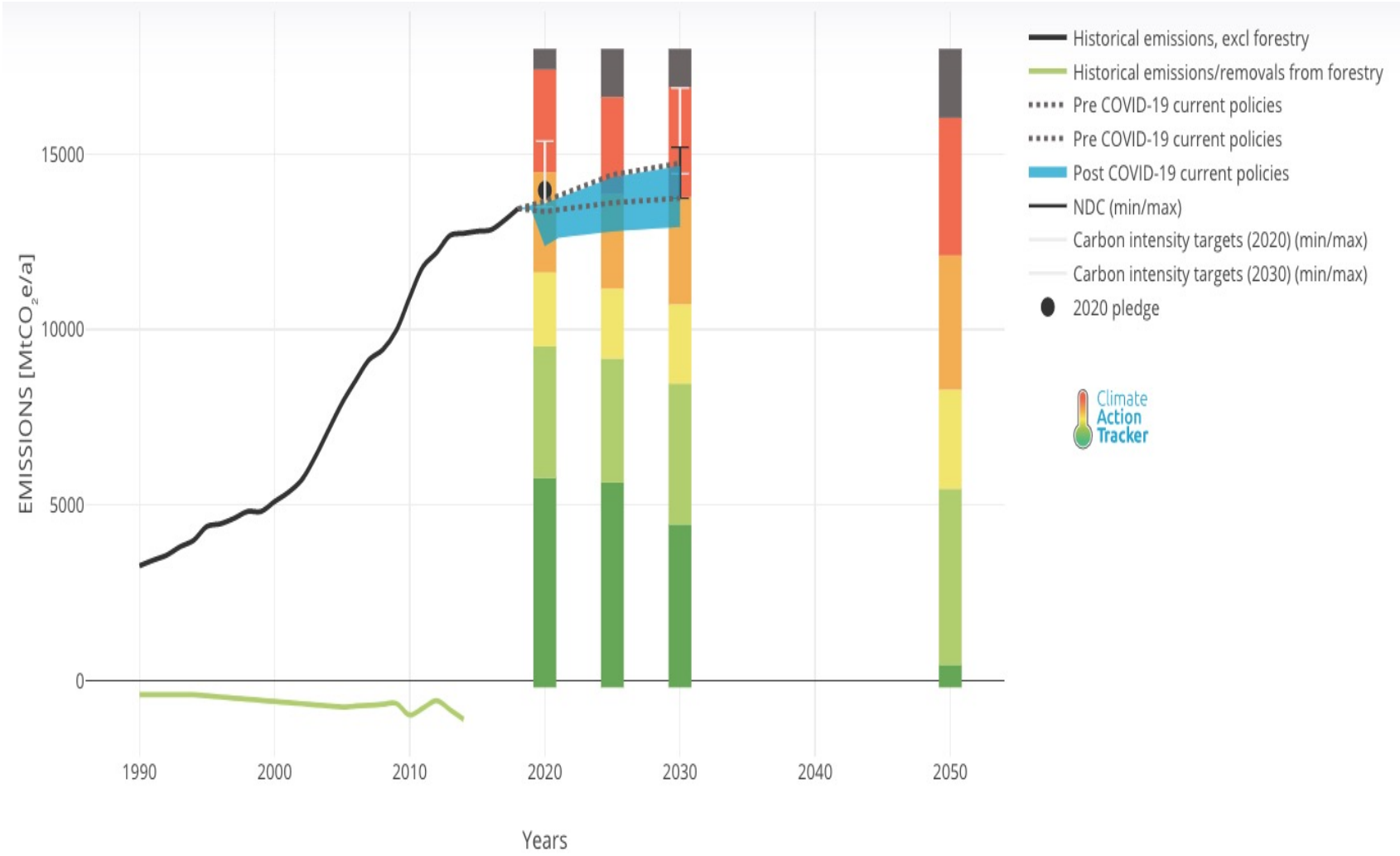
Xiangtan Low-Carbon Transformation for Livable City

