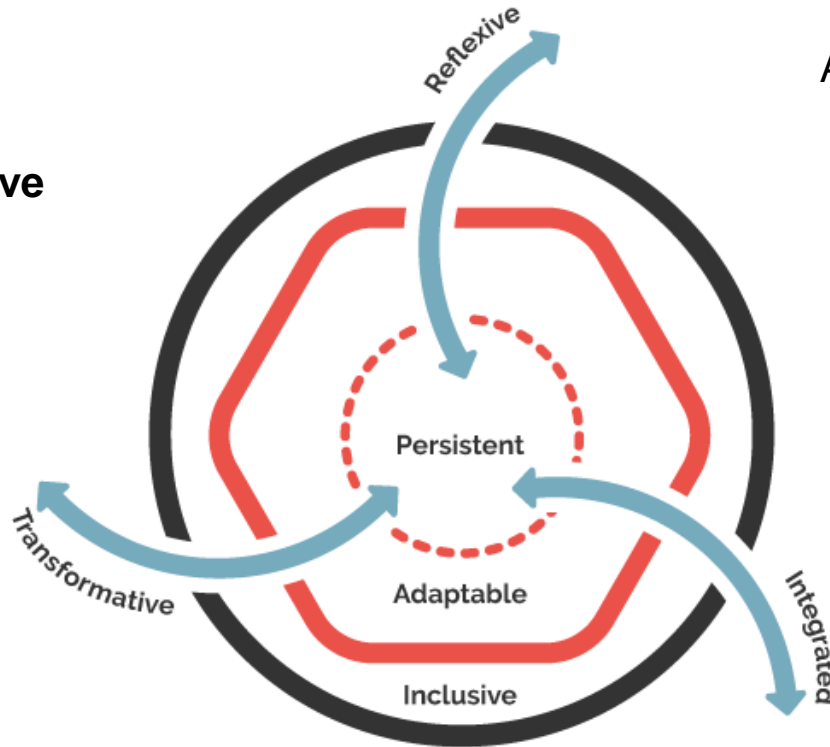
An inclusive city centres on **people** by understanding that being resilient entails protecting each person from any negative impact. Recognising that people **in vulnerable situations** are among the most affected by hazards, it actively strives towards **social inclusion** by promoting **equality, equity and fulfilment of human rights**. It fosters social cohesion and empowers comprehensive and meaningful participation in all governance processes in order to develop resilience.

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URBAN RESILIENCE CHARACTERISTICS SYSTEMIC APPROACH

INTEGRATED

An integrated city appreciates that it is composed of and influenced by **indivisible, interdependent and interacting systems**. It combines and aligns many lenses to ensure input is holistic, coherent and mutually supportive towards a **common cause**.

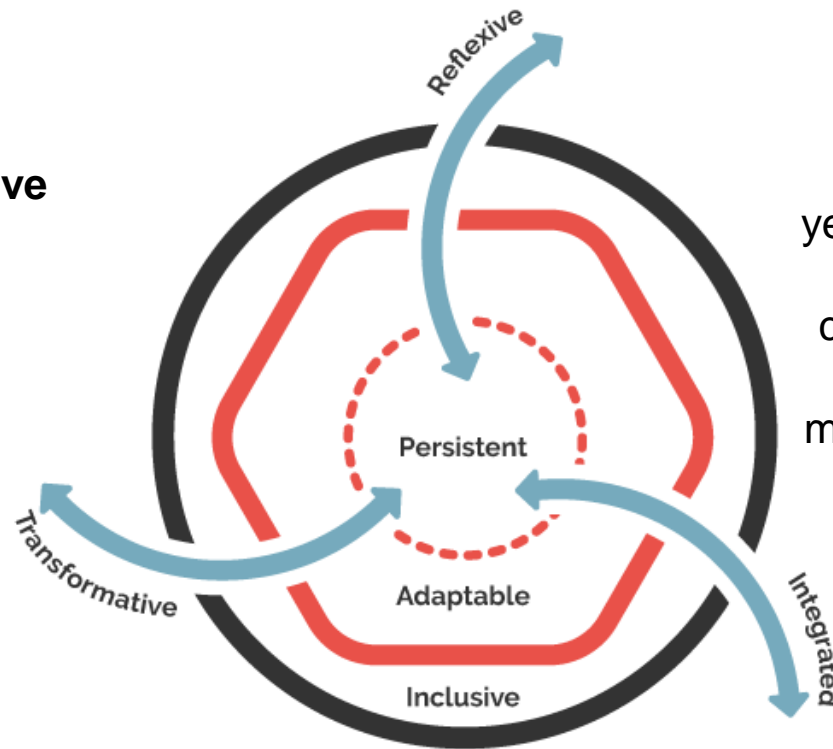
It enables a **transdisciplinary collaboration** that encourages open communication and facilitates strategic coordination. It supports the collective functioning of the city and guarantees far-reaching, **positive and durable change**.

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URBAN RESILIENCE CHARACTERISTICS SYSTEMIC APPROACH

REFLEXIVE

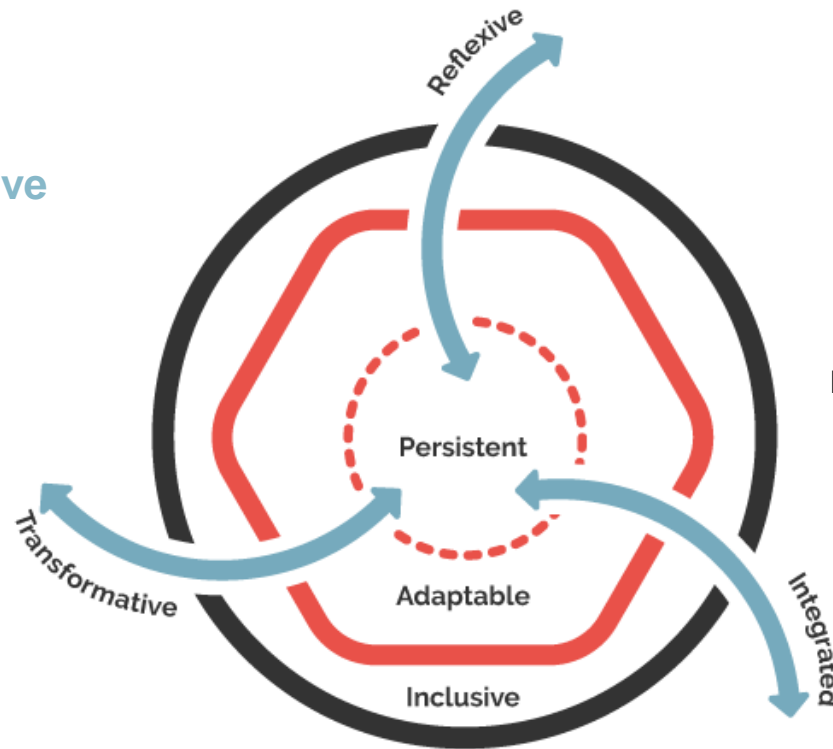
A reflexive city understands that its system and surroundings are **continuously changing**. It is aware that past trends have shaped current **urban processes** yet appreciates its potential **to transform** through shocks and stresses over time. It is reflective, conveying the capacity **to learn** from knowledge, past experiences and new information. It also learns by doing and installs mechanisms **to iteratively examine progress** as well as systematically update and improve structures.

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URBAN RESILIENCE CHARACTERISTICS SYSTEMIC APPROACH

TRANSFORMATIVE

A transformative city adopts a **proactive approach** to building resilience in order **to generate positive change**. It actively strives to alleviate and ultimately eradicate untenable circumstances. It fosters **ingenuity** and pursues **forward-looking**, innovative solutions that over time create a system that is no longer prone to risk. A transformative city is **focused** and **goal-oriented** towards a shared vision of the resilient city.

A RESILIENT CITY

plans and acts to prepare for and respond to hazards – natural and human-made, sudden and slow-onset – in order to protect and enhance people's lives, secure development gains, foster an investible environment, and drive positive change.

Our vision is for all local governments to actively engage in building urban resilience with a **people-centred** and **holistic** approach.

OUR CHALLENGES



Rapid growth
in cities



Climate
Change



Engagement
Stakeholders



Local
Government
Capacity

OUR CITY RESILIENCE PROFILING TOOL

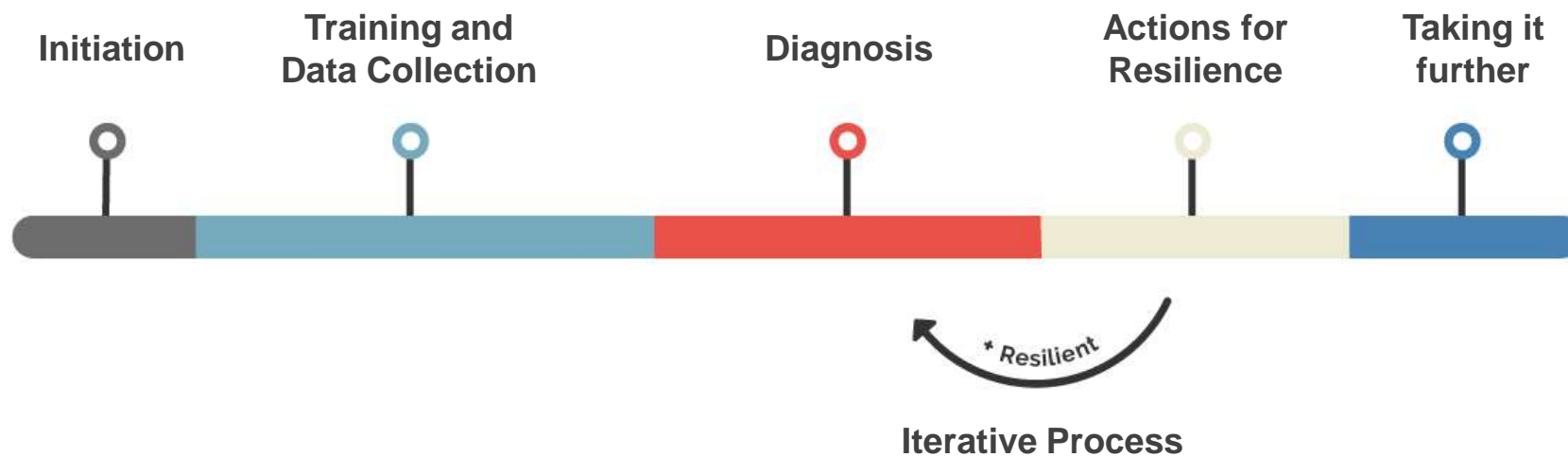
UN-Habitat's most comprehensive tool for building urban resilience, the CRPT is a practical framework used by cities to gather and analyse resilience data and plan informed actions.

