

Climate Action Enhancer

Climate Action and Development Climate Action and Resilience Climate Action and the City Resilience Profiling Tool



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¹ IPCC. (2014). Climate Change: Synthesis Report - Summary for Policymakers. https://www.ipcc.ch/pdf/assessment-report/ar5/syr/AR5_SYR_FINAL_SPM.pdf

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1.Introduction

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 forefront¹.

From altered weather patterns to rising sea levels and more extreme meteorological events, the bearings of climate change impact on people's wellbeing and livelihoods². Many of these changes are strongly linked to human activity, notably intensified temperatures, high seas and the rain patterns. The consequences of non-action will be disruption not only for economies and environments but for all people and human activity. Climate change cannot be considered a distant threat to future generations, but as the most pressing and challenging issue for humanity today. Although all peoples are affected, it is the poorest and most vulnerable who pay and will continue to pay a proportionately higher price as disruption, deterioration, displacement or even destruction of human life become more frequent³.

Without action, the average global surface temperature is expected increase over the course of the century and may exceed 3°C, with some areas expected to increase even more. Ocean temperatures are equally set to rise and ice melting is likely to continue at current or accelerated rates. Predictions put the average elevation of sea level between 24-30 cm up to 2065, and 40-63 cm up to 21004. Even if emissions stop tomorrow, climate change and its impacts will persist for many centuries. Climate resilience measures are therefore an imperative for the foreseeable future.

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 achieved or sustained without mitigation and adaptation measures. Cities may be the biggest polluters, but they are also centres of innovation, transformation, growth and large-scale gains where climate action stands to be catalysed. Recognizing the complexity of cities and the need for a collective response to climate action, UN-Habitat works with a broad range of agencies and entities to mobilize expertise, experience and effective action towards sustainable urban development⁶.

The City Resilience Profiling Tool (CRPT), developed by UN-Habitat, is a leading methodology for resilience building in cities⁵ and has a strong climate action focus. The CRPT identifies resilience trends, vulnerabilities, synergies, and interlinkages within the urban system that become the basis for prioritized actions. This Climate Action Enhancer 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.

² IPCC, 2014: Climate Change 2014: Synthesis Report. Contribution of Working Groups I, II and III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change [Core Writing Team, R.K. Pachauri and L.A. Meyer (eds.)]. IPCC, Geneva, Switzerland, 151 pp.

³ United Nations. Sustainable Development Goals. Goal 13: Take urgent action to combat climate change and its impacts. [online] http://www.un.org/sustainabledevelopment/climate-change-2/

⁴ Idem 2.

⁵ UN-Habitat Governing Council. (2015). Resolution 25/4: Implementation of the strategic plan for 2014-2019

⁶ UN-Habitat Climate Change Strategy 2014-2019. Nairobi: UN-Habitat.

2.Climate Action and Urban Development

Climate change is the defining topic of our time. Its prominence not only in national and international policy, but in mainstream media, grassroots movements and citizen consciousness attests to this. With around 54 percent of the world's population currently living in urban areas and urban population growth projected at 2.5 to 3 billion by 2050, cities are the primary battle ground where the fight to manage and respond to climate change will be won or lost.

In urban settings, climate action presents specific challenges owing to scale (cities account for the majority of greenhouse gas emission), the complexity of urban systems, governance (often mandates and responsibilities overlap), and many other factors. The opportunities for positive climate action are however equally as significant, from economies of scale to the proximity and density of people that favour resource efficiency. It is therefore unsurprising that global development agendas such as those elaborated below give special consideration to nexus between climate action and sustainable urban development.

Urban vulnerabilities are predicted to increase in the coming decades. Projections by the Intergovernmental Panel on Climate Change presents an increase of 1.2 million square kilometres of urban land cover from 2000 to 2030. The projection includes the loss of green infrastructure that is key to climate change adaptation, as well as increasing the exposure of population to greater risks, especially those residing in informal settlements. The greater the deficit in infrastructure and public services, the greater the exposure to the impacts of climate change⁷.

2.1. The Paris Agreement

The Paris Agreement (2015) recognize that climate change is a real and unprecedented challenge, requiring urgent global action⁸. Bridging today's policies with climate-neutral vision set out for the end of the century, the Agreement sets out ambitious targets to limit global temperature increase.

The concepts and trends highlighted in the Agreement are fundamental for climate action and balance both mitigation and adaptation action while highlighting how financing, capacity building and technology sharing can also support achieve the mission. Through the Nationally Determined Contributions, most countries committed to present their main climate change challenges and measures with many seeking or already adopting innovative holistic solutions⁹.



⁷ UN-HABITAT. (2015). Climate Change Strategy 2014-2019. Nairobi: UN-Habitat.

⁸ UNFCCC. (2015). Agenda item 4(b). Adoption of the Paris Agreement -/CP.21. https://unfccc.int/resource/docs/2015/cop21/eng/log.pdf

⁹ UN-HABITAT. (2017). Sustainable Urbanization in the Paris Agreement: Comparative review for urban content in the Nationally Determined Contributions (NDCs). Nairobi, October 2017.

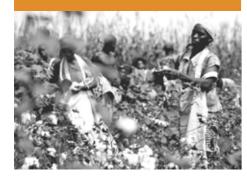
2.2. Sustainable Development Goals (SDGs)

Achieving sustainable development requires a harmonized approach that encompasses the three pillars of sustainability: economic, social and environmental. Without all pillars, gains and progress will not be sustainable over the long-term. In 2015, the Sustainable Development Goals set out an ambitious set of 17 targets to transform our world¹⁰.

SDG 13 acknowledges that climate change is already impacting public health, food and water security, migration, peace and security. This goal advocates for development that addresses climate change by reducing greenhouse gas emissions, building climate resilience, and developing adaptive capacity to climate-related hazards and natural disasters. Furthermore, it emphasizes the importance of improving education, awarenessraising and human and institutional capacity in the areas of: climate change mitigation, adaptation, impact reduction and early warning.

Mitigation actions are closely linked to reducing greenhouse gas emissions through resource efficiency. SDG 12 pledges to achieve the sustainable management and efficient use of natural resources, as well as substantially increase the number of human settlements adopting and implementing integrated policies and plans towards inclusion, resource efficiency, mitigation and adaptation to climate change, and resilience to disasters.