Integrated solutions to climate friendly and resilient city

PRC's Greenhouse gas emissions and Commitment to Climate Change

-Carbon peaking by 2030
-carbon neutrality by 2060



Source:https://climateactiontracker.org/countries/china/

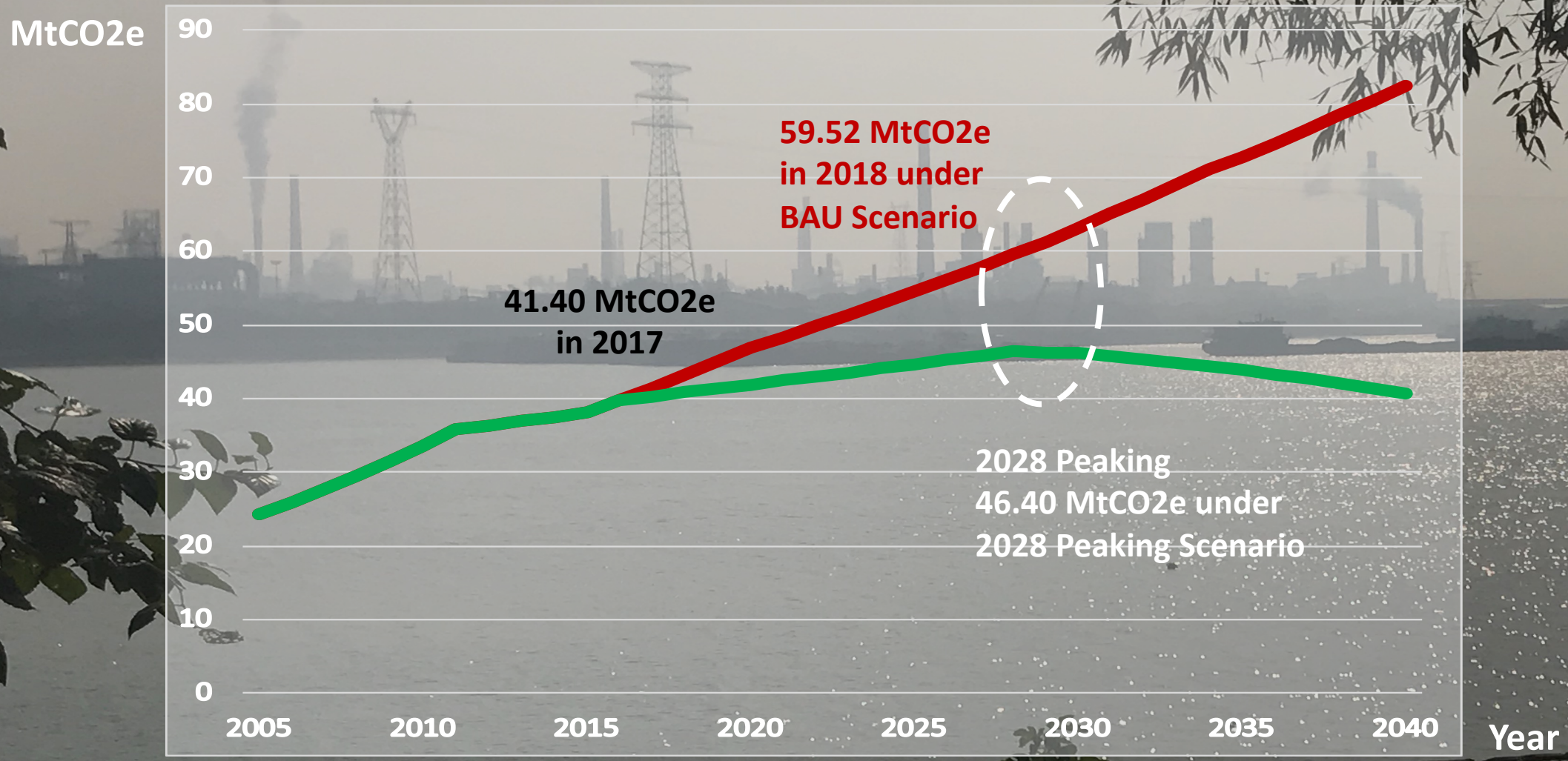
Xiangtan, Hunan in the People's Republic of China

- An old industrial town undergoing rapid urbanization and industrial transformation
- Designated low-carbon city since 2018
- Population: 2.9 million
- GDP per capita in 2018:

  CNY 75,609

  (*ranking: 69th in 2017*)

Xiangtan's Greenhouse gas emissions and Low-Carbon Development Plan



Low-Carbon Development (*working definition*)

Low-Carbon Development refers to 'sustainable development' grounded in *systems-thinking* and guided by quantifiable indicators of GHG emissions, which encourages *integrated and collaborative city* planning, *coherent sector development*, ***resilience*** improvement by taking *preventive approach*, and active governance through engaging and activating all stakeholders by providing the *right incentives*.

- Motivation for change
- LC actions shall be easy
- Power, resources, and information/knowledge