**No plans,
integrating
actions**

**No indexes,
city profiles**

**No
comparisons**

CRPT PROCESS



CRPT DATA COLLECTION



User friendly



Training



Guided

SET 1

City ID

SET 2

Stakeholders and Local Government

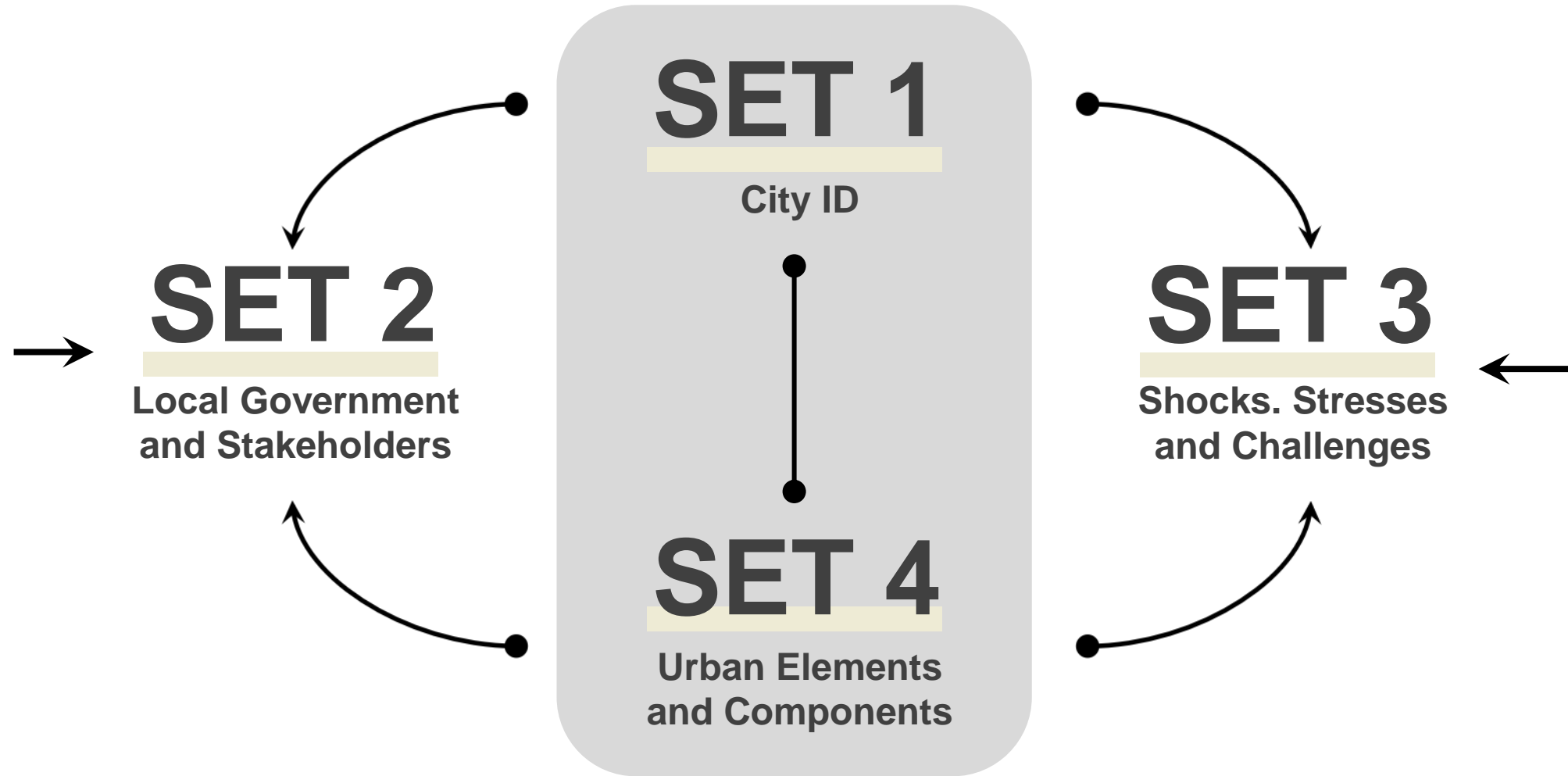
SET 3

Shocks, Stresses and Challenges

SET 4

City Elements

DATA SETS



SET 1

City ID

- Historical context
- Spatial context
- Local Government and Public Administration
- Population and Demographics
- Economy and livelihoods
- Hazards and Challenges
- Other relevant information

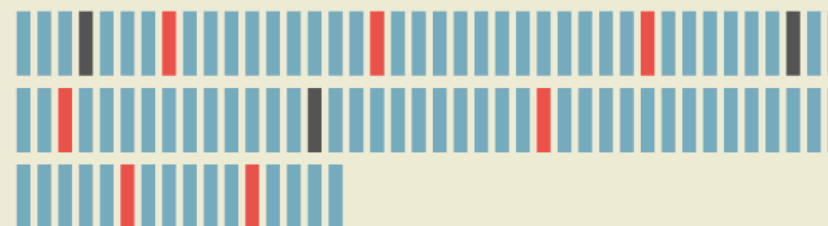
7 TOPICS



19 SUB-TOPICS

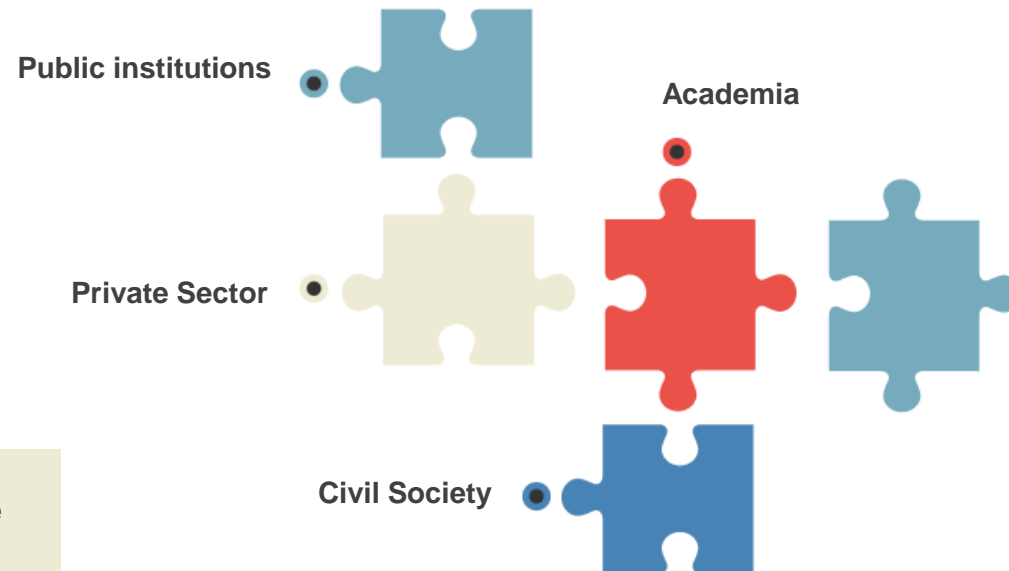


96 FEATURES



SET 2

Stakeholders and Local Government

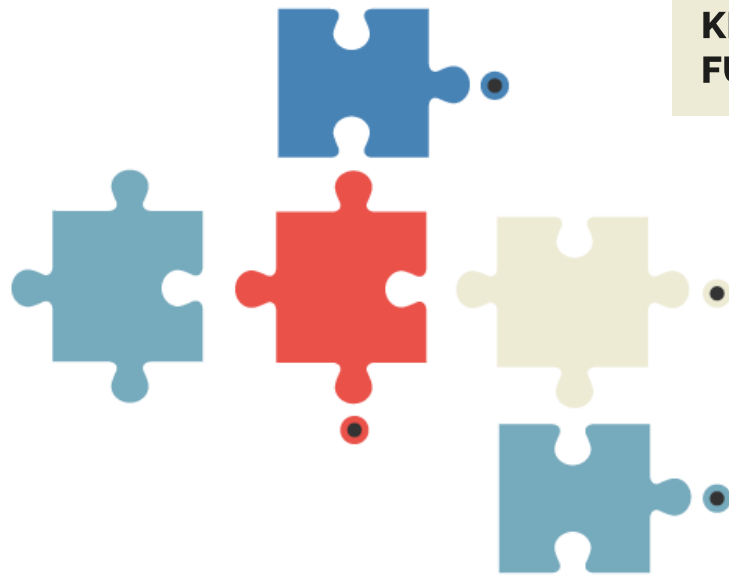


This data set captures the level of influence of stakeholders in the urban resilience process

SET 2

Stakeholders and Local Government

TECHNICAL COOPERATION WITH CITIES



KEY ANALYTICAL FUNCTIONS OF SET2

Through CAPACITY IMPROVEMENT

Role and place of the different public administrations

- a. An inventory of responsibilities of the local governments and the functions of the different public administrations.
- b. Aspects of decentralisation are also analysed.

Stakeholders mapping

- a. Exhaustive mapping of the stakeholders, covering all the areas and themes of interest from a resilience perspective.
- b. Analysis of public, private, civil society, academia, and other important stakeholders, including their responsibilities.

Stakeholders relationships

- a. Analysis of interactions between the stakeholders, in terms of power, interest and resources that need to be deployed in order to develop sustainable resilience strategies at city level.
- b. Prepare the grounds for informed and evidence-based recommendations for actions for resilience.