Sustainable Development Goal 12



Sustainable Development Goal 13 Take urgent action to combat climate change and its impacts



2.3. The New Urban Agenda

The New Urban Agenda (2016) acknowledges the key role that cities play in climate action. The way in which human settlements are planned, financed, developed and built directly impacts sustainability and resilience far beyond city boundaries. The vision presented in the NUA is one of sustainable, inclusive, and safe cities that are accessible for all. Resource-efficient consumption and production models should protect, conserve, restore and promote ecosystems, water resources, natural habitats and biodiversity, hereby minimising environmental impact.

The framework also reinforces the need to adopt and implement risk reduction and management mechanisms to reduce vulnerabilities, build responsiveness to natural and human-made hazards and foster mitigation and adaptation to climate change.

Article 79

We commit ourselves to promoting international, national, subnational and local climate action, including climate change adaptation and mitigation, and to supporting the efforts of cities and human settlements, their inhabitants and all local stakeholders to be important implementers. We further commit ourselves to supporting building resilience and reducing emissions of greenhouse gases from all relevant sectors.

Article 80 🖸

We commit ourselves to supporting the medium- to long-term adaptation planning process, as well as city-level assessments of climate vulnerability and impact, to inform adaptation plans, policies, programmes and actions that build the resilience of urban inhabitants, including through the use of ecosystem-based adaptation¹¹.

2.4 Sendai Framework for Disaster Risk Reduction

Building urban climate resilience contributes to the reduction of vulnerability to disasters (intensified by climate change) and increases preparedness for response and recovery. The Sendai Framework (2015) promotes analysis and action to address the interlinked challenges of disaster risk, sustainable development and climate change, and calls on national and local governments to undertake climate action. The Framework stresses that achieving stronger recognition of disaster risk reduction and climate change adaptation are complementary strategies that lead and facilitate appropriate climate risk management.

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¹⁰ United Nations. (2015). Transforming Our World: The 2030 Agenda for sustainable Development. https:// www.un.org/pga/wp-content/uploads/sites/3/2015/08/120815_outcome-document-of-Summit-foradoption-of-the-post-2015-development-agenda.pdf

¹¹ United Nations (2016). New Urban Agenda. [online] http://habitat3.org/wp-content/uploads/NUA-English.pdf

3.Climate Action and Resilience

Natural hazards alone do not cause catastrophes. It is the combination of exposed, vulnerable, and poorly prepared populations with a hazardous event that results in a disaster. Any resilience analysis must focus on how people, places and institutions can be affected by climate-change related hazards, or otherwise put, their sensitivity The degree of sensitivity is captured by the combination of environmental and socioeconomic aspects such as the natural resources assessment, and trends in demographics and poverty status. In this process, the characteristics of people in vulnerable situations must be given special attention, notably relating to gender issues, coverage and access to basic services, land, housing, critical infrastructure, and other services.

Cities are only able to understand, manage and achieve resilience if they are able to read their changing reality in a critical manner from evidence-based data and by engaging with all stakeholders to undertake action from both a mitigation and adaptation perspective.

3.1. Climate mitigation measures towards resilience

Climate change mitigation refers to efforts to reduce or prevent emission of greenhouse gases¹². The Paris Agreement defines mitigation efforts as those contributing to, "holding the increase in the global average temperature to well below 2°C above pre-industrial levels and to pursue efforts to limit the temperature increase to 1.5°C above pre-industrial levels, recognizing that this would significantly reduce the risks and impact of climate change"¹³.

To include mitigation measures in urban policies, UN-Habitat set out recommendations in the policy guide Addressing Climate Change in National Urban Policy¹⁴. These include:

- 1. support the development of local level plans and strategies to reduce GHG emissions,
- 2. increase the share of low-carbon/renewable energy sources, promoting efficient energy consumption.
- **3.** boost sustainable urban development patterns that minimize journey times and travel distances and reduce emissions, and stimulate sustainable transport modes,
- 4. reduce emissions by promoting more sustainable design and construction,
- 5. sustainable management of solid and liquid waste.

Climate change mitigation measures should be informed by greenhouse gas emissions and environmental quality indicators.

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3.2. Climate adaptation measures towards resilience

In the Paris Agreement, climate adaptation is defined as, "increasing the ability to adapt to the adverse impacts of climate change and foster climate resilience and low greenhouse gas emissions development, in a manner that does not threaten food production" ¹⁵.

Adaptation measures are those that propose adjustments in ecological, social or economic systems in response to present or future climatic phenomena and their effects or impacts. There are changes in processes, practices, and structures to moderate potential damage or to create new opportunities associated with climate change.

In the Climate Change Strategy¹⁶, UN-Habitat's recommendations to build climate resilience (adaptation) include:

- promote applied research into risks associated with climate change impacts and other hazards,
- 2. encourage and support local level climate change vulnerability assessment.
- 3. map hazards (including those that can evolve over time),
- **4.** plan human settlements, regulate land use, and provide critical infrastructure and services considering risk information and building resilience,
- **5.** prioritise actions that strength resilience of vulnerable and marginalised populations, upgrade slums and informal settlements,
- 6. promote the restoration of ecosystems and natural buffers,
- 7. provide for regional planning that protects ecosystems and guards against 'mal-adaptation'.

Any climate change adaptation measure should seek to improve the resilience of the system. Using nature-based solutions and a holistic approach, actions should maintain and improve a system's inherent resilience. Climate change adaptive strategies should take into consideration the impact of these measures on the city.

¹² UN-Environment Programme

https://www.unenvironment.org/explore-topics/climate-change/what-we-do/mitigation

¹³ UNFCCC. (2015). Agenda item 4(b). Adoption of the Paris Agreement -/CP.21. https://unfccc.int/resource/docs/2015/cop21/eng/log.pdf

¹⁴ UN-HABITAT. (2016). Addressing Climate Change in National Urban Policy: a policy guide for low-carbon and climate-resilient urban development. Cities and Climate Change Initiative: policy note no.4. Nairobi: UN-Habitat

¹⁵ Idem 16

¹⁶ UN-Habitat UN-HABITAT. (2015). Climate Change Strategy 2014-2019. Nairobi: UN-Habitat

4.Climate Action through the CRPT

The impact of climate change must be analysed in an evidence based manner. This approach underpins the City Resilience Profiling Tool and is intrinsic to climate change analysis. The CRPT's resilience analysis is comprehensive, covering the entire urban system in its measurement of vulnerabilities, and potential hazards while also taking into account governance issues. 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 build urban climate resilience, it is important to understand the challenges that a changing climate pose to the city's environmental, economic and social systems and from this understanding, outline the mitigation and adaptation plans, and actions for resilience.