"Low-carbon and resilient city must benefit its residents and their wellbeing. Through improvement of livability, citizens shall be proud of their city!"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环卫车辆作业
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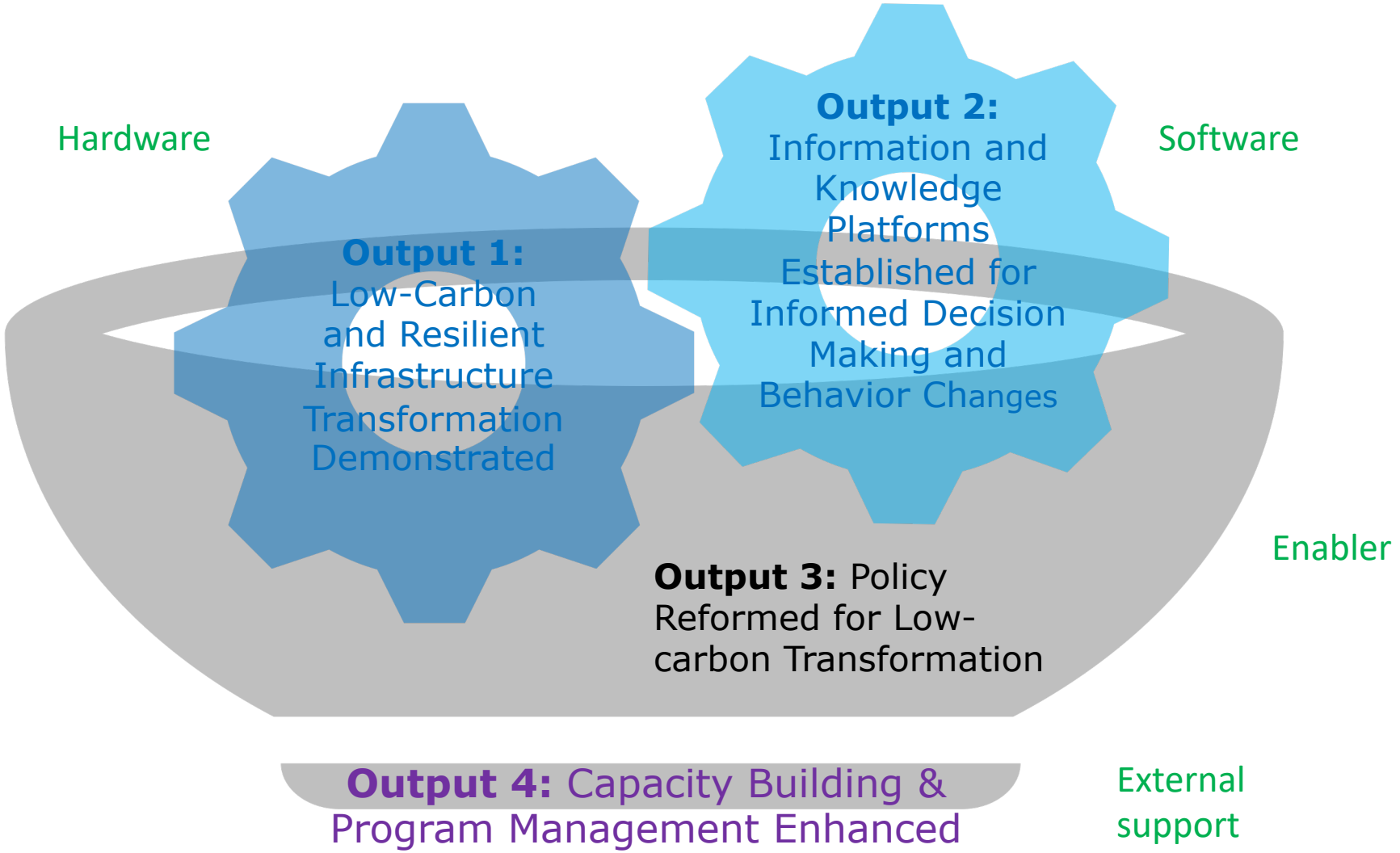
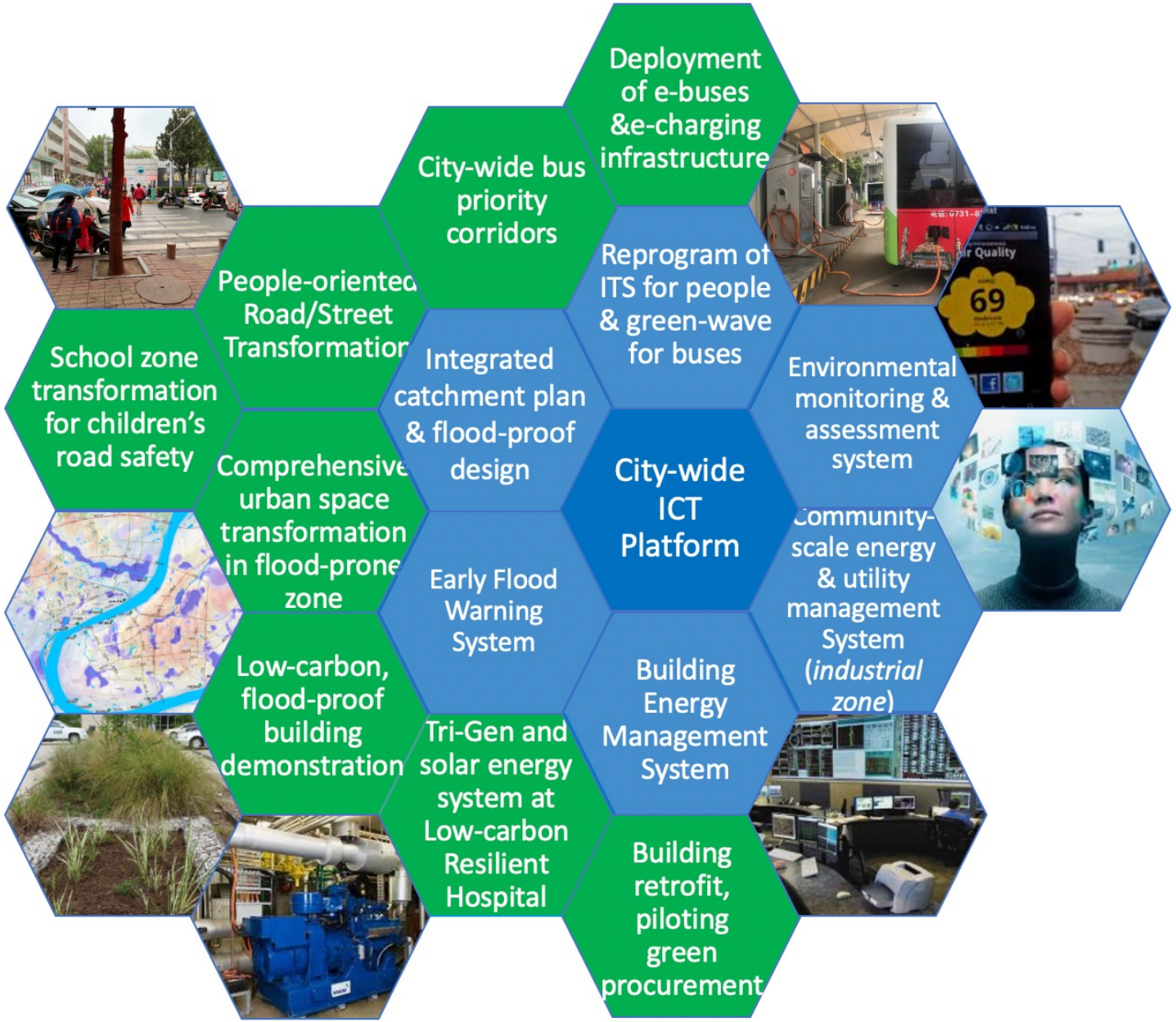
Integrated Program Design to Activate all Actors