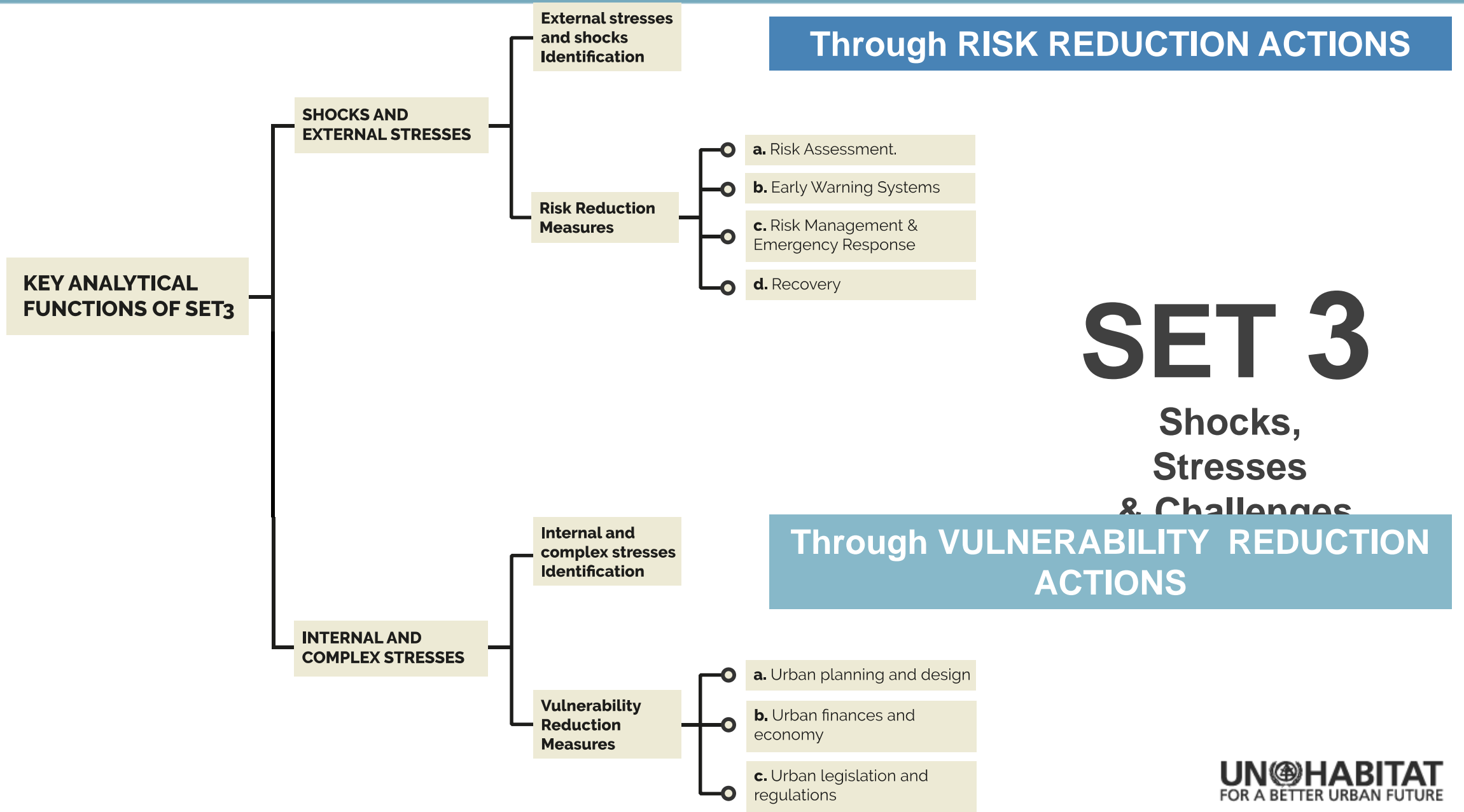
ACTIONS



This data set considers all plausible hazards that could hit the urban space

SET 3

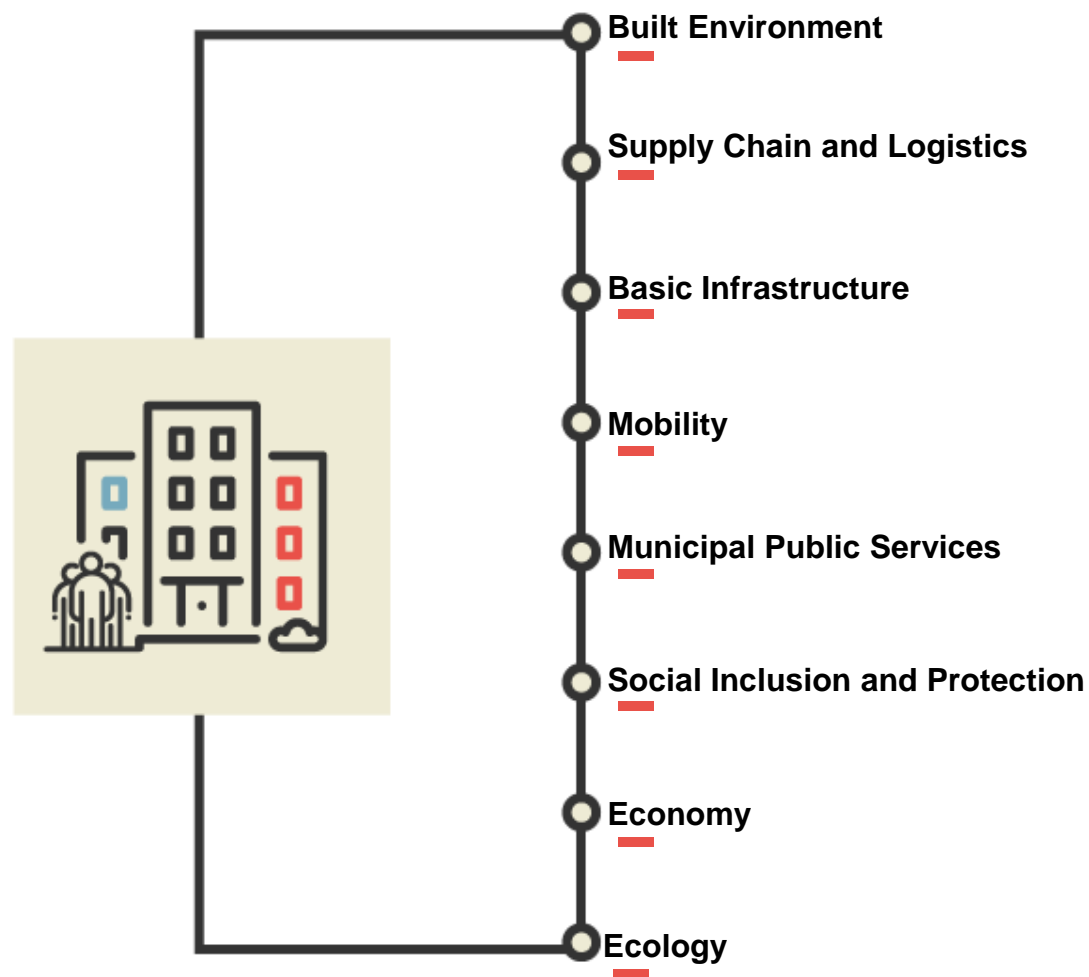
Shocks, Stresses & Challenges



SET 4

Urban Elements

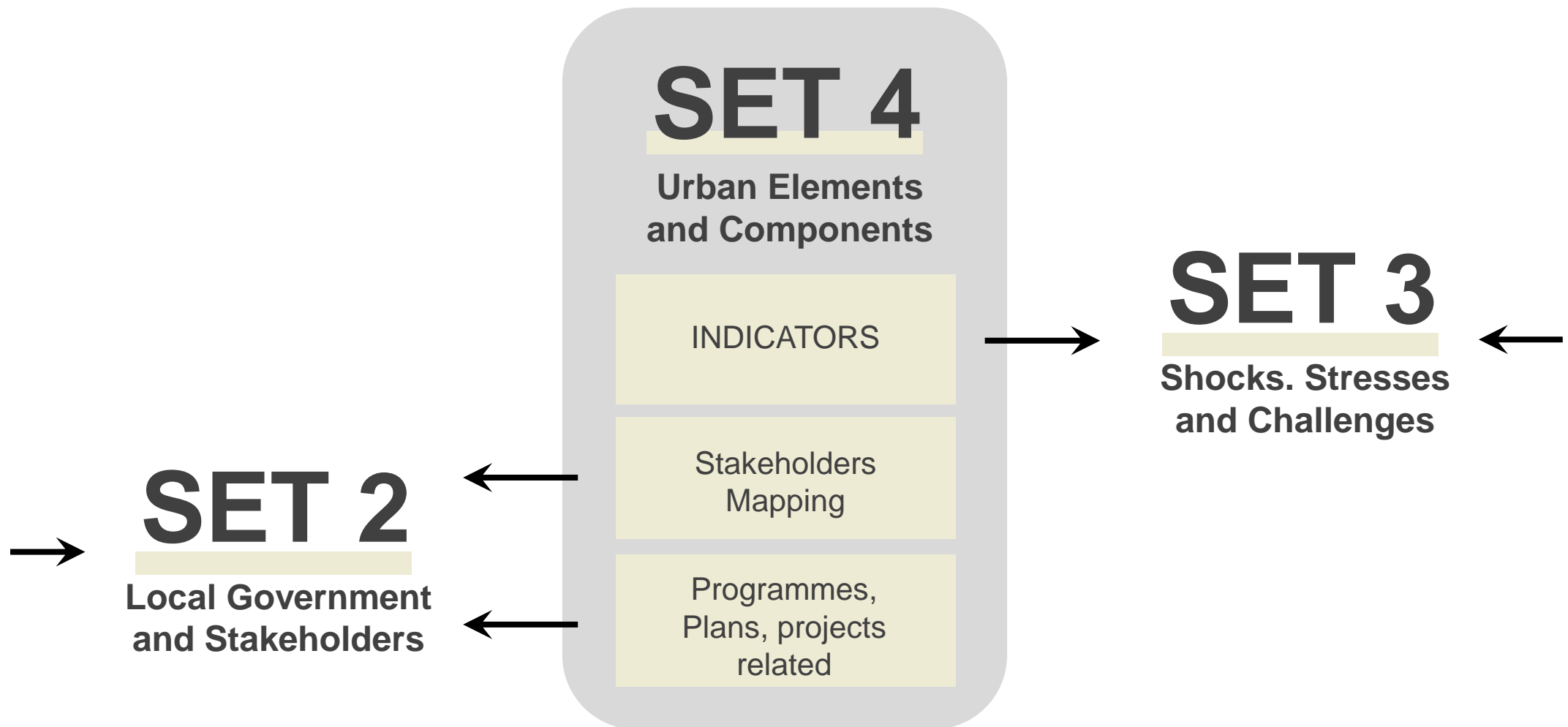
TECHNICAL COOPERATION WITH CITIES



This data set captures essential information about the elements that make up the city and cross-cutting issues.