4.1. Evidence-based data knowledge

Climate change data, trends and models can be complex tools for governments and inhabitants to adopt, especially in contexts where capacity and resources are limited. The City Resilience Profiling Tool is an accessible methodology built to support local governments and city inhabitants overcome this challenge. By connecting stakeholders (from climate change experts, data service providers, people and city authorities) around a common resilience framework, data collection is extensive and forms the basis of a diagnostics on exposure, sensitivity, and the adaptive capacity of a city.

4.2. Identifying climate change challenges in the city

The CRPT analysis evaluates how the city suffers from current and long-term climate conditions and hazards through models that extract information on temperature, heat waves, precipitations, water runoff, snow/ice cover, thermal stress, droughts, floods, among others. The CRPT approach draws on the available capacity from scientists, engineers, satellite experts, and software & tool developers who support the local government to downscale global climate change scenarios to the local and regional levels. At this scale, validation can be sought from the local community, and climate change challenges and actions (on-going and planned) can be identified.

4.3. Climate change impacts in cities

Exposure analysis from current and projected climate data combined with the sensitivity data is fundamental to assess the degree to which urban systems are affected by the biophysical impact of climate change. To plan climate action, it is also essential to assess the city's adaptive capacity by its current abilities and efforts in both physical elements (infrastructure, material wealth, and technology) and social/institutional elements (human capital, governance, and institutional strength).



5. Climate Action Workflow

Climate Action is a complex set of strategies that link vulnerability assessment to the climate impacts of an urban settlement and a wide spectrum of actions that can mitigate and adapt to these impacts at different levels. To mainstream climate action, the CRPT focuses on the promotion of a straightforward, efficient and effective understanding of the climate resilience status within the urban system.

For the Climate Action Enhancer, the pertinant indicators from the CRPT that relate to climate change have been extracted. The information gathered through these indicators should be processed through a workflow. The workflow gradually filters the information and classifies it into the following 4, according to its function in the process of constructing public policies for the climate action:

5.1. Climate Trends Data

The climate data modelling is fundamental to understanding the current and foreseen future situation faced by urban systems in order to articulate climate change issues into the city's policies. The task is to co-design the way in which we produce and show climate change information. To do so, stakeholders' collaboration and expertise in urban settings and climate observations, governance and management is needed

5.2. Environmental Quality Data

Environmental quality is comprised of data that can provide an understanding of how a changing climate could affect the region's bio-capacity and environmental qualities, such as air, water and soil quality.

Together with Climate Resilience Data (below), this category assesses the sensitivity and adaptive capacity of the urban systems. With this data (including satellite observation data), current impacts on the system are measured, providing information related to actual stresses faced by the cities.

5.3. Climate Resilience Data

Resilience data assess the links within the urban system, and its capacities to mitigate and adapt to climate change. The indicators are filtered through a set of cross sectoral issues¹⁷:

Land Use: Compact, transit-oriented, mixed-use development; regulations based on risk mapping that reflects both current risk plus the projected impacts of climate change.

Business and Livelihoods: Incentives and training to encourage green economy industries; green procurement policies.

Energy efficiency: Applies to various sectors listed above, including buildings and basic urban services. **Consumption:** Incentives for more sustainable packaging; addressing emissions linked to city supply chains including food, cement and construction materials; green procurement; addressing vulnerability of key supply chains.

Natural environment: Solutions that involve protecting, restoring and enhancing green and blue infrastructure; ecosystem based approaches to adaptation; managing the impact of climate change on native and invasive species.

Natural hazards: Disaster-resilient public and private investments in various sectors, and other priorities applicable at the city-level that are identified in the Sendai Framework for Disaster Risk Reduction (2015-2030).

5.4. Resource Efficiency

Mitigation related indicators include those that assess the city's capacity to monitor and reduce emissions, including resource efficiency combined with the effectiveness of urban systems in delivering positive contributions towards the SDGs. The indicators taken from the CRPT on this subject will be covered within a specific category.

5.5. Climate Action

After the city-specific diagnosis and through the Actions for Resilience, the CRPT devises concrete climate actions that are tailored to each city. The main aspects of these recommendations are related to collecting data in order to build up reliable climate models and better understand climate change impacts. This entails studying the combination of hazards (shocks and stresses) that can lead to malfunctions in the city, proposing governance measures that work in the direction of climate justice, and supporting inhabitant participation. The recommendations seek to encourage compact urban development, promote more sustainable building codes and reduce consumption to help achieve national goals, amongst others.

The development of appropriate urban solutions requires advancement beyond purely sectoral approaches towards a more integrated and holistic planning, construction and management of cities, and a political, legislative and fiscal environment that supports action.



¹⁷ UN-Habitat. (2015). Guiding Principles for City Climate Action Planning. Nairobi: UN-Habitat.

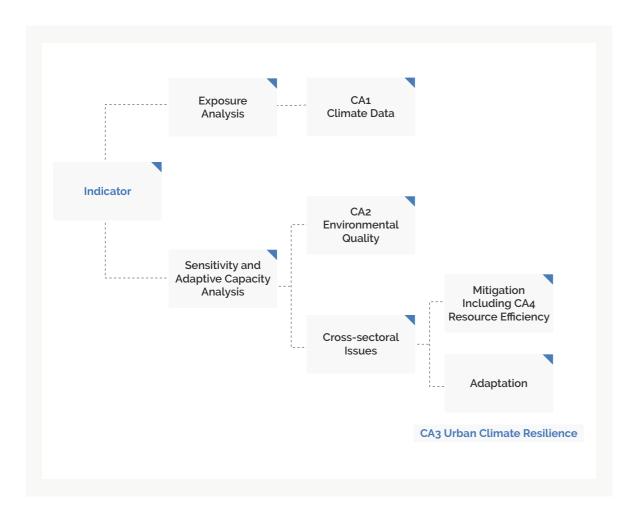
6.Climate Action Indicators in the CRPT

In the following pages are the indicators extracted from the CRPT that related to climate change. By applying these indicators, a city is able to gather a snapshot of the climate change situation, identify missing critical data, engage with relevant stakeholders and plan actions.