Investment Project

Output 1: Low-carbon & resilient infrastructure

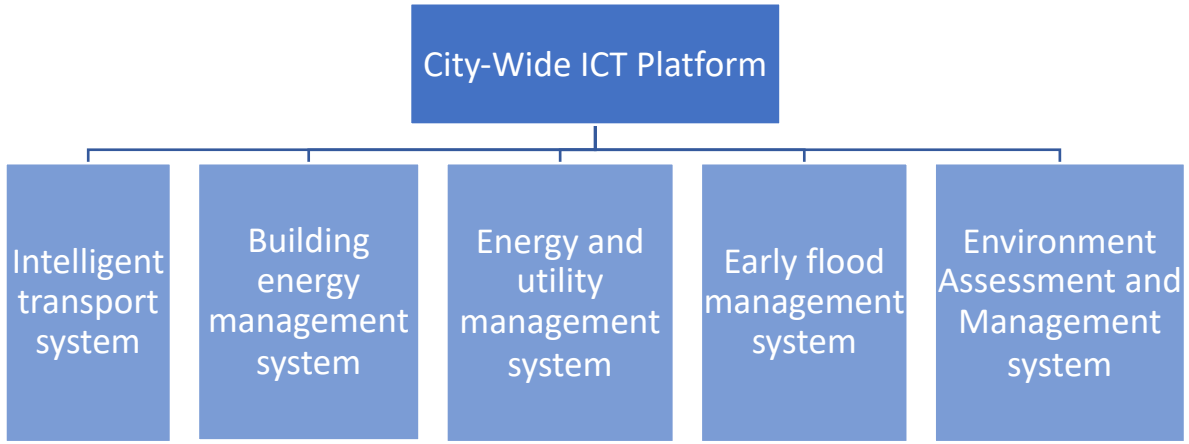
-transport/mobility
-green Building
-clean energy
-urban space and connectivity



Output 2: Information & knowledge platforms

Output 3: Capacity building and Knowledge Enhanced

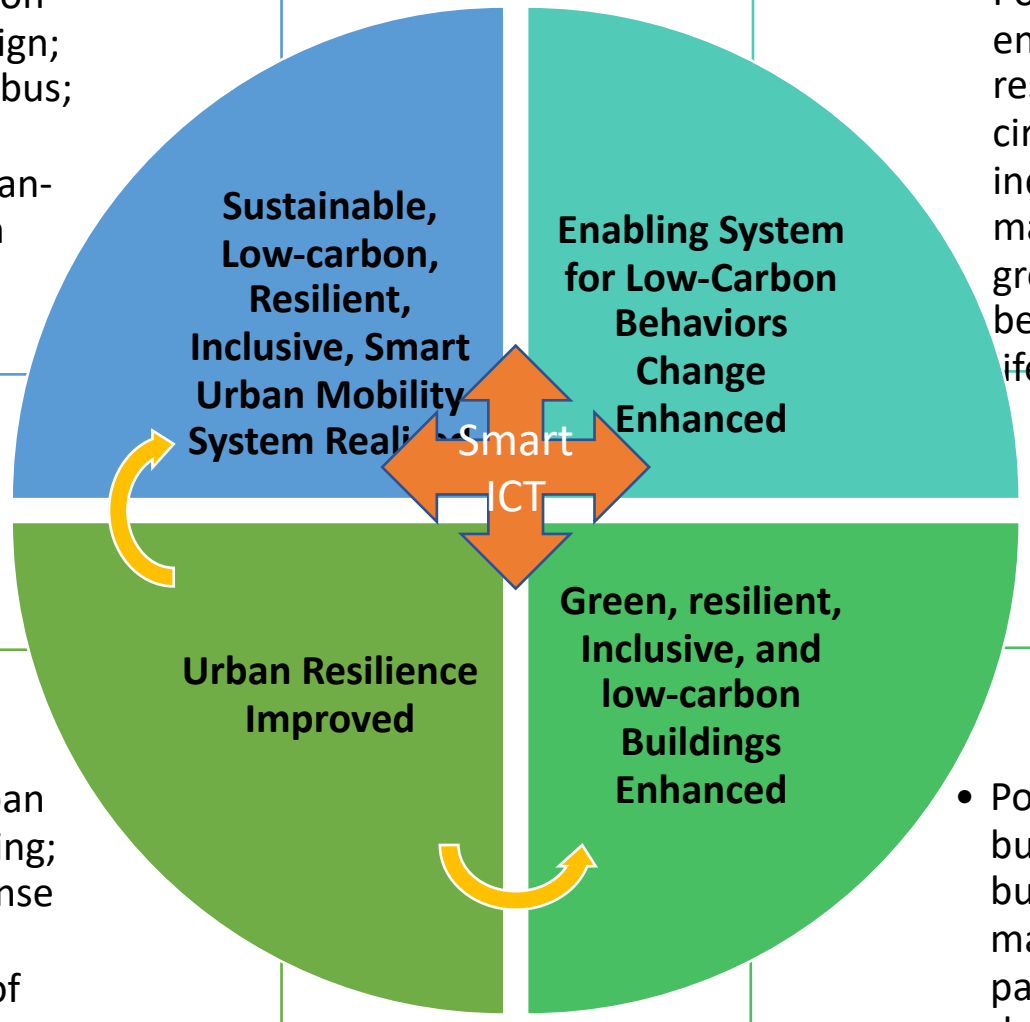
Smart Xiangtan



Policy and Reforms to support and sustain the transformation and behavior changes

- Policy reforms on urban road design; parking; public bus; non-motorized transport; human-oriented design standards