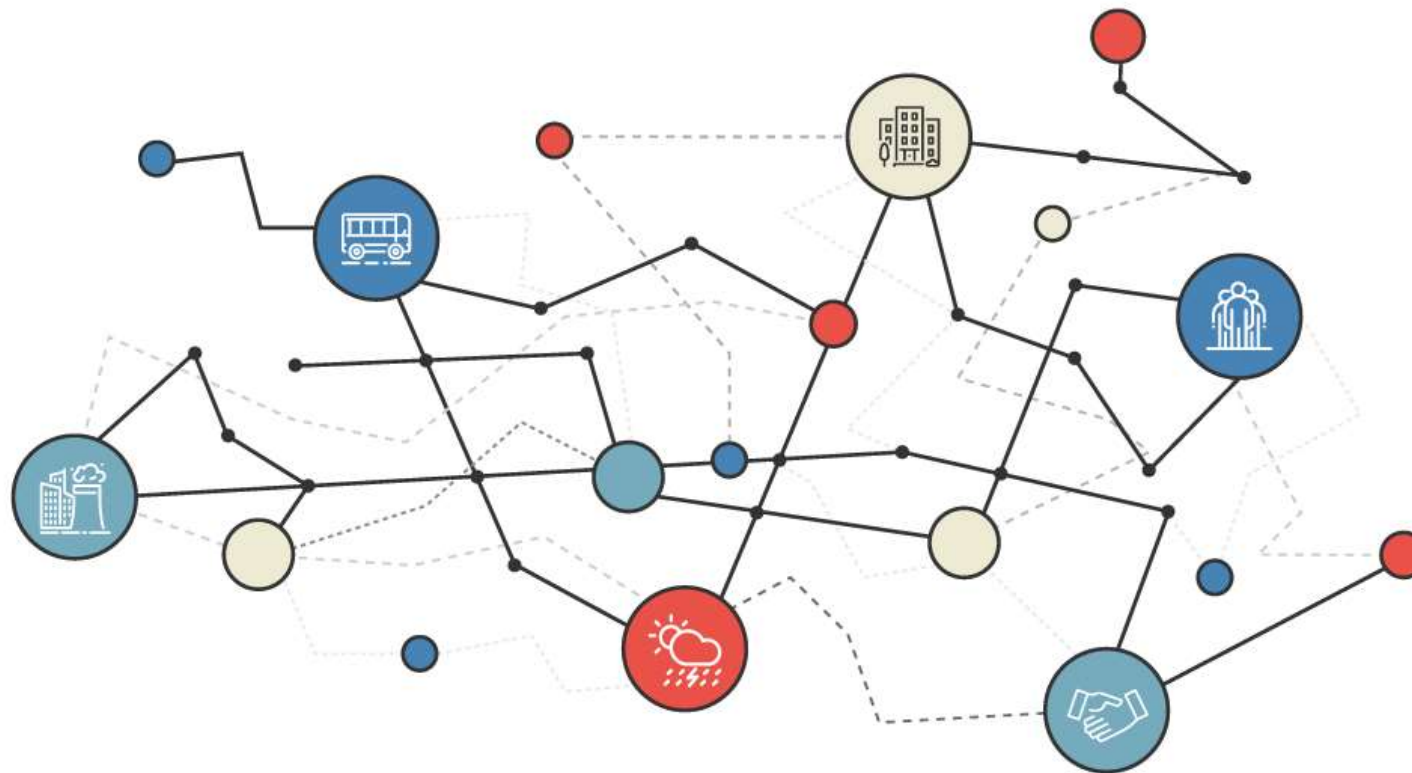
Crosscutting Issues



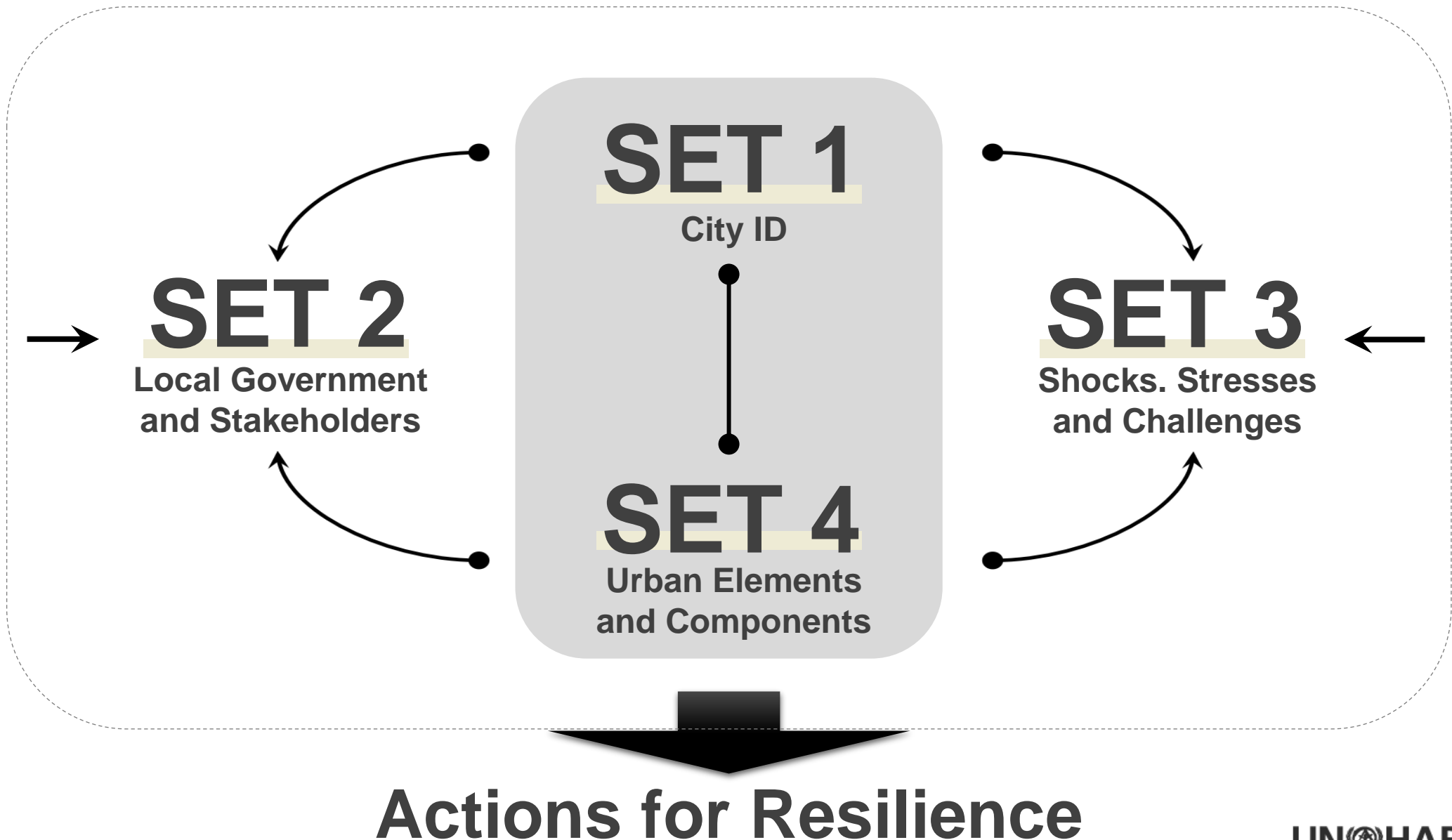


CRPT MODELLING

Our network approach maps the connections between **stakeholders, hazards, all elements of the urban system** to identify **capacity gaps** and **vulnerabilities**



Gaps and vulnerabilities become action areas to build resilience



WHAT ARE ACTIONS FOR RESILIENCE?

AN ACTION-ORIENTED TOOL, NOT A NORMATIVE PLAN:

Adaptive learning informed by the City Profile and CRPT

STRATEGIC PLANNING TOOL:

Combining risk reduction and sustainable development

**A PROCESS TO BUILD CONSENSUS AMONG DIFFERENT
STAKEHOLDERS**

WHAT IS THE ADDED VALUE OF ACTIONS FOR RESILIENCE?

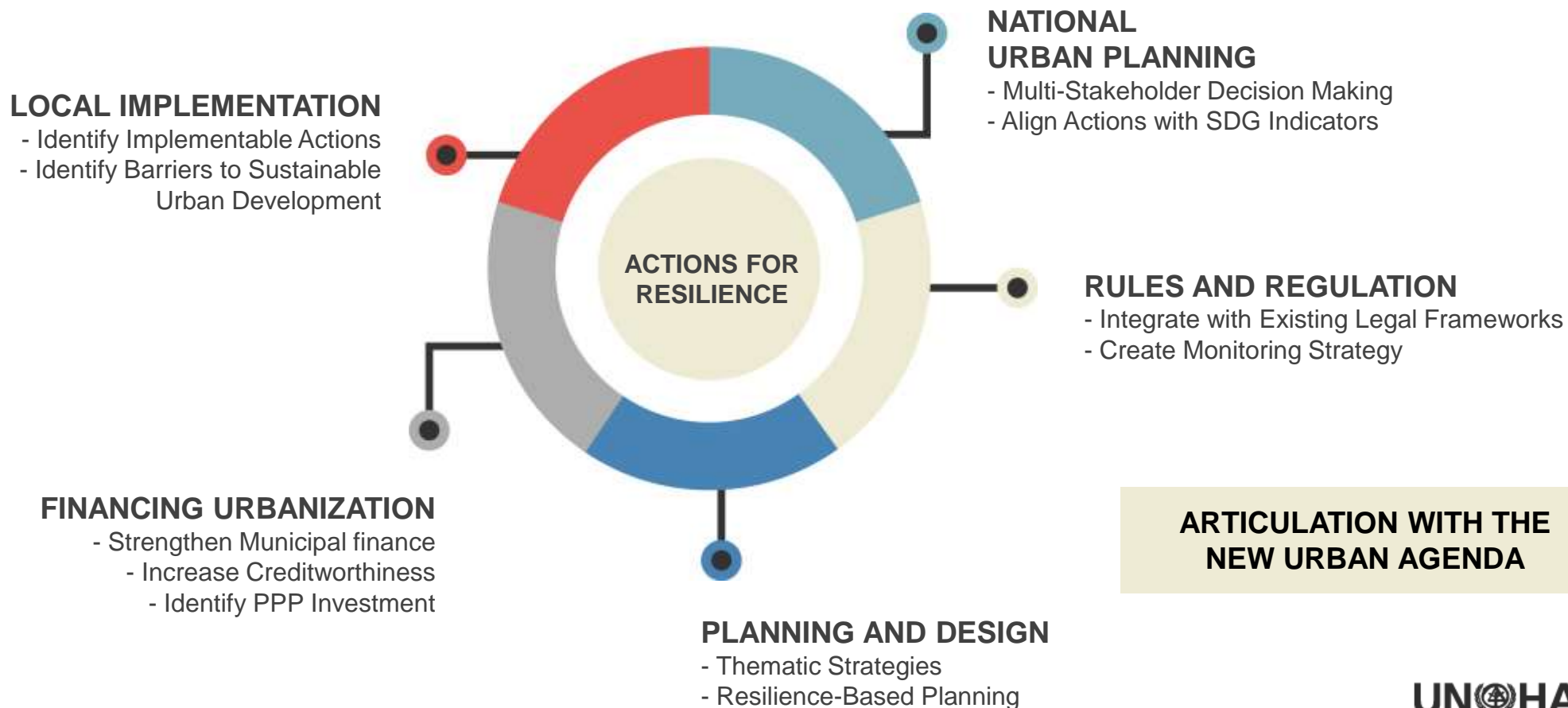
TO DEVELOP a SHARED VISION
On how to act

TO DESIGN NEW PROGRAMMES
(Plans and actions) to boost resilience and sustainable development

TO MODIFY ONGOING PLANS AND ACTIONS



ACTIONS FOR RESILIENCE

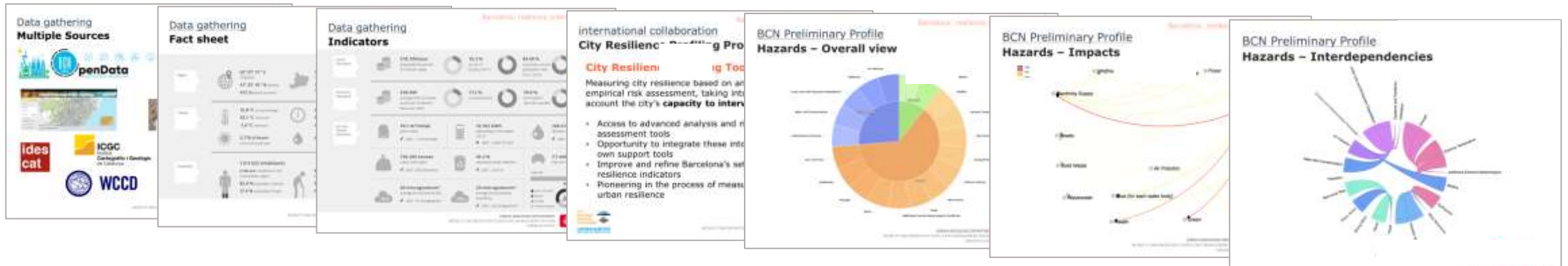


STEP 1

CITY PROFILE AND CRPT

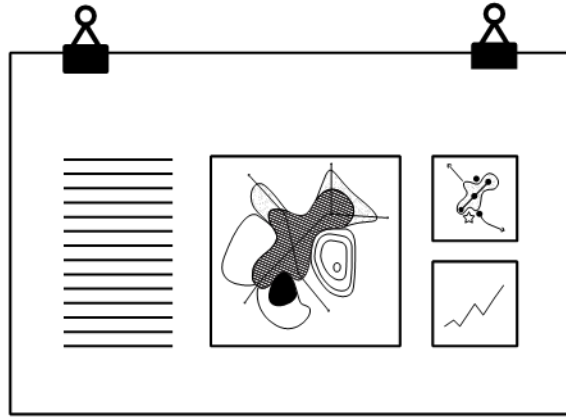


- Identification of interdependency between system's components.
- Current Map Scenario: analysis of components vulnerability due to internal stresses and external hazards.
- Analysis sheet per component linking to stresses, hazards and stakeholders.
- Stakeholder Map – processes, size, influence related to system's performance.



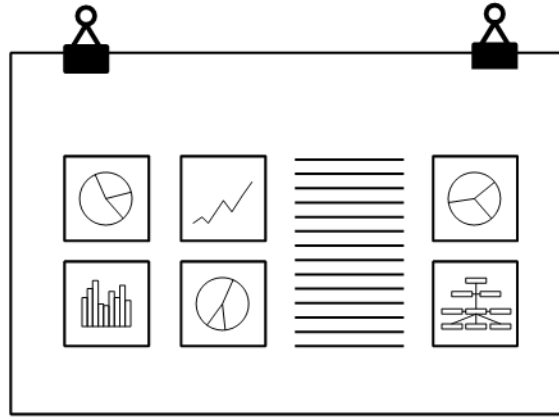
STEP 2

SCENARIOS



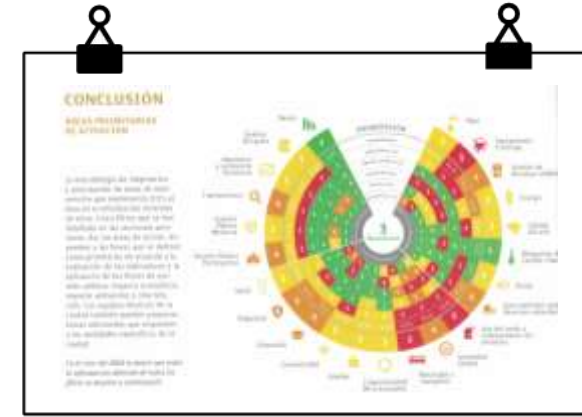
PRESENT SCENARIO

built upon
**City Profile
CRPT**



TREND SCENARIO

Present Scenario
modified by ongoing
Plans and Actions



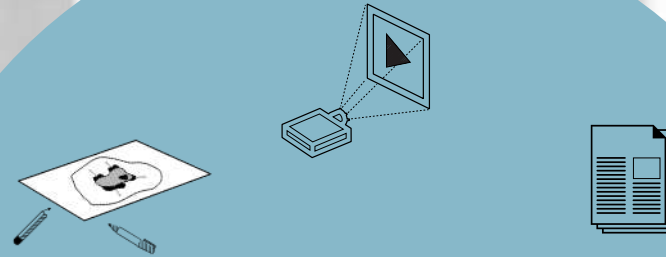
R&SD SCENARIO (Resilient & Sustainable Development)

