



**COP28**  
**UAE**

**Scientific Network and Climate Adaptation in the Caspian Sea Region**

Side Event of the Tehran Convention

# Urbanization and Climate Change Adaptation in the Caspian Sea region



ADAPTATION FUND

REGIONAL PROGRAMME PROPOSAL

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# Urbanization and Climate Change Adaptation in the Caspian Sea region



## REGIONAL PROGRAMME PROPOSAL

- Countries:** Republic of Azerbaijan  
Islamic Republic of Iran
- Thematic Focal Area:** Urban Development, Coastal Zone Management, Disaster Risk Reduction and Early Warning Systems, Water Management
- Implementing Entity:** United Nations Human Settlements Programme - UN-Habitat
- Executing Entities:** United Nations Environment Programme UNEP  
International Organisation for Migration – IOM  
United Nations Human Settlements Programme - UN-Habitat
- Duration:** 4 years
- Budget:** USD 14M

# Programme approach / 4 components

1. Climate change adaptation planning strategies enhanced at the Caspian Sea regional level
2. Adaptation planning at national level in both Azerbaijan and Iran
3. Implementation of transformative and catalytic projects at national, city and community levels that can be upscaled
4. Urban resilience, climate change adaptation partnerships, as well as institutional, legal, research cooperation and knowledge exchange



Iran and Azerbaijan are facing similar urbanization pressure on their coastlines



# Main Climate Change Hazards



**Rising average temperatures**, coupled with overall decrease in precipitations and evaporation, leading to seawater decline and increased levels of salinity – all of which are affecting biodiversity



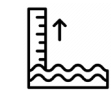
**Changes in temperature patterns:** increased frequency of extreme weather events such as heat waves and intense rainfall



**Flash floods:** causing mudflows and landslides, and severe damage in lower lands and mouth of transboundary rivers



**Droughts:** leading to deteriorating crops, pasture and forest land, rise in dust, and water shortages for agriculture and domestic consumption



**Sea level fluctuations:** affecting coastal ecosystems, communities, tourism and infrastructure.



## Selected impacts of climate change in the Caspian basin

Coastal zone defined by the Caspian Environment Programme

### On atmosphere

Strong increase in temperature during the cold season (more than 4.5 °C) for 2070-2099 period

### On land and sea

Severe desertification

Precipitation increase recorded in 2010

Precipitation decrease recorded in 2010

Risk of flooding due to storm surges and sea level fluctuation

### On sea ice

Boundaries of drifting ice during severe winters, late 1990s

Boundaries of drifting ice during moderate winters, late 1990s

Ice extent (including drifting ice) as of 01 February 2010

### On water basins

River runoff increasing

Reduction of water resources due to temperature increase

Note: Precipitation variations indicate the increase or decrease between August-October 2010 and August-October's mean for 1979-2000.

0 100 200 km

Sources: Caspian Environment Programme, *Transboundary Diagnostic Analysis Revisit*, 2007; Panin, G. N., *Climate Change and Vulnerability Assessment Report for the Caspian Basin*, 2006; Kuderov, T., *Climate Change and Vulnerability Assessment Report for Kazakhstan*, 2006, and *Sea ice cover in the Caspian and Aral Seas*, 2004; Elguindi N. and Giorgi F. *Simulating future Caspian sea level changes using regional climate model outputs*, 2006; Global Forest Watch, on-line database, accessed on May 2010; Philippe Rekacewicz, *Vital Caspian Graphics*, 2006; International Research Institute for Climate and Society, *Cmaps on line*, accessed november 2010; De Martino and Novikov, *Environment and Security, the case of the Eastern Caspian Region*, 2008. .



Many areas are suffering from multiple hazards



# Non-climatic drivers and pressures affecting the environment

**Rapid and sprawling urbanisation, land use changes, untreated sewage, overuse of ground water, informal landfill sites, and infrastructure development** are leading to the loss of agricultural land, deforestation, reduction of biodiversity, and pollution of land, ground water and air



**Thriving tourist/recreational activities and economic development** have resulted in pressure on existing infrastructure, water stress, gaps in basic services delivery and shortages in affordable housing



**The degradation of the ecosystem** is affecting the habitat of aquatic species, wetlands, and ecosystems that depend on rivers and sea – as well as the livelihoods and food security

# Climate adaptation



**Adaptation anticipates adverse effects of climate change** and takes appropriate action to prevent or minimize the damage they can cause



**Adaptation measures can also provide co-benefits for economic and social development, the environment and climate change mitigation**



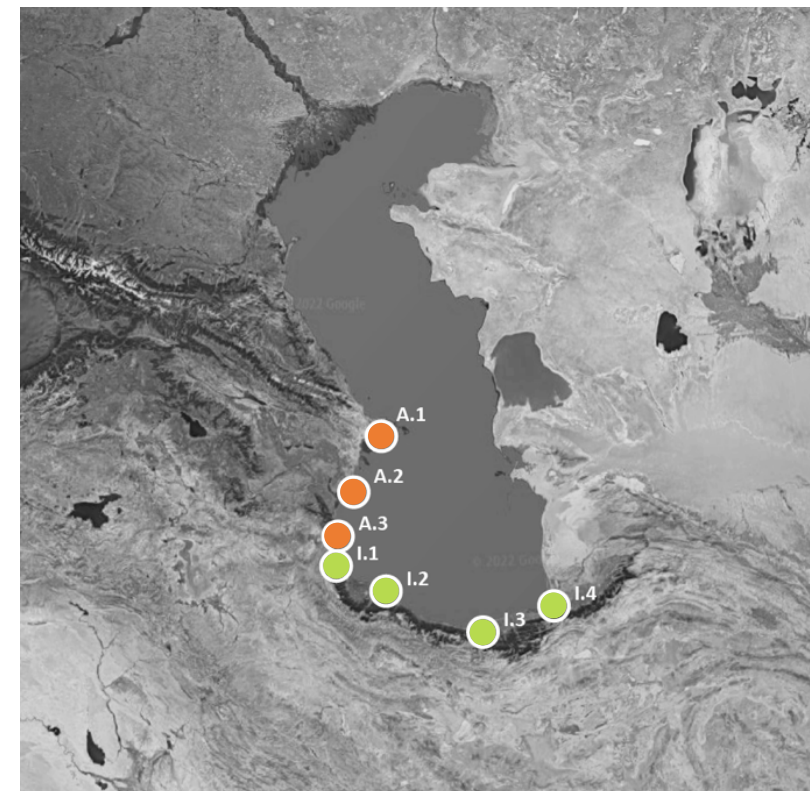