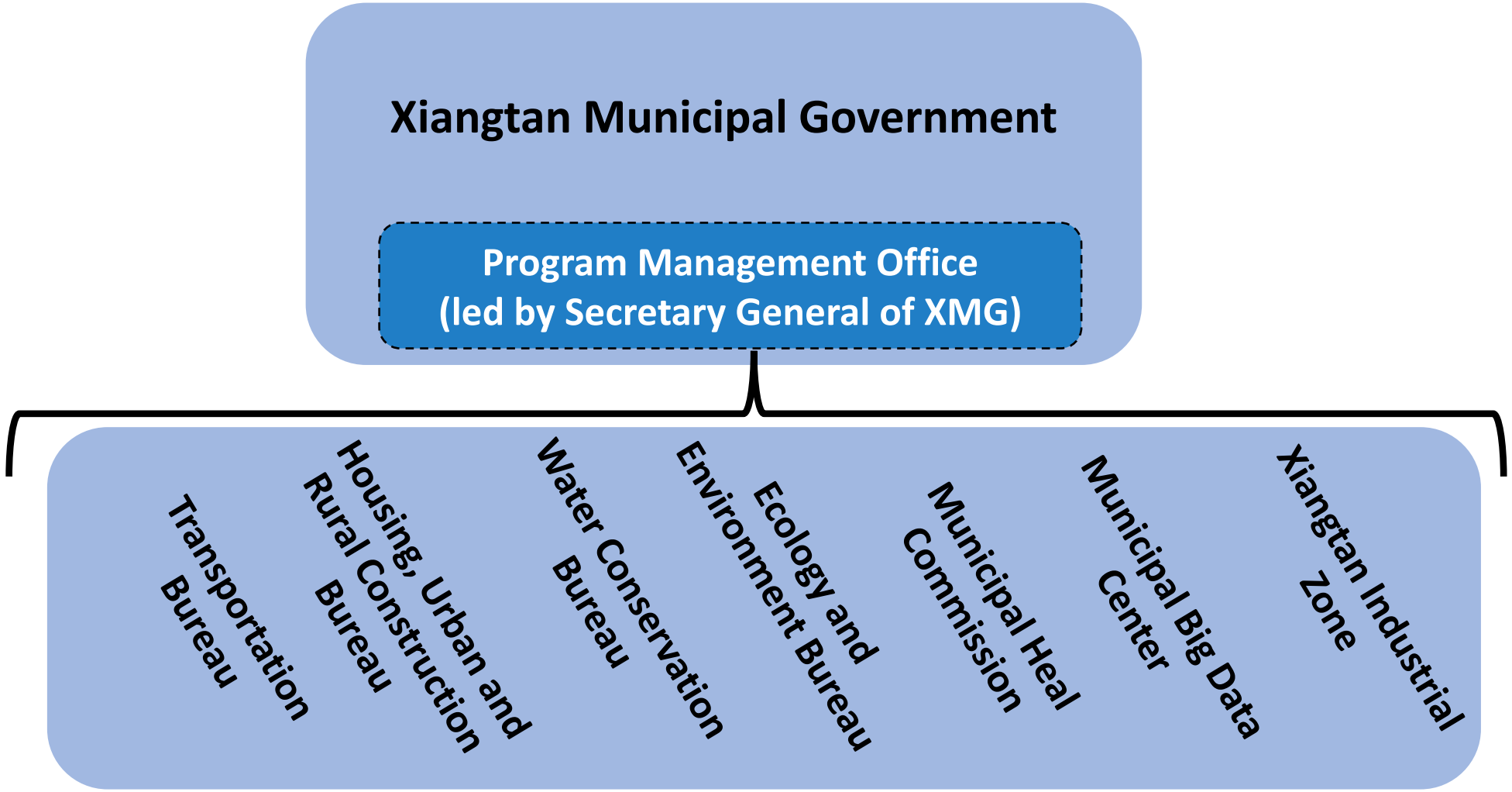
- Policy reforms on energy and resource efficiency; circular economy; industrial zone management; green purchasing; behaviors and lifestyle



- Reforms on urban design & planning; risks and response management; enhanced use of science; etc.

- Policy to promote building certificate; building energy management; passive/inclusive design standards