The process of identifying climate action should remain an iterative one, and it is expected that CRPT piloting in the cities will bring new elements to enrichen the current approach. At a later stage, the CAE is expected to contribute to broader policy-making and strategy development process in cities, thus fulfilling a new role, and shifting from tool strengthening (in terms of climate action) to strengthening the capacity of the city to address complex climate action issues they are confronted with.

Indicators in SET 4 are references with their alignment to global frameworks, tools and indexes. See reference 16 for full list.

As explained above, the data gathered from each indicator is filtered into four categories.



	CITY ID c	SET4 c	TOTAL
CC-1 Climate Data	22	0	22
CC-2 Environmental Quality Data	3	28	31
CC-3 Urban Climate Resilience Data	14	80	94
CC-4 Resource Efficiency Data	0	49	49
Total	39	157	196

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SET 1 - City ID City ID 1 HISTORICAL CONTEXT 1.1 Setting 114 Coordinat CC-1 2 SPATIAL CONTEXT 2,1 Climate 2.1.1 Climate type CC-1 212 Altitude CC-1 2.1.3 Temperature range CC-1 2.1.4 Heatwave CC-1 2.1.5 Tropical nights CC-1 2.1.6 Ice days CC-1 2.1.7 Frost days CC-1 2.1.8 Zero crossing of air temperature days CC-1 219 Degree days CC-1 2110 Solar Insolation CC-1 2111 Precipitation CC-1 2112 Short-duration extreme precipitation CC-1 Snow cover and water equivalent 2113 CC-1 2.1.14 Snow water equivalent CC-1 2.1.15 Water runoff or discharge CC-1 2116 Thom Discomfort Index CC-1 2.1.17 Universal Thermal Climate Index CC-1 2.1.18 CC-1 2.1.19 Droughts CC-1 2.120 CC-1 2,2 Ecosystems 2.2.1 Ecosystem types CC-2 2.2.3 Surface water bodies CC-2 2,3 Urban Area Total urban footprint 2.2.1 CC-2 3 LOCAL GOVERNMENT AND PUBLIC ADMINISTRATION 3.4 Resilience including Risk Reduction Entities in charge of resilience and/or risk reduction CC-3 3.4.2 Existing policies and plans for resilience and/or risk reduction CC-3 3.4.3 Budget allocation CC-3 Resilience partnerships 3.4.4 CC-3 4 POPULATION AND DEMOGRAPHICS 4.1 Population Characteristics CC-3 4.1.1 Population size 4.1.2 Population density CC-3 4.2 Population Dynamics Population growth rate CC-3 4.2.1 Migration rate CC-3 Migration streams CC-3 Tourism rate CC-3 5 ECONOMY AND LIVELIHOODS 5.2 Urban Economy Industrial and natural resources extraction CC-3 6 HAZARDS AND CHALLENGES 6,2 Challenges 6.2.1 CC-3 Shocks 6.2.2 CC-3 Stresses CC-3 6.2.5 Main risk-prone areas CC-1 Challenges attributed to climate change

SET 4 - Built Environment

1. Built Environment

1.1	1,1 URBAN FORM							
1.1.1	.1.1 Urban Growth Model							
	1111	Land consumption rate to population growth rate in the past 10 to 15 years.		SDG 11.31C CPI-UGL 31C ESCI 41P		CC-4		
	1112	Percentage of urban footprint located in hazardous areas.				CC-3		
1.2	LAND TENU	₹E						
1.2.1	Legal Status	of Land						
	1212	Percentage of city area considered informal.		SDG 11.11A ESCI 50A CPI-ESI 2.1A		CC-3		
	1.2.1.3	Percentage of informal land under tenure formalisation.				CC-3		
1.3	HOUSING							
1.3.1	Availability of	Adequate Housing		SDG 11.1.1P				
	1311	Percentage of homes in hazardous location.		ESCI 43A CPI-ID 11A		CC-3		
	1312	Percentage of homes with inadequate structure.		ESCI 43A CPI-ID 11A		CC-3		
1.4	BUILT ASSES	т						
141	Robustness of	of Critical Facilities		ESCI 39P				
	1.4.1.1	Percentage of critical facilities in hazardous locations.				CC-3		
	1412	Percentage of critical facilities with inadequate structure.				CC-3		
142	Robustness	of Key Buildings		ESCI 39P				
	1.4.2.1	Percentage of key buildings in hazardous locations.				CC-3		

2. Supply Chain & Logistics

		ESOURCES			
		y of Water Resources			-
	2.111	Proportion of water supply from each resource type.			CC
	21111	Inter-annual Variability.			CC
	2.1112	Does the city have a plan for prioritisation of water based on historical water level data?			C
212	Water Cor	nsumption			
	2.1.2.1	Total water consumption per capita (litres/day).	ISO-37120 21.5C ISO-37120 21.4P ESCI 2P		CC
	2.12.2	Trend in water consumption.			CC
2.1.3	Water Res	source Balance			
	2.1.3.1	Level of Water Stress (Baseline Water Stress).	SDG 6.4.2C		C
	2132	Frequency the city needs extra support from other systems.	ESCI 6C		C
2.1.4	Water Res	source Management			
	2.1.4.1	Is the city implementing Integrated Water Resource Management (IWRM) tools?	SDG 651A		C
	2.143	Is the city implementing water demand management strategies?			C
2.2	ENERGY R	RESOURCES			
2.2.1	Energy Re	source Diversity			
	2.2.1.1	Energy supply diversity (% of the supply).	IEAA		C
	2.2.1.2		CityStrength 8A		
		Spare capacity available? (per source) [+]		-	C
222	Energy Eff	icency	ESCI 22P		
	2.2.2.1	Energy intensity measured in terms of primary energy and GDP.	SDG 7.3.1C IEA/EEAA		C
	2.2.2.1.1	Consumption disaggregated by sector.			C
	2.2.2.2	Existence of energy efficiency regulations in place.	ESCI 23P		C
2.2.3	Clean and	Renewable Energy			
	2.2.3.1	Non-carbon energy share in the total final energy consumption (%).	IEAA EIST ECO12C		C
			SDG 7.2.1C		
	2.2.3.2	Renewable energy share in the total final energy consumption (%).	ISO 37120 7.4C ESCI 24C EIST ECO13C		C
	2233	Ratio of municipal financing for clean energy transition in local budget.	EIST ECOIGC		C
	FOOD SUF			-	-
	Availability		SDG 2.1A		
_	2.3.1.1	Average value of food production (disaggregate by food type).	FAO-FS I_12C.		С
			I_3.5P		
	2.313	Trends in production and supply of basic food.			C
2.3.2	Food Supp	ply Dependencies			
	2.32.1.1	Does the city have policies and programmes promoting local food production and consumption?			C
	2.3.2.2	Percentage of households/entities practicing urban farming and aquaculture (disaggregate by tenure type).			C
	2.3.2.3	Percentage of arable land equipped for irrigation.	FAO FS I_32C		C
233	Food Chai	n Efficiency and Continuity			
	2.3.3.1	Percentage of food waste and production losses (disaggregate per stage).	SDG 12.21A		CC
	2.33.1.1	Does the city have policies and programmes to prevent food waste?	50016.637		CC