Trend Scenario
modified by **A4R**

STEP 3

WORKSHOP – 2 days

LOCAL AUTHORITY
UN-HABITAT
RELEVANT
STAKEHOLDERS



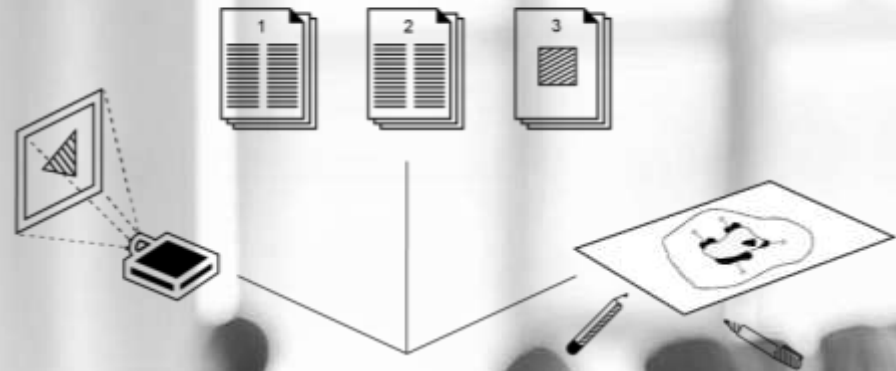
STEP 1 & 2 PRESENTATIONS
to build up a shared vision on:

- ROADMAP (list of actions and prioritization)
- STAKEHOLDERS & GOVERNANCE

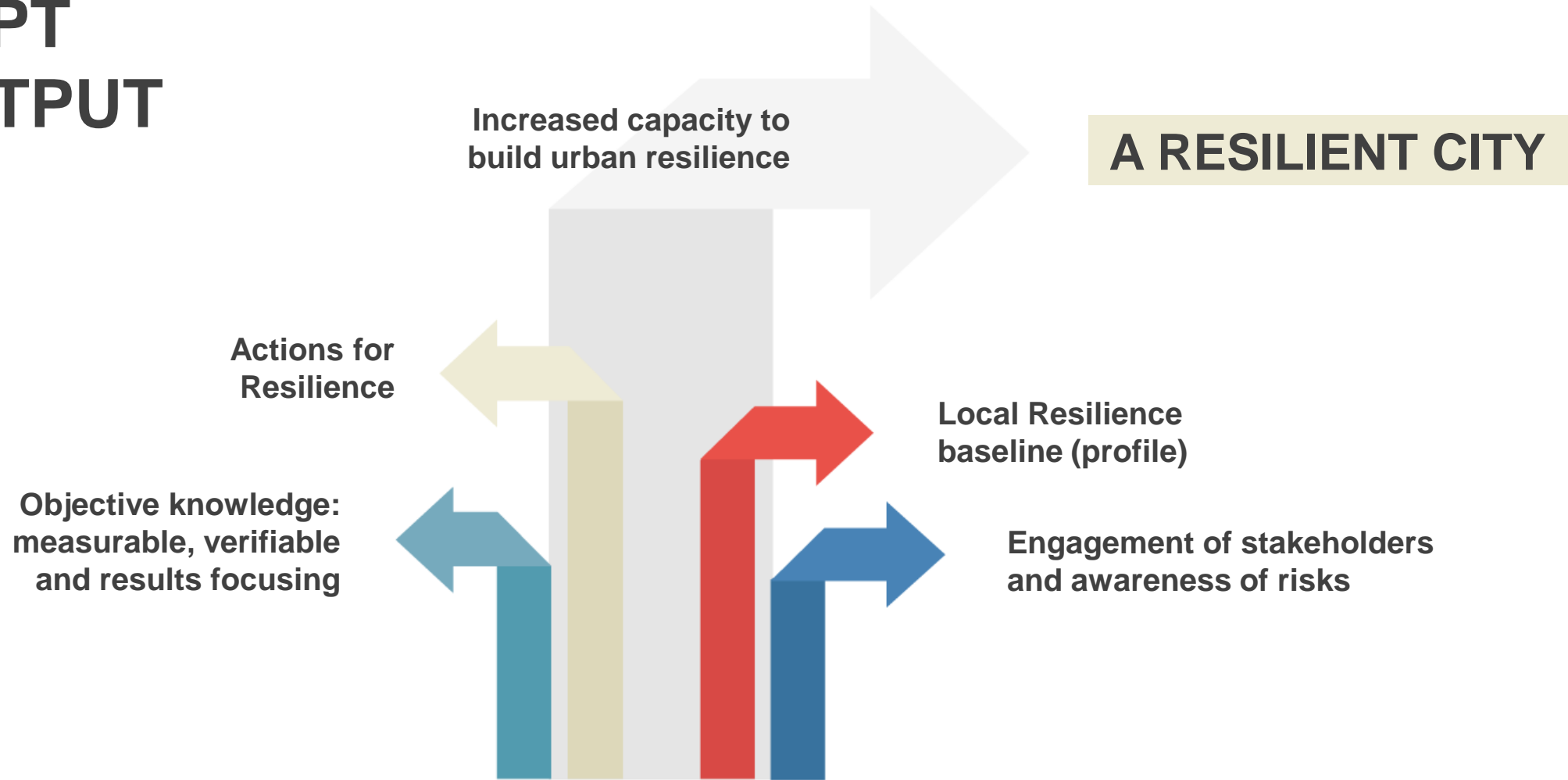
STEP 4

A4R BRIEFING – FINAL PRODUCTS

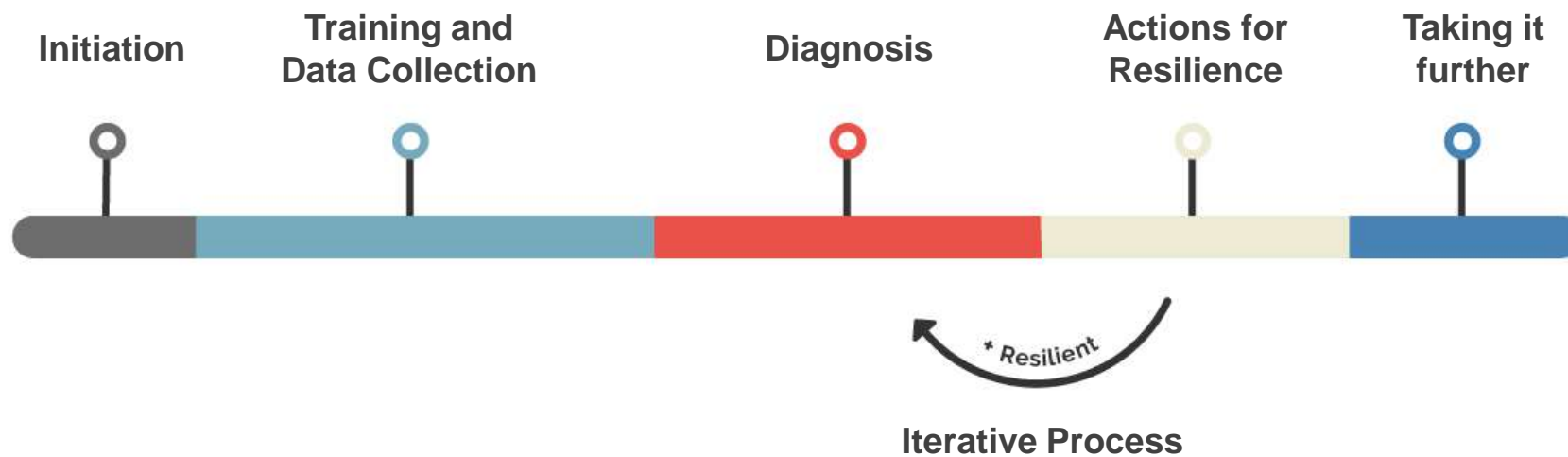
WORKSHOP
OUTCOMES



CRPT OUTPUT S



CRPT PROCESS





CLIMATE ACTION ENHANCER

Climate change is the defining threat of our time...We need to do more on five ambition action areas: emissions, adaptation, finance, partnerships and leadership.

ANTÓNIO GUTERRES

Secretary-General of the United Nations



UN-Habitat's resilience work brings together local governments, humanitarian organizations, academia and all other stakeholders to protect and enhance people's lives, secure development gains, foster an investible environment and drive positive change.

RESILIENCE ENHANCERS

Extract the **cross-cutting themes** (i.e. Gender, Climate Action, Humanitarian Action, among others) that underpin UN-Habitat's resilience building methodology into an advocacy and training tool.

They can provide a first approach, taking into consideration our urban resilience understanding as **systemic, holistic and comprehensive—avoiding silo assessments**.

Initiate
Discussions

Snapshot

Counter-check



CLIMATE ACTION ENHANCER

In a rapidly urbanizing world, UN-Habitat is committed to promoting effective climate action in our cities and recognizes that sustainable and resilient urban development cannot be sustained without mitigation and adaptation measures.

CRPT is a leading methodology for resilience building in cities and has a strong climate action focus. It identifies resilience trends, vulnerabilities, synergies and interlinkages within the urban system that become basis for prioritised actions.

The Climate Action Enhancer (CAE) extracts the elements of the CRPT methodology that relate most closely to **climate challenges and action**, and as such aims to provide a snapshot of the city in relation to climate change.



CLIMATE CHANGE CHALLENGES THROUGH CRPT

Risks related to climate change strongly vary around the globe, highlighting the importance of conducting a **local impacts study through a vulnerability assessment**.

Vulnerability is a function that involves three main variables within each system:

- **Exposure**
- **Sensitivity**
- **Adaptive capacity**

Climate change's impacts must be analysed from an **evidence based approach** through a **comprehensive urban system assessment of intrinsic vulnerabilities** and their relationships with potential shocks, increased in intensity and frequency because of climate change, as well as the links with governance issues.

Evidence-based
data knowledge

Climate change
challenges in
cities

Climate change
impacts in cities

CLIMATE ACTION THROUGH CRPT

Climate Action is a complex set of strategies that links together the **vulnerability assessment to climate impacts** of an urban settlement and a wide spectrum of **actions** that can **mitigate and adapt** to these impacts in different levels.