Implementation Arrangement

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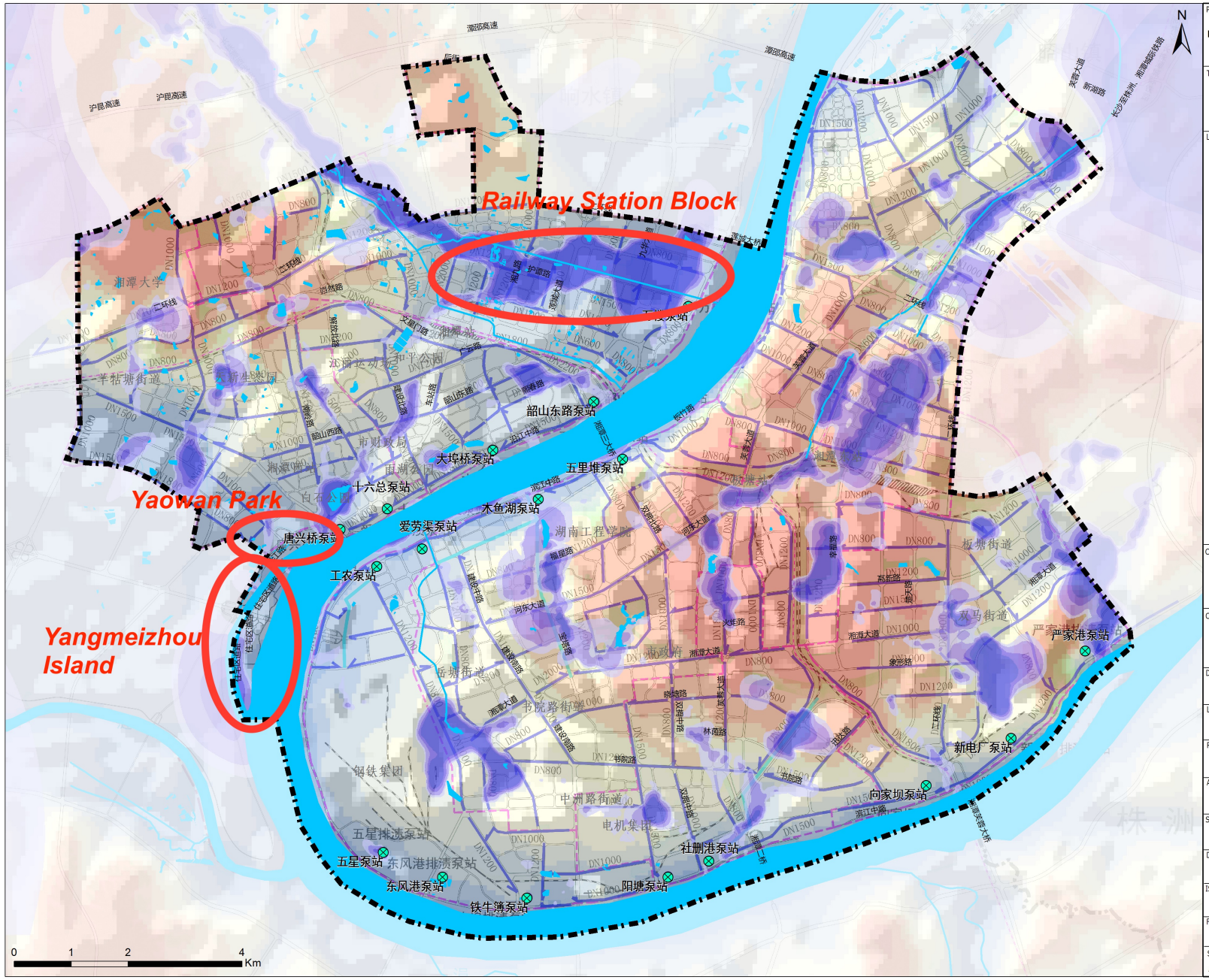

PROJECT:

Development of Ecosystem-Based Adaptation Measures for Climate Risks in Xiangtan

TITLE:

Xiangtan City
Urban Flood Venerable Areas

LEGEND:

Flood Risk Category

Low

High

Stormwater System

- Pump
- Main Pipe
- Culvert
- Subcatchment Boundary

DEM (m)

- < 35
- 35 - 40
- 40 - 45
- 45 - 50
- 50 - 55
- 55 - 60
- 60 - 65
- 65 - 75
- 75 - 100
- > 100

- Water
- Study Area

CLIENT:

ADB Asian Development Bank

COMPANY:

Deltares Ewaters

DESIGN:	TX
LAYOUT:	TX
REVIEW:	WJ
APPROVAL:	WJ
SCALE:	1:32,000
DATE:	16/8/2019
ISSUE STATUS:	Draft
FIGURE No:	Figure 4

SCALES: IF PRINTED AT FULL A3 - NOT TO SCALE IF EMBEDDED IN PAGE.