SET 4 - Basic Infrastructure

3. Basic

c Inf	rastru	cture		
_		NERGY SUPPLY FOR BUILDINGS		
3.1.1.1	31112	Proportion of population with primary reliance on clean fuels and technology for heating, cooling and cooking.	SDG 7:12C	CC-3
	31113	Proportion of household budget spent on energy for domestic purposes (electricity, heating, cooking).	EISD SOC2A	CC-3
3113	Energy Supp	ply Efficiency		
	31131	Buildings Sector (Residential + Services) energy consumption per capita (ToE/cap).	EISD ECO9A ESCI 21A ISO_37120 7.5A	CC-4
	3.1.1.3.1.1	Trend in Consumption.	10023/2007/51	CC-4
	311312	Consumption disaggregated by end use.		CC-4
	3.1.1.3.1.3	Consumption by energy sources. Percentage of non revenue consumption. (per public network: Electricity,	_	CC-4
	3.1.1.3.2	Gas, Heating/Cooling District) [+]	CityStrenght 8A	CC-4
	3.1.1.3.3	Energy consumption of public buildings per year (kWh/m2).	ISO_37120 7.3C	CC-4
	3113.31	Trend in Consumption. Energy consumption of Public Spaces and Street lighting (kWh/m2).	_	CC-4 CC-4
	3113.41	Trend in Consumption.		CC-4
	3.1.1.3.5	Percentage of customers with Smart Electricity Meters (%).		CC-4
212	3.1.1.3.5.1 ENEDGY - E	Access to real time electricity consumption data? NERGY SUPPLY FOR MOBILITY		CC-4
		ply Network Coverage		
	3.1.2.1.1	Percentage of vehicle fuel demand covered by supply network.	CityStrenght 8A	CC-3
	312.12	Existence of alternative clean fuel vehicle network. (per network: compressed gas vehicle, electric vehicles) [+]		CC-3
3.12.2		Energy for Transportation	EISD ECO10A	
	31221	Transport energy consumption (ToE/capita).		CC-4 CC-4
	312211	Disaggregated by end use. Disaggregated by energy source.		CC-4
	31222	Non-carbon fuels share (%).		CC-3
	312.2.3	Renewable fuels share (%).		CC-3
3.2.1	WATER - W	ATER SUPPLY		
3.2.1.1	Access to Dr	rinking Water	_	
	32112	There are obligations/incentives in the building codes for secondary source/reusing of water?		CC-4
3212	Water Supp	ly Network Coverage		
	32122	Percentage of water samples in a year that complies with drinking water quality standards.	ESCI 4 C SDG 611 A	CC-4
3.2.1.3	Efficiency of	Water Supply Operations	ESCI 5 C	
	32.1.3.1	Percentage of unaccounted for water (water loss).	ISO 217 C	CC-4
		ASTEWATER AND SANITATION Network Coverage		
3222		Is the network able to cope with seasonal increase in rain/stormwater (if		CC 2
	32223	combined sewer system)?		CC-3
3.2.2.3		Treatment and Discharge	SDG 631C	
	3.2.2.3.1	Proportion of wastewater that is safely treated.	ESCI 8 C	CC-4
	32232	Proportion of hazardous wastewater that is safely treated. Proportion of sludge that is safely treated.	_	CC-4 CC-4
	32234	Return flow ratio - Percentage of available water that has been previously used and discharged upstream as wastewater.	WRI Aqueduct C	CC-4
3.2.2.4	Efficiency of	Water Operation		
	322.4.1	Total number of sewage overflows reported per 100km of sewer main per year.		CC-4
3.2.3	WATER - ST	ORMWATER		
3.2.3.1	Stormwater			
	3.2.3.1.1	Percentage of urban area covered by stormwater collection system.	63.63	CC-3
	3.2.3.1.2	Is the city's drainage system currently able to cope with seasonal increase in rain/stormwater?	CityStrenght 17A	CC-3
	3.2.3.1.3	Is the city reusing rainwater to reduce drinking water consumption?		CC-4
3.2.3.2	Stormwater	and Flood Management Strategies		
	32321	Is existing protective infrastructure well-designed and well-built based on flood risk information?	UNISDR Scorecard D8. 1A	CC-3
	32322	Does the city regularly and extensively consider the use of alternative water	UNISDR Scorecard D4. 2.1A	CC-3
	323221	If yes, what is the percentage of total urban runoff retained through water sensitive urban design solutions?		CC-4