The CRPT provides a **holistic approach** to tackle climate action, combining **climate-related hazards** through a **cross-sectoral analysis of urban physical, organisational, functional and social environment**. To mainstream Climate Action, the lens focuses on the promotion of a straightforward, efficient and effective understanding of the **climate resilience status** within the urban system

CRPT DATA SETS



SET 1

City ID

SET 2

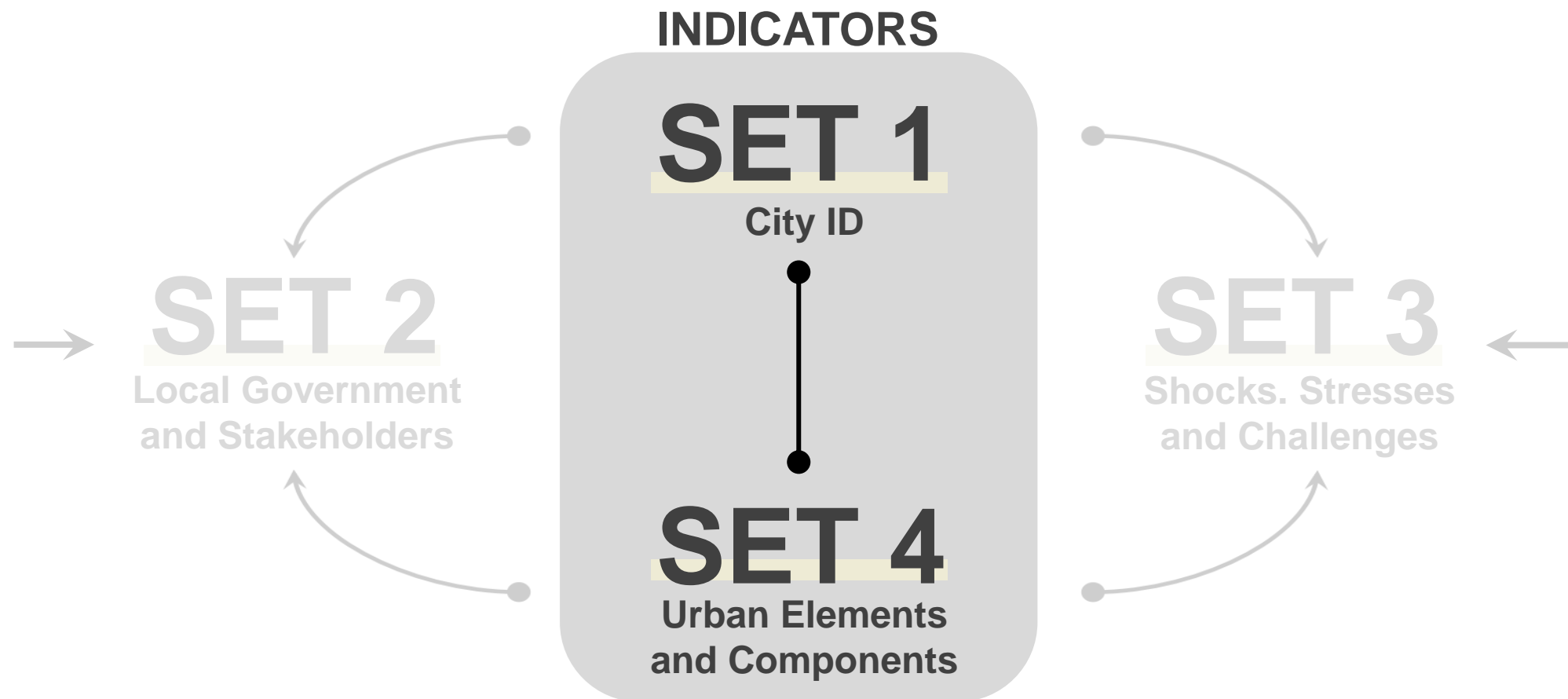
Stakeholders and Local Government

SET 3

Shocks, Stresses and Challenges

SET 4

City Elements



SET 1

Current Climate TRENDS & Impacts by 2030



Apart from providing the **general context of the city and its inhabitants**, the first data collection set will provide:

1. a static image of the **current climate**
2. a **projection of the impacts** of climate change in the region by 2030

2.1 Climate	
2.1.1	Climate type
2.1.2	Altitude
2.1.3	Temperature range
2.1.4	Heatwave
2.1.5	Tropical nights
2.1.6	Ice days
2.1.7	Frost days
2.1.8	Zero crossing of air temperature days
2.1.9	Degree days
2.1.10	Solar insolation
2.1.11	Precipitation
2.1.12	Short-duration extreme precipitation
2.1.13	Snow cover and water equivalent
2.1.14	Snow water equivalent
2.1.15	Water runoff or discharge
2.1.16	Thom Discomfort Index
2.1.17	Universal Thermal Climate Index
2.1.18	Growing season
2.1.19	Droughts
2.1.20	Floods

SET 4

Urban Elements and Components

Analysis of existing mitigation measures (e.g. low-carbon technologies) and adaptive capacity to build climate resilience.

Climate Action indicators on SET 4 highlight data regarding the study of carbon footprint of the city, the interaction with environmental quality and extension of green cover to map mitigation capacity. And on a further level, the adaptive capacity of population, government, infrastructure and built environment through the study of exposure, vulnerabilities, and consumption patterns.

Carbon Footprint
Environmental Quality
Adaptive Capacity

Based on this analysis, further **mitigation measures** are proposed as part of UN-Habitat's **normative role** once the city's carbon footprint is established.

SET 4

Urban Elements and Components

Carbon Footprint
Environmental Quality
Adaptive Capacity

Environmental Quality Data

Environmental Quality category comprises data that can provide an understanding about how changing climate could affect the region's bio-capacity and the environmental quality, such as Air, Water and Soil Quality.

- Ecosystem Services Condition and Trends
- Biocapacity
- Native Biodiversity in the City
- Greenhouse Gas Emissions
- Air Quality
- Water Quality
- Other Pollution

SET 4

Urban Elements and Components

Carbon Footprint
Environmental Quality
Adaptive Capacity

Climate Resilience Data

Urban Climate Resilience category assess the links within the urban system, and its capacities to mitigate and adapt to climate change.

- Urban Growth Model
- Hazardous Areas
- Land Tenure
- Housing. Critical Facilities
- Availability of Food, Food Supply Dependencies
- Water Resources Availability & Management
- Wastewater & Stormwater systems
- Flood Management Strategies
- Energy Resource Diversity, Clean and Renewable Energy.
- Solid Waste Collection, Coverage and Disposal.
- Urban Mobility modal diversity, coverage, access, operations
- Infectious Disease Control
- Local Economy Structure
- Ecosystems Services Maintenance
- Protected Natural Areas

SET 4

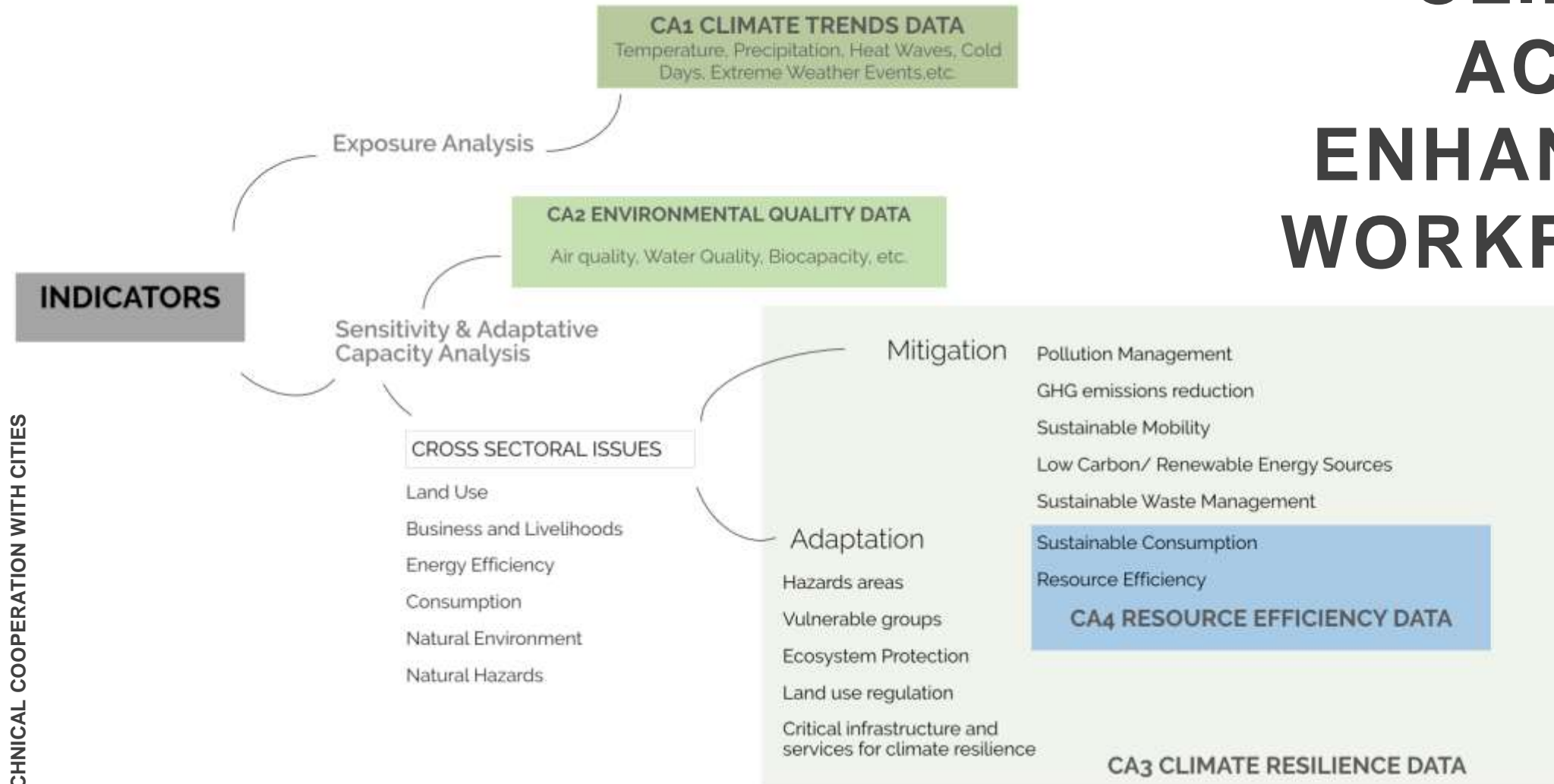
Urban Elements and Components

Climate Resilience Data: Resource Efficiency

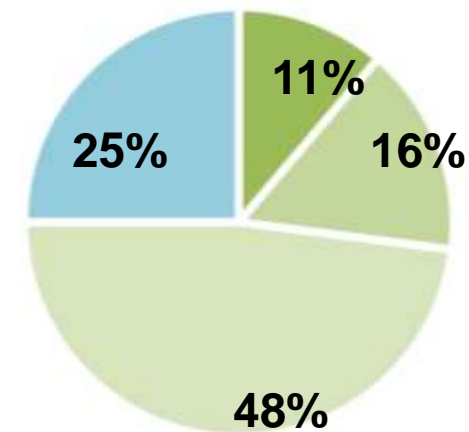
- Land Consumption
- Food Chain Efficiency and Continuity
- Water Consumption and Resource Balance
- Energy Efficiency
- Energy Supply Efficiency
- Efficiency of Water Supply
- Efficiency of Wastewater operation
- Water sensitive design strategies.
- Solid Waste treatment and recovery
- Public Lighting