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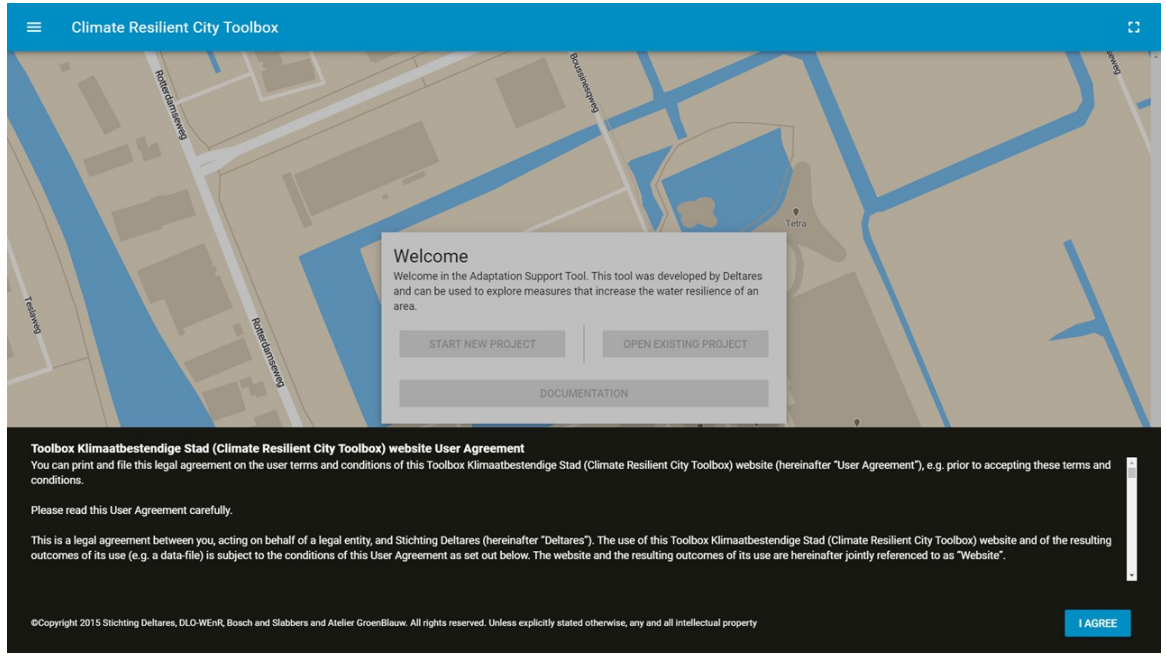
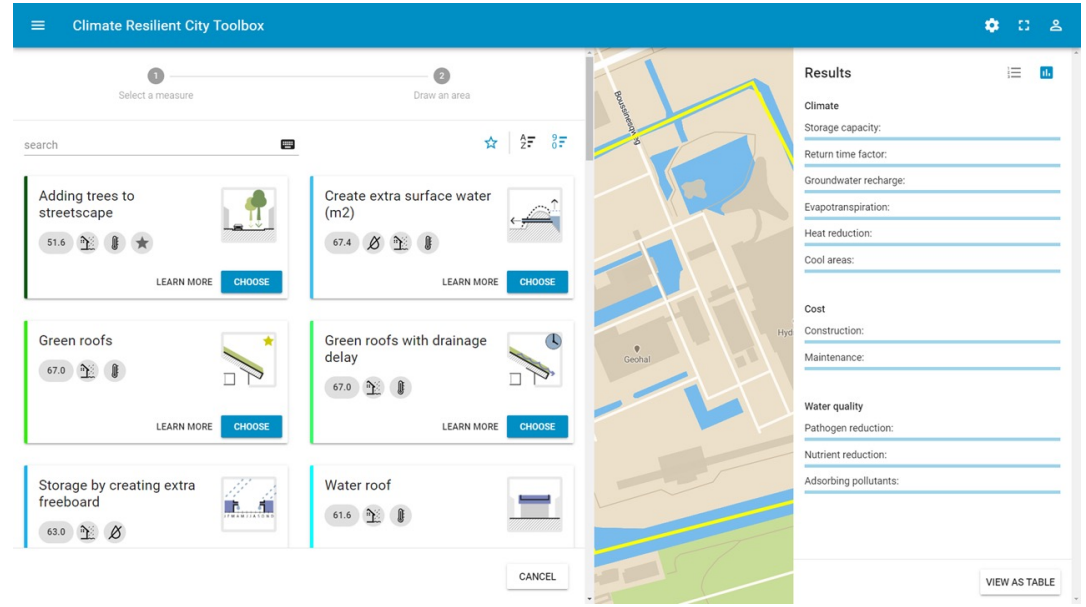
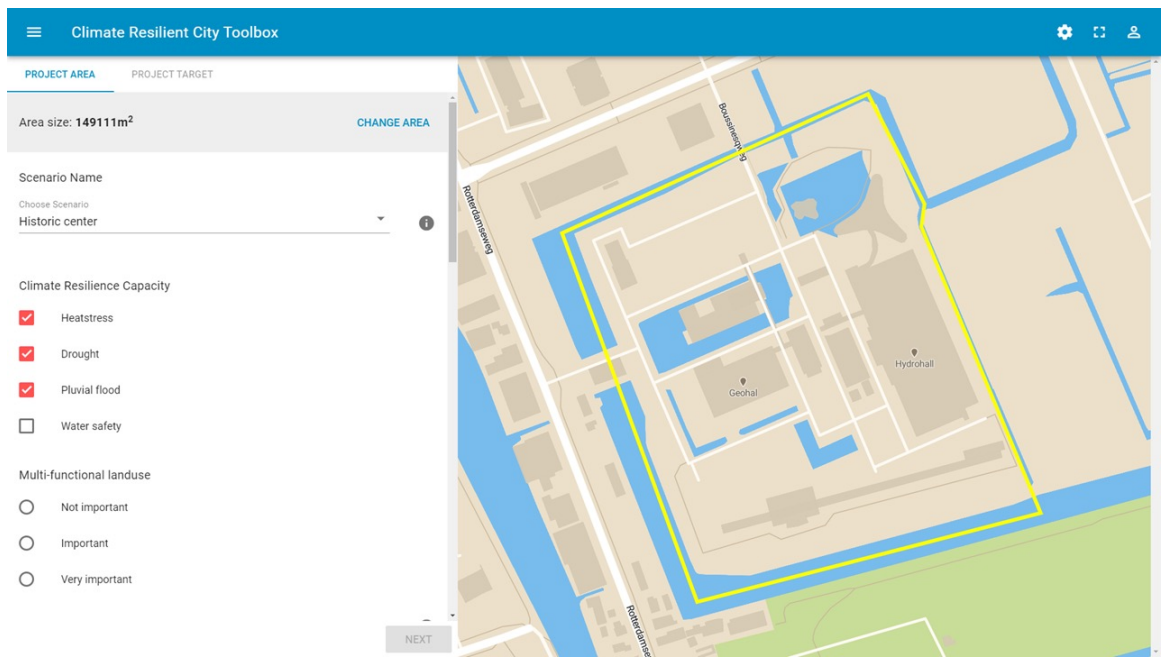
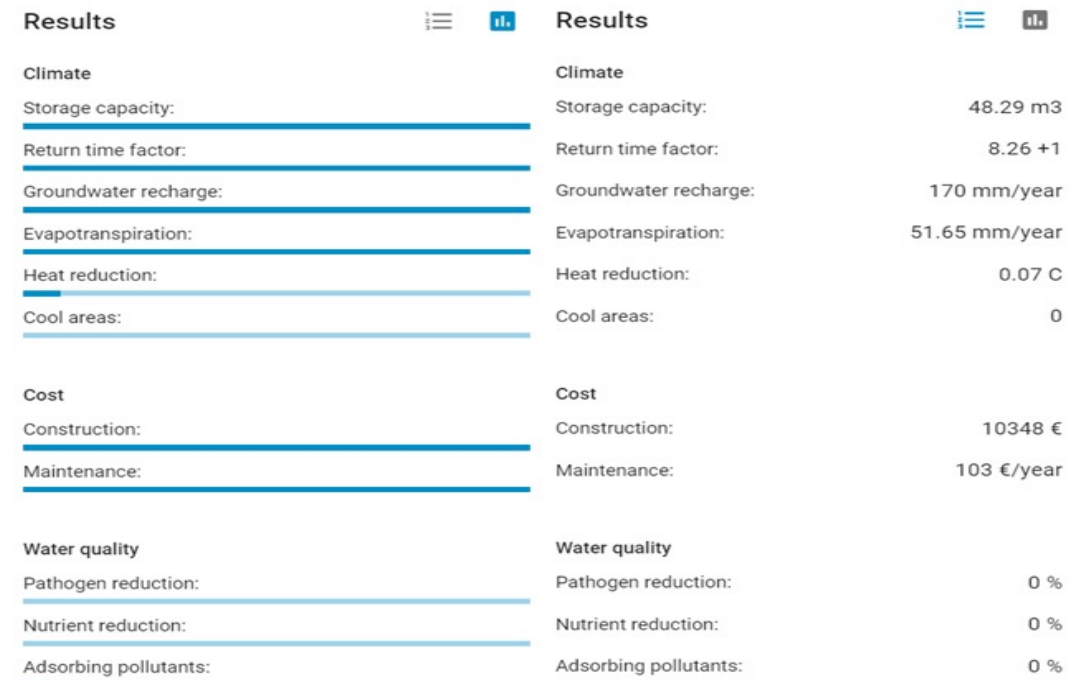
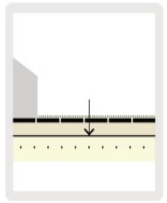