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3. Basic Infrastructure Percentage of impervious surface coverage within urban area. CC-3 UNISDR Do building codes or standards exist, and do they address water CC-4 Scorecard D4. sensitive urban design and/or onsite stormwater solutions? Are zoning rules, building codes and standards widely applied, properly 323241 CC-4 enforced and verified? 3.2.3.3 Effectiveness of Stormwater Solution Percentage of dwellings damaged by intense flooding (10 years). ESCI 9P CC-3 3.2.3.3.1 Please describe disruptions on road traffic due to water logging and CC-3 occurrence, if applicable. Please describe disruption of access to public services due to water logging and occurance, if applicable [+] (for education and health services. CC-3 32333 If the city monitores interruption in other services please include) 3.3 SOLID WASTE CityStrength 3.3.1 Solid Waste Collection Coverage Proportion of solid waste collected out of total solid waste generated by SDG 11.6.1P & 12.4.2P ISO_37120 16.2P the city, per category of waste (municipal/non-municipal; CC-3 3.3.1.1 hazardous/non-hazardous; including through waste drop-off facilities for non-municipal). CPI-ES 2.1A CityStrength 332 Access to Collection Service 15A Percentage of population with regular municipal solid waste collection ESCI 10C CC-3 SO_37120 16.1C service (at least once a week). 3.3.3 Pre-treatment of Solid Waste SDG 12.5A ESCI 15P CC-4 Main method(s) used for pre-treatment (specify percentage, if available). Legal obligation of pre-treatment for non-municipal solid waste CC-4 3.3.3.2 generators? 3.3.4 Treatment: Recovery of Solid Waste Urban/Municipal Solid Waste SDG 12.5.1P & 12.4.2P ESCI 14C, 15C & Proportion of urban/municipal solid waste treated out of total generated, CC-4 16C ISO_37120 16:3P by type of treatment? (incl. municipal Hazardous Waste). & 16.10P CPI-ES 2.3C Non-municipal Solid Waste SDG 125.1P & 12.4.2P Proportion of non-municipal solid waste treated out of total generated, by CC-4 3.3.4.2 ISO_37120 16:3P & 16:10P type of treatment? (incl. non-municipal Hazardous Waste). Solid Waste Recovery Trend 3.3.4.3 Characterise the recovery trend of solid waste in the last 10 years. CC-4 3.3.5 Treatment: Disposal of Solid Waste SDG 11.6.1P & 12.4.2P Percentage of solid waste that is disposed of out of the total solid waste ISO_37120 16.4 C, 16.5C, 16.6C, 16.7C & 16.8C CC-3 3.35.1 generated, by types of disposal and types of waste. ESCI 11C & 13C Characterise the trend of solid waste that has been landfilled in the last 10

CC-3

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SET 4 - Mobility

4. Mobility

4.1	URBAN MO	DBILITY			
411	Diversity of	f Transport Modes and Modal Share			
	4.1.1.1	Percentage of commuting trips per mode of transport (Please disaggregate by sex, if possible).	SDG 9.12P ESCI 56P CPI-ID 41P ISO-37120 18.3 A, 18.5A	ı	CC-3
	4.1.1.2	Percentage of population using paratransit modes of transportation (Please disaggregate by sex, if possible).	SUTPA	ı	CC-3
	4.1.1.3	For each mode of transport, characterise the growth rate. [+]			CC-3
412	Coverage of	of Urban Mobility Networks	CPI-ID 4:3A ISO-37120 18:1A, 18:2A		
	4.1.2.2	Road density dedicated for public transport only (km / 100 000 population).	ESCI 53C		CC-3
	4.1.2.3	Raitway density (km / 100 000 population).			CC-3
	4.1.2.4	Navigable water network density per population (km / 100 000 population			CC-3
	4.12.5	Density of side walks and pedestrian paths (km / 100 000 population).	ESCI 55C		CC-3
	4.1.2.6	Bicycle lanes density (km / 100 000 population).	ESCI 54C ISO-37120 18.7C	۰	CC-3
	4.1.2.7	Cable line density (km / 100 000 population).			CC-3
41.3	4131	Percentage of city population within 500 m distance to nearest public transport stop. Please disaggregate by modes of transport.	UN-Habitat* P SDG 11.2.1P IND03 UN- Habitat* P	ı	CC-3
	4.1.3.3	Percentage of households with at least one car (Please disaggregate by sex of the head of the households, if possible).	OECDA ISO 37120 18.4C	۰	CC-3
	4.1.3.5	Average commuting travel time using various modes of transport.	SUTPP		CC-3
414		of Urban Mobility Operations	CPI-ID 42P	п	
	4.1.4.6 All transpoi	What is the average age of the transport fleet?	ESCI 57C	В	CC-3
42	4.1.4.8 INTER-REC	Does the city have an integrated central control of all transport modes? GIONAL MOBILITY		п	CC-3
4.2.1	Diversity ar	nd Modal Share of Inter-Regional Mobility Systems			
	4.2.1.1	Percentage of trips per each mode of transport.	SDG 9.12P		CC-3
	4.2.1.1	For each mode of transport, characterise the growth rate. [+]			CC-3
422	Coverage a	and Capacity of Entry Points and Inter-Regional Transport Facilities Number of major coach/bus terminals in city with regional/ international		ı	CC-3
	4222	destinations. Number of train stations in city with regional/ international destinations.			CC-2
	422.2	Number of ports in city.			CC-3
	422.4	Number of airports in city.			CC-3
422		Inter-Regional Mobility Systems			00-3
42.3		ter-regional transport facility [+]			
		Is it accessible through at least one public urban transport mode?			CC-3
	4233				
424	4233 Continuity	of Inter-Regional Mobility Operations			00-3

SET 4 - Municipal Public Services 5. Municipal Public Services 51 CEMETERIES AND CREMATORIUMS 5.1.4 Quality and Safety Monitoring Do any public or private burial sites or crematoriums pose a CC-3 contamination risk? 5.9 STREET LIGHTING 5.9.2 Coverage of Public Lighting CC-4 5.9.22 Does the municipality use a night lighting schedule? 5.9.3 Maintenance of Public Lighting Infrastructure Types of public lighting installed in the city and percentage as a part of CC-4 the total public lighting infrastructure. Percentage of public lighting infrastructure equipped with electricity CC-4

SET 4 - Social Inclusion and Protection Element 6. SIP Element 6.32 ACCESS TO BASIC SOCIAL SERVICES - HEALTH 6.321 Coverage of Basic Health Services 6.3213 Do local or national early warning systems for disease control exist (e.g. Ebola outbreak)? 6.3214 Are there protocols in place for monitoring infectious diseases. CC-3

SET 4 - E	conom	у		
7. Econo	my			
	7.1 LOCAL E	CONOMIC STRUCTURE Composition		
	7.1.1.1	Industrial diversity	CPI-P 2:2A ARUP 6:3A	CC-3
	7.12 Business	Composition	_	
	7.1.2.4	Circular Economy: Number of Related Enterprises per 100,000 inhabitants	SDG 8.4A, 11.6A NUA 50A AAAA I.A	CC-3
	7.3.3 External I	Market Integration	SDG 8AA	
	7.3.3.3	Imports/exports composition	ARUP 6.5A	CC-3
	7-3-3-4	Import/Export diversity	ARUP 6.5A OECD A1.5A	CC-3

SET 4 - Ecology

8. Ecology

\mathbf{y}					
8.1	ECOSYSTEM	1 SERVICES			
8.1.1	Ecosystem S	Services Condition and Trends	SDG 151A, 142A		
	8.1.1.1	Indicate the level of preservation (good, bad) of the provisioning services the inhabitants are obtaining from the ecosystem, as well as the trend (enhanced, stable, degraded) over the past 10 years.			CC-2
	8.1.1.2	Indicate the level of preservation (good, bad) of the regulating services the inhabitants are obtaining from the ecosystem, as well as the trend (enhanced, stable, degraded) over the past 10 years.			CC-2
	8.1.1.3	Indicate the level of preservation (good, bad) of the cultural services the inhabitants are obtaining from the ecosystem, as well as the trend (enhanced, stable, degraded) over the past 10 years.			CC-2
8.1.2	Ecosystem S	Services Maintenance	SDG 15.1A. 14.2 A		
	8.1.2.1	Please select the services the local government obtains from the surrounding ecosystems.			CC-3
	8.1.2.2	Please identify the policies or the plans that the local government developed to preserve the ecosystem services selected in 8.1.2.1.	SDG 15.9P, 2.3A , 2.4A , 2.CA, 6.6 A, 12.2A, 14.4A		CC-3
	8.1.2.3	Does the local government take the ecosystem services approach or a different environmental approach into consideration in local policy and planning?			CC-3
	8.1.2.4	Is the local government involved in transboundary agreements or collaborations to enable policy and planning for the implementation of ecosystem services approaches?	UNISDR Scorecard 53.2C		CC-3
		L FOOTPRINT			
8.2.1	Biocapacity	What is the biggereath, of the region over the last of years? Places			
	8.2.11	What is the biocapacity of the region over the last 10 years? Please specify the area size (in hectares) of each land use type present in the region, in order to calculate the area's biocapacity (in global hectares) for 2008 and 2017.	SDG 14.4A, 151 A, 15.11P		CC-2
8.2.2	Ecological F	ootprint of Consumption	SDG 12.2A		
	8.2.2.1	Ecological Footprint of Production (10 year trend).			CC-4
	8.2.2.1.1	Break down the data (gha/pop) based on land use type and consumption output.			CC-4
	8.2.2.2	Ecological Footprint of Consumption (10 year trend).			CC-4
_		TY AND GREEN INFRASTRUCTURE			
0.3.1	Native Block	versity in the City Specify the change in number of native species over the past ten years. If		-	
	8.3.1.1	data is available, please disaggregate further, particularly into those species on the Red List of Threatened Species.	SDG 15.5A ISO-37120 8.8P		CC-2
	8.3.1.2	Proportion of invasive alien species as percentage of all species.	SDG 15.8A		CC-2
	8.3.1.3	Proportion of natural areas and urban green spaces in the city as a percentage of the urban area.			CC-2
	8.3.1.4	Specify the urban green space per capita and disaggregate, if possible, by sex, age and groups in vulnerable situation.	ISO-37120 19.1C ESCI 45C		CC-2
	8.315	Proportion of urban green space cover (including vegetation canopy cover and blue areas), as percentage of the size of the functional area.			CC-2
8.3.2	Protected Na	atural Areas in the Region and Connectivity			
	8321	Please, specify the proportion of natural areas in the region that is protected.	SDG 6.6A, 14.51 P. 151.2P. 154.1P		CC-3
	8.3.2.2	Please specify whether expenditure (public and private) per capita spent on the preservation, protection and conservation of natural heritage is increasing, stable, or decreasing.	SDG 11.4.1P		CC-3
	8.3.2.3	Please specify the total size of the number of areas (in ha) that connect protected natural areas and urban green spaces in the city, using the Green Infrastructure Index as measure.			CC-3
	8324	Does the city take the biodiversity in these corridors, and in their green spaces and blue areas in general, into consideration?			CC-3
		NTAL QUALITY			
8.4.1	8.4.1.1	Gas Emissions CO2 emissions (tones of CO2 per inhabitant).	ESCI 29C ISO-37120 8:3P		CC-2
	8.4.1.2	CO2 intensity (grams per unit of real GDP).	ESCI 30C		CC-2

8. Ecology

8.4.2	Air Quality		ESCI 26C	
	8.42.1	Particulate matter (PM10) concentration (24-hour average).	ESCI 27C ISO-37120 8.2C SDG 11.6.2P	CC-2
	8.4211	Exceedance days (above 50µg/m3).		CC-2
	8.4.2.2	Fine particulate matter (PM2.5) concentration (1-year average).	SDG 11.6.2C ISO-37120 8.1C	CC-2
	8.4221	Exceedance days (above 25µg/m3).		CC-2
	8.4.2.3	Nitrogen dioxide (NO2) concentration (1-hour average).	ISO-37120 8.4P	CC-2
	8.4.2.3.2	Exceedance days (above 200µg/m3).		CC-2
8.4.3	Water Qualit	ty	SDG 632A	
	Ground wate	er quality		
	8.4.3.1	Select the pollutants present in ground water that have transgressed the established limit.		CC-2
	Surface fresh	nwater quality		
	8.4.3.2	Select the pollutants present in inland surface water that have transgressed the established limit.		CC-2
	Marine water	r quality of Class I Water		
	8.4.3.3	Select the pollutants present in Class I Water that have transgressed the established limit.	SDG 141A, 1431 P	CC-2
	Marine water	r quality of Class II Water		
	8434	Select the pollutants present in Class II Water that have transgressed the established limit.	SDG 141A, 1431 P	CC-2
8.4.4	Additional P	ollution		
	8.4.4.1	Are there areas in the city with significant land pollution (e.g. brownfield sites, riverbeds, agricultural sites etc.)?		CC-2
	8.4.4.2	Are there currently areas in the city with significant thermal pollution (e.g. heat island effect)?		CC-2
	8443	Are there currently areas in the city with significant radioactive pollution (e.g. nuclear power plants, industrial sites, hospitals etc.)?		CC-2
	8.4.4.4	Are there currently areas in the city with significant noise pollution?	ISO 8.7A	CC-2
	8.4.4.5	Are there currently areas in the city with significant light pollution?		CC-2
	8.4.4.6	Other types of pollution not included in this report. [+]		CC-2
8.4.5	Monitoring o	of Environmental Quality		
	8.4.5.1	Existence and monitoring of greenhouse gas inventory.	ESCI 28C	CC-3
	8.4.5.2	Existence, monitoring and enforcement of air quality regulations.	ESCI 25C	CC-3
	8.4.5.3	Existence, monitoring and enforcement of water quality regulations.	SDG 6.3A SDG 14.1A	CC-3
	8.4.5.4	Existence, monitoring and enforcement of regulations regarding the additional types of pollution identified in Indicator 8.4.4. [+]	ESCI 32P	CC-3

7.Climate Action Enhancer Questionnaire

7.1. Methodology and process for CAE

In order to make the Climate Action Enhancer effective and easily applicable, a semistructured questionnaire format was applied to the CRPT to extract key indicators and steps. The CAE has supported UN-Habitat to identify how much of the CRPT supports climate change projects and programmes. The questionnaire includes the following five sections:

- 1. Basic information for contextualisation
- 2. Climate Action Targeting
- 3. Climate Change Analysis
- 4. Climate informed Actions for Resilience (A4Rs)
- 5. M&E aspects for further applicability of recommendations

Whereas the team in charge of the elaboration of the CRPT benefited from the support of various specialists, the CAE questionnaire was designed as a complementary tool to support each team member in applying critical thinking in climate change action.

The process of climate action should remain an iterative one, and it is expected that CRPT piloting in cities will bring new elements and enrich the current approach. At a later stage, the CAE is expected to contribute to broader policy-making and strategy development process in cities, thus fulfilling a new role, and shifting from tool strengthening (in terms of climate action) to a strengthened capacity in cities to address challenges.

1. Basic Information about CRPT					
Analytical set	Select: SET 1 to 4, or A4Rs				
Urban Element	Select: Element 1 to 8				
(Supra) Component	Full name				
Expert in charge with the component	Name and role in the project				
Climate / environmental expert (countercheck)	Name and role in the project				
Date of assessment					

2.Climate Action Targeting (component level)								
Questions	Answers							
2.1 Is the component relevant for climate action mainstreaming?	Yes [] No [] Not determined yet []							
2.2 Is the component relevant for climate change mitigation urban policies? (Multiple choice)	1. Development of local levels plans and strategies to reduce GHG emissions 2. Increasing the share of low-carbon/renewable energy sources, promoting efficient energy consumption 3. Boosting sustainable urban development patterns that minimizes journey times and travel distances and reduce emissions, stimulate sustainable transport modes 4. Reducing emissions by promoting more sustainable design and construction 5. Sustainable management of solid and liquid waste []							
2.3 Is the component relevant for climate change adaptation urban policies? (Multiple choice)	1. Promote applied research into risks associated with climate change impacts and other hazards 2. Encourage and support local level climate change vulnerability assessment 3. Mapping of hazards (including those ones that can evolve over time) 4. Plan human settlements, regulate land use, and provide critical infrastructure and services considering risk information 5. Prioritise actions targeting vulnerable and marginalised population, upgrade slums and informal settlements 6. Promote the restoration of ecosystems and natural buffers 7. Provide for regional planning to protect ecosystems and guard against 'mal-adaptation []							

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3. Analysis (name the indicator or the supporting indicator)						
Questions	Answers					
Does the indicator refer to climate change trends?	Yes No > go to section 4	[]				
Does the indicator refer to environmental quality?	Yes No	[]				
Does the indicator refer to climate resilience?	Yes No					

4. Actions for resilience (name the A4R relevant or the analysed component)	
Level of analysis	UN-Habitat thematic area of interest
The articulation with the New Urban Agenda implies the work at the following five levels. Specify whether the recommendation for action for resilience is action informed at each of these levels.	Climate Action mainstreaming areas, according to Cities and Climate Change Initiative, according to UN-Habitat Guiding Principles for City Climate Action Planning (2015). Select every relevant one.
4.1 Local implementable actions Yes [] No [] If not, explain why:	1. Urban legislation, land, governance 2. Urban planning and design branch 3. Urban economy 4. Urban basic services 5. Housing and slum upgrading 6. Research & capacity development 7. Risk reduction and rehabilitation []
4.2 Financing the urbanisation Yes [] No [] If not, explain why:	1. Urban legislation, land, governance 2. Urban planning and design branch 3. Urban economy 4. Urban basic services 5. Housing and slum upgrading 6. Research & capacity development 7. Risk reduction and rehabilitation []
4.3 Strategies, planning, design Yes [] No [] If not, explain why:	1. Urban legislation, land, governance 2. Urban planning and design branch 3. Urban economy 4. Urban basic services 5. Housing and slum upgrading 6. Research & capacity development 7. Risk reduction and rehabilitation []
4.4 Existing rules and regulations Yes [] No [] If not, explain why:	1. Urban legislation, land, governance 2. Urban planning and design branch 3. Urban economy 4. Urban basic services 5. Housing and slum upgrading 6. Research & capacity development 7. Risk reduction and rehabilitation []
4.5 Harmonisation with national urban planning Yes [] No [] If not, explain why:	1. Urban legislation, land, governance [] 2. Urban planning and design branch [] 3. Urban economy [] 4. Urban basic services [] 5. Housing and slum upgrading [] 6. Research & capacity development [] 7. Risk reduction and rehabilitation []

5. M&E	
Questions	Answers
5.1 Are any climate action related baselines used in the analysis?	Yes [] No [] If not, explain why:
5.2 Are any climate action related aspects monitored when implementing the recommendations for actions for resilience?	Yes [] No [] If not, explain why:
5.3 Is any evaluation carried-out in order to assess whether the recommendations were implemented?	Yes [] No [] If not, explain why:

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