Carbon Footprint
Environmental Quality
Adaptive Capacity

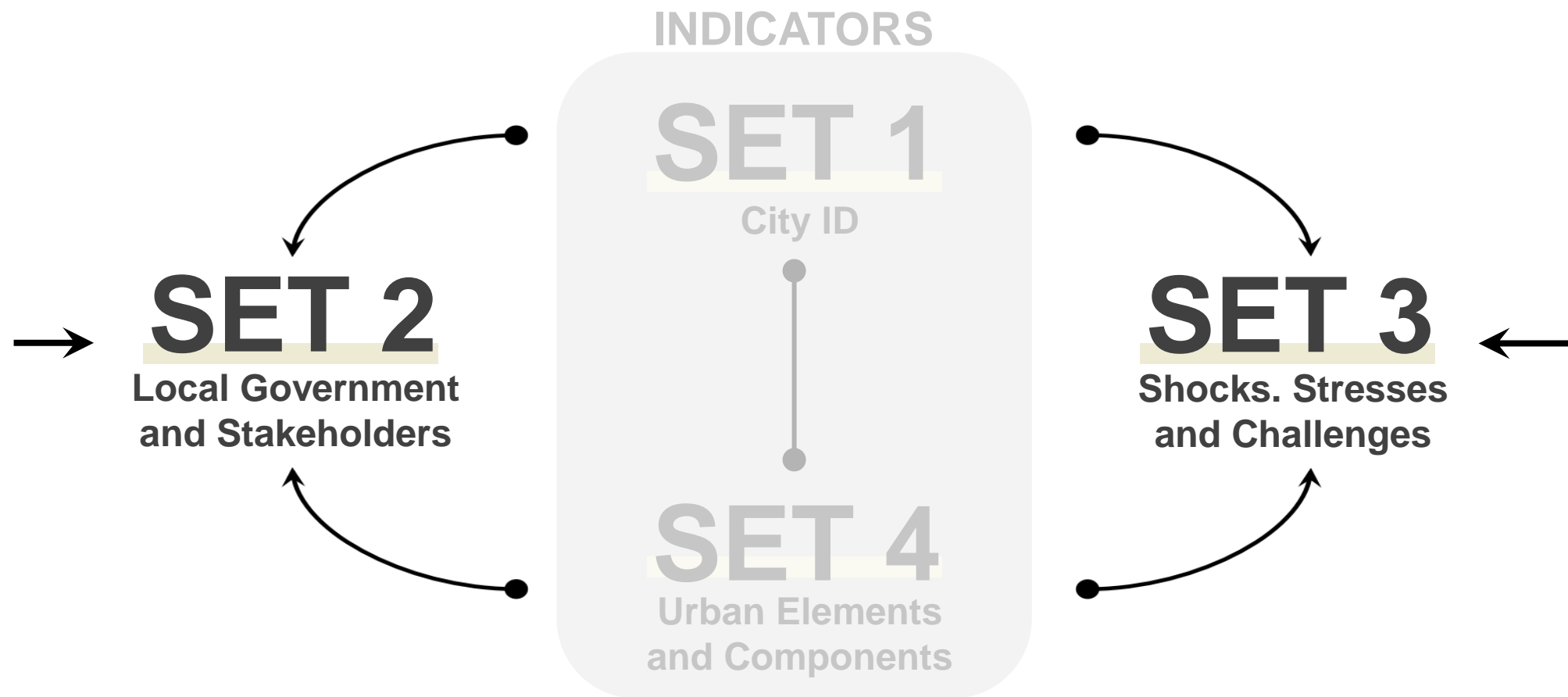
CLIMATE ACTION ENHANCER WORKFLOW



CLIMATE ACTION ENHANCER DATA



	CITY ID	SET4	TOTAL
Climate Trends Data	22	0	22
Environmental Quality Data	3	28	31
Climate Resilience Data	14	80	94
Resource Efficiency Data	0	49	49
Total	39	157	196



SET 2

Relevant Stakeholders in CC Planning



Stakeholders and Local Government

Data collection SET 2 identifies stakeholders from the **public and private sectors** as well as **civil society** from local, regional, national and international scales directly involved in:

Climate science

Current climate change management (e.g. implementation of ongoing climate action)

Decision making regarding future climate change actions

The dataset closely studies the **responsibilities of and the relationships** between these stakeholders, as well as the interaction with actors indirectly related to these activities.

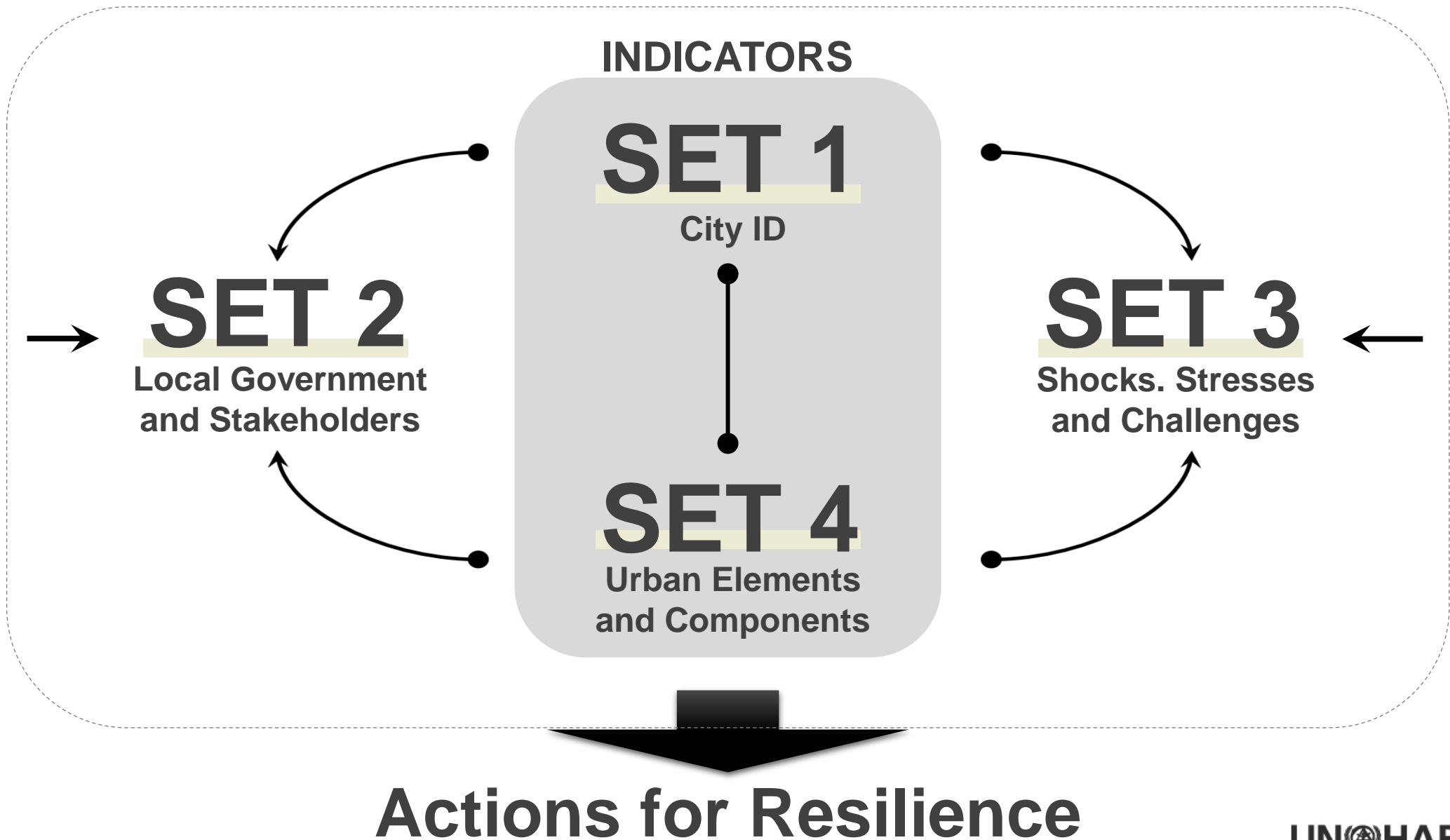
SET 2 also maps all existing plans in the city directly or indirectly related to climate change, that can provide an understanding of how the city will mitigate and adapt to climate impacts.