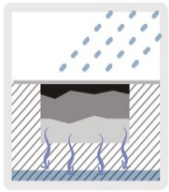


Permeable pavement (infiltration & storage)



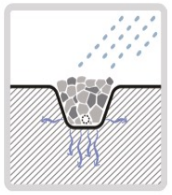
Permeable pavements consist of porous material that absorbs rainfall. Water can be stored either in the top layer (e.g. very open asphalt concrete) or in below the top layer in the foundation. Besides reducing runoff, permeable pavements can trap suspended solids and filter pollutants from the water.

Rain garden



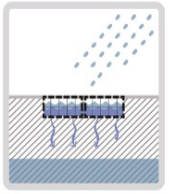
These are sandy soil or aggregate filled depressions that treat stormwater runoff to improve water quality. Stormwater is captured and allowed to percolate through the soil/aggregate layer, where pollutants are removed, prior to being released through an underdrain located at the bottom of the depression.

Infiltration trench



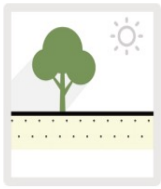
An infiltration trench, also known as a French drain, is a linear feature used to reduce stormwater runoff and improve water quality. These shallow excavated trenches are filled with aggregate or crushed stone that is designed to allow for stormwater to infiltrate the ground plane and ultimately percolate though permeable soils into the groundwater. Their linear shape can also serve to convey stormwater from one area

Infiltration boxes



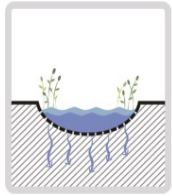
Infiltration boxes buffer rainwater underground and allow using a single area for two purposes. In general they offer more storage capacity than above-ground infiltration installations. More rainwater can be buffered temporarily and gradually released into the groundwater. The extra infiltration leads to less drought damage, subsidence and salinization.

Creating shade



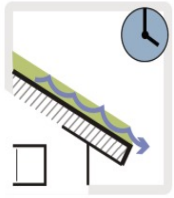
Creating shade is important to prevent surfaces from heating up and to cool the surroundings. This can be accomplished by using trees, pergolas, overhangs, awnings and such. Arcades and covered walkways are urban elements commonly used in warm countries to create shade.

Rainwater detention pond (wet pond)



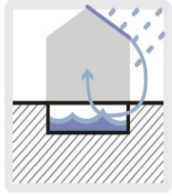
Buffer ponds temporarily capture precipitation and allow it to drain off slowly. During rainfall, the rainwater is captured in the pond and subsequently drained off to create room for the next precipitation. Buffer ponds can be designed to have a mostly stony or a mostly natural appearance.

Green roof with drainage delay



Green roofs with drainage delay are also called retention roofs. It is a green roof that can store extra water in a substrate layer under the green planted layer and is drained delayed with a pinched drain. A polder roof is a retention roof where the control system is linked to the weather forecast.

Systems for rainwater harvesting



Rainwater harvesting is the collection and storage of stormwater for reuse on site. This is most commonly be achieved by capturing runoff from the roof of a building, however, it can also include the collection of runoff from throughout the site or byproducts from systems such as air conditioning condensate. The collection structures can take on multiple forms and be installed either above ground or subsurface. Depending on its source and treatment, the harvested water can be reused on site for irrigation.

Critical elements to build “Low-Carbon Resilient city”

- ✓ Scientific knowledge for better decision making
- ✓ Better use of Smart technology
- ✓ Integrated planning and collaboration across sectors
- ✓ Use of nature-based solutions in every corner of a city – multiple benefits to residents
- ✓ Integrated solutions and right incentives to activate all actors


Thank you for your attention
Welcome to Xiangtan!!!
ADB