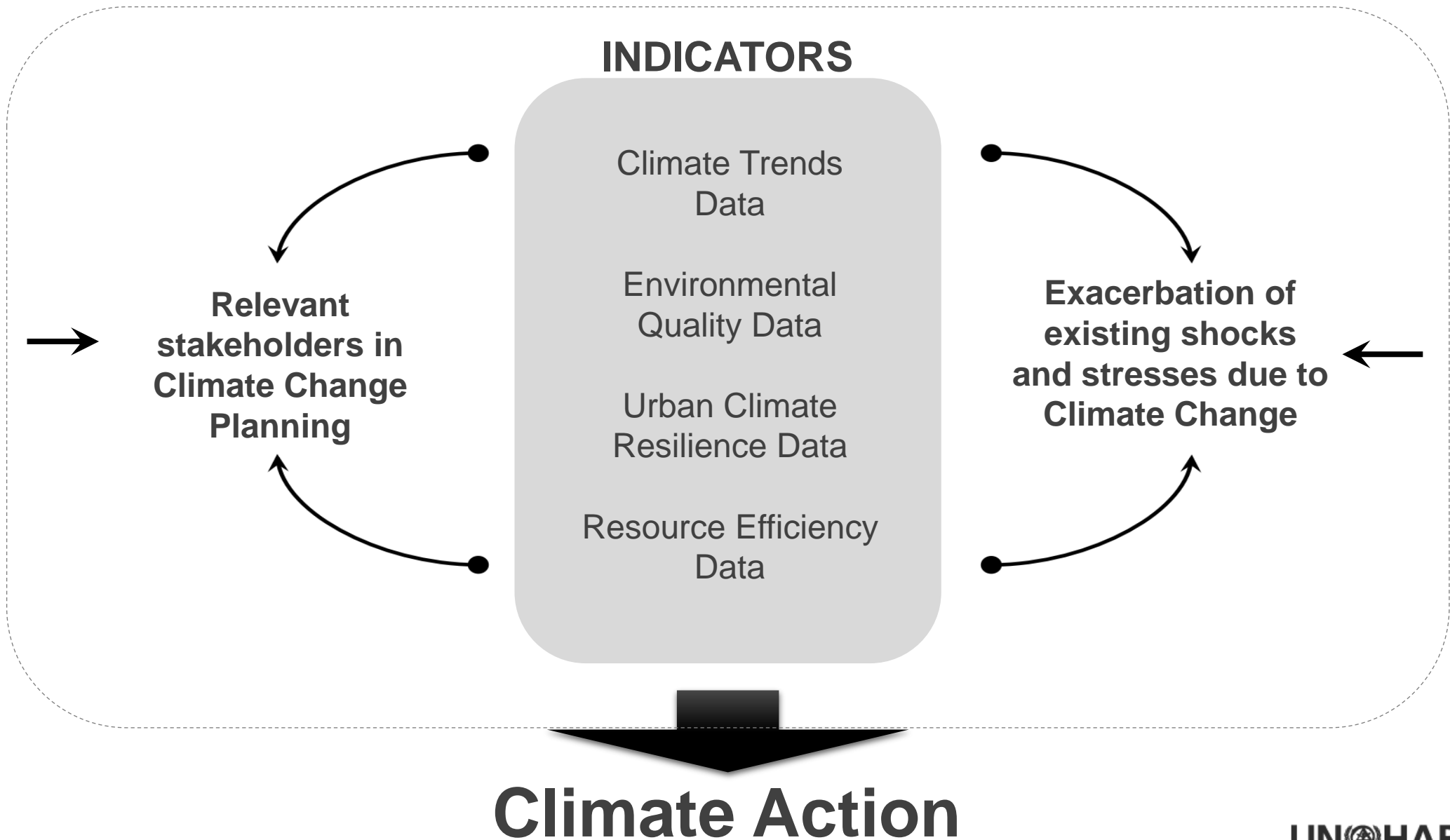


Exacerbation of existing
shocks and stresses

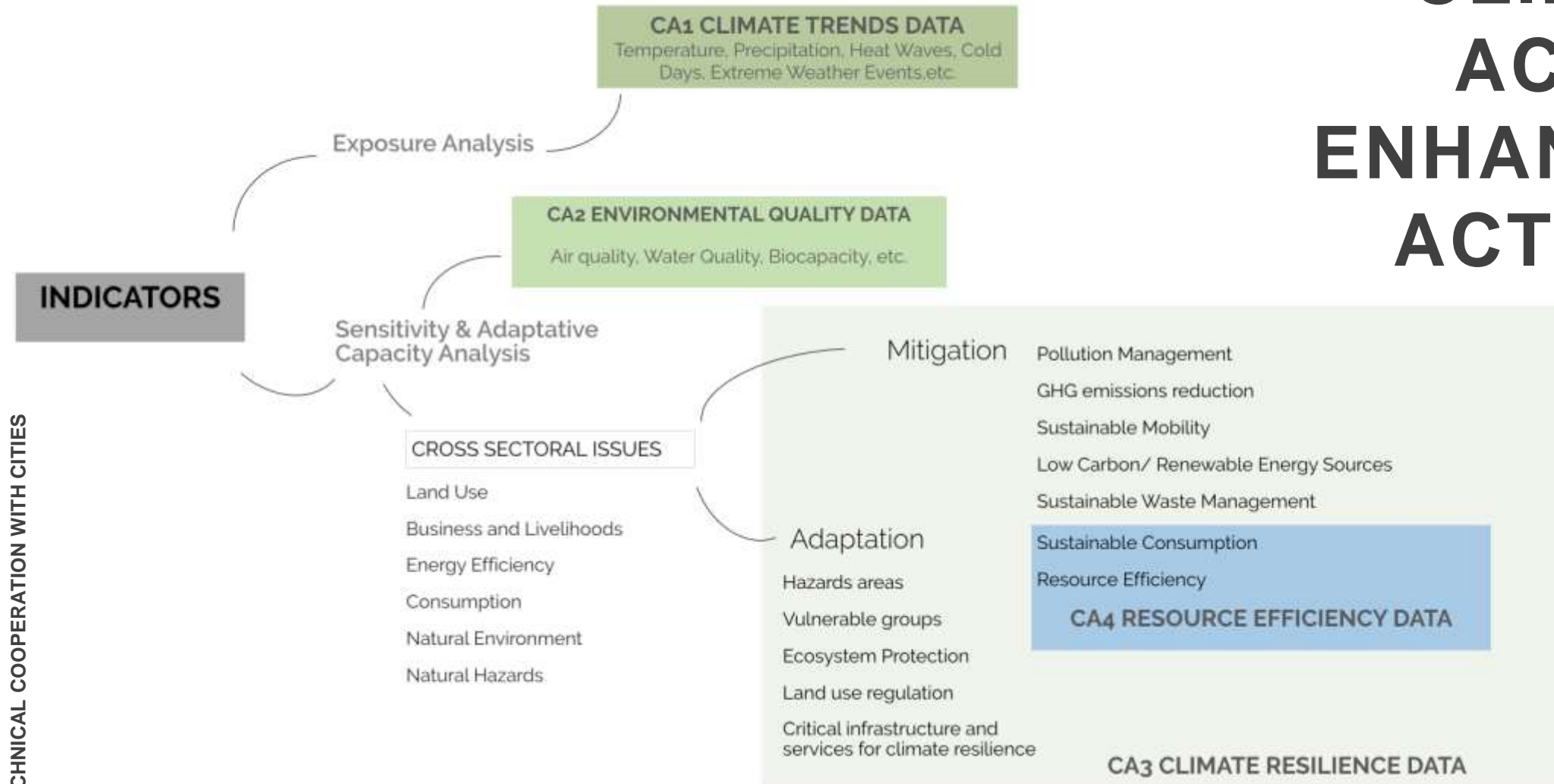
SET 3 first identifies the **shocks and stresses** that the city currently faces. From a climate change perspective, particular attention is paid to **natural and environmental hazards**.

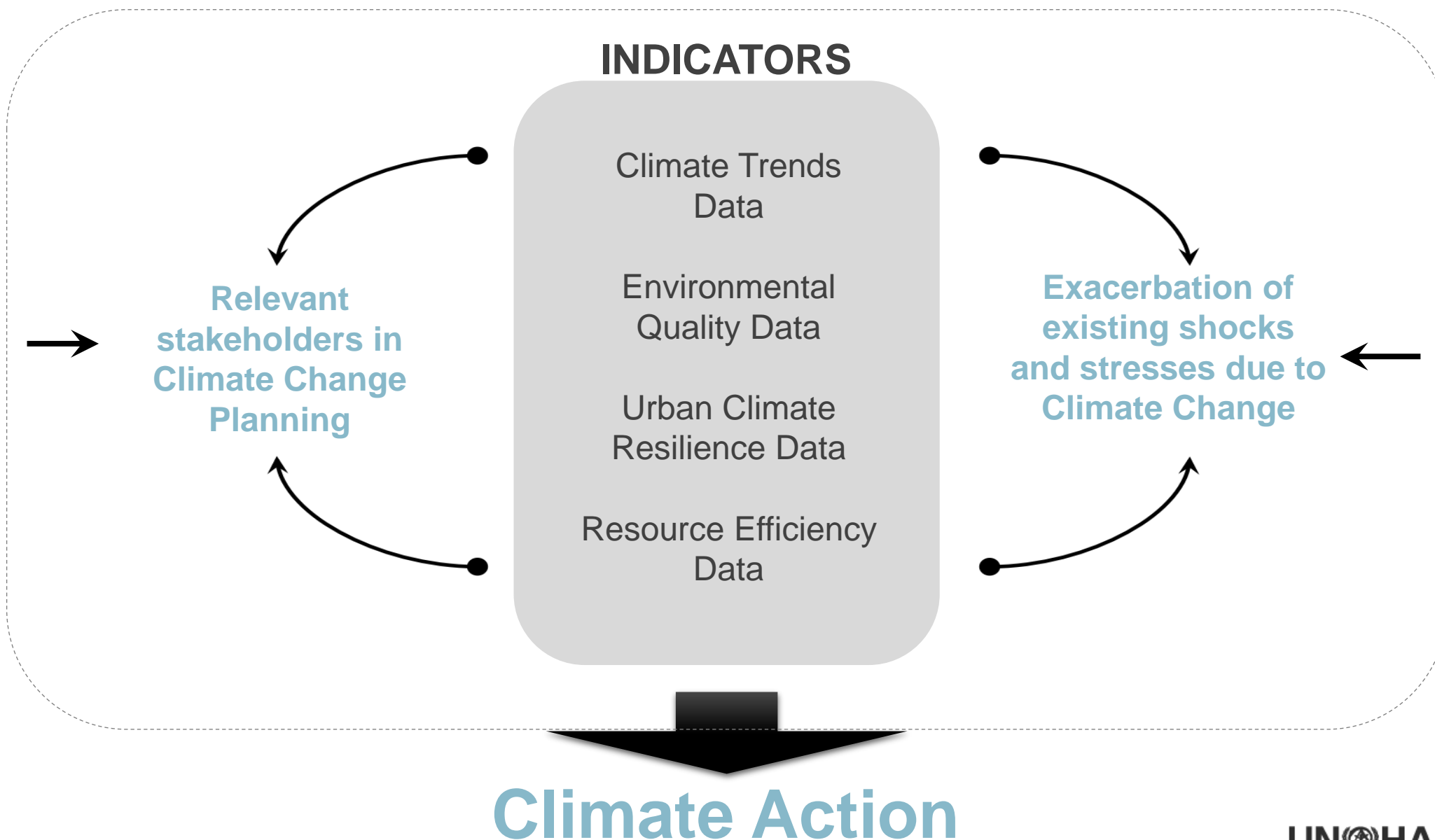
Combining this information with the 2030 projection of SET 1 will establish the extent to which existing hazards will be **exacerbated by climate change**. It will also inform on possible **new hazards** that may appear.





CLIMATE ACTION ENHANCER ACTIVITY





Your City?



WORKING IN CITIES

Partnerships

We forge partnerships with all the major actors working on urban resilience, including donors, local governments and their networks, humanitarian organizations, UN agencies and academia. One of our chief aims is to bring more cohesion and understanding around urban resilience thinking, in particular to local governments across the world. Partnerships therefore represent a significant advancement toward achieving that goal.

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for Urban
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**PARTNER
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Urban Resilience
Institute

Making Cities
Resilient
Campaign

Arctic Resilient
Cities Network





www.urbanresiliencehub.org

URBAN RESILIENCE HUB

ASUNCION

Spatial Dimensions

The climate in Asunción is warm and mild, with rainfall occurring during all months of the year. The Paraguay River surrounds a large proportion of Asunción forming a natural border on its northern, southern and western sides. Currently, 70% of households in Asunción are connected to the city's sewage system. Only 4% of the region's wastewater receives treatment, with the rest released directly into urban streams and the Paraguay River. A bidding process is currently underway to expand the existing treatment facilities and build new ones.

Climate

Asunción's Köppen-Geiger climate classification is "Cfa and Cwa"; these are described as mild temperate climates or humid subtropical climates. This classification features average temperatures of between 0 °C (32 °F) and 18 °C (64 °F) in the coldest month and of 22 °C (72 °F) or more in the warmest.

According to historical records, the average annual temperature in Asunción is 22.7 °C (21-year historical database) with an average rainfall of 1370 mm per year (114-year historical database).

The weather variation over the course of the year is as follows:

- January is the warmest month with an average temperature of 27.4 °C.
- The coldest month is July with an average temperature of 17.5 °C.
- The driest month is July with 46 mm of rainfall, while the average rainfall in April is 162 mm.



MORE ABOUT THE CITY

- City Context and History
- Population and Demographics
- Economy and Livelihoods
- Local Government and Public Administration
- Hazards and Challenges

Climate Type: Humid Subtropical Climate.

Altitude: 133 metres.

Highest Recorded Temperature: 41 degrees.

Precipitation: 1370 mm annual average.

MAPUTO

Hazards and Challenges

The Municipality of Maputo is vulnerable to the impacts of climate change, where the incidence of high temperatures, internal flooding, pluvial erosion due to rainwater runoff and coastal erosion due to the process of sea wave dynamics is currently observed. Maputo Municipality has been identified as one of the most risk-prone locations to climate change in Mozambique by the World Bank in 2010 and INGC.

Main Climate Change Related Challenges

Historical data indicate that most areas near the coast of Maputo Municipality recorded an increase of 0.32 °C in the mean annual maximum air temperature per decade and a decrease in 0.04 °C in the mean annual minimum temperature per decade during in the 1970-2006 period. In the mainland of Maputo the mean annual maximum air temperature increased by 0.23 °C per decade, while the minimum temperature increased by 0.33 °C per decade over the same period. The precipitation presented considerable annual variability but showed no discernible changes throughout the region of this municipality.

Climate projections indicate that between 2046-2065 the average annual maximum air temperature in Maputo could increase by 2.1 °C while the minimum increase by 2.2 °C. On the other hand, precipitation projections also



Hazard Type: Flash Floods, Droughts, Tropical Cyclones, Famine, Malária, Cholera, HIV.

Time Period Of Crisis: October - March (Floods).

Main Issues: Weak infrastructure and services, Lack of access to credit, Limited Environmental protection.

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Port Vila, Vanuatu

Port Vila is the capital city and main economic hub of the island nation of Vanuatu. Located on the south-west coast of the island of Efate, one of approximately 82 islands that comprise the Y-shaped archipelago in the South Pacific, Port Vila faces extensive environmental threats, evident in its recent ranking as the "world's most exposed city to natural disasters."^[1] Such environmental threats, many of which are linked to the impacts of climate change, are exacerbated by existence of impoverished people, limited economic opportunity, and tenuous connectivity to external markets.

Context

The city's climate is classified as tropical rainforest or equatorial (Köppen climate classification: Af) and is characterised as experiencing heavy rainfall and high humidity throughout the year with no pronounced summer or winter season. The average precipitation for the year is 2336.8mm with rainfall usually peaking in January (average precipitation of 337.8mm/month) and reaching its nadir in October (94mm/month average).

Based on the most recent national census (2016), Port Vila has a population of approximately 51,500 and accounts for nearly 20 percent of the country's total population. While the city experienced rapid growth between 1999 and 2009, increasing its population by over 50 percent, recent estimates indicate a slightly reduced growth rate over the past decade, a trend believed to stem, at least in part, from economic effects following the global financial crises in 2008.

Glorious Project

GLORIOUS: GLObal use**Rs** In the c**O**pernic**U**s climate change **S**ervice

ITT: C3S_422

Lot 1: Global services



Climate change is impacting natural and human systems on all continents and across all our oceans. Regardless of its causes, the observed impacts of climate change are bringing the sensitivity of natural and human systems to the forefront.

<https://glorious-unhabitat.firebaseio.com/en/portVila/>

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Question & Answer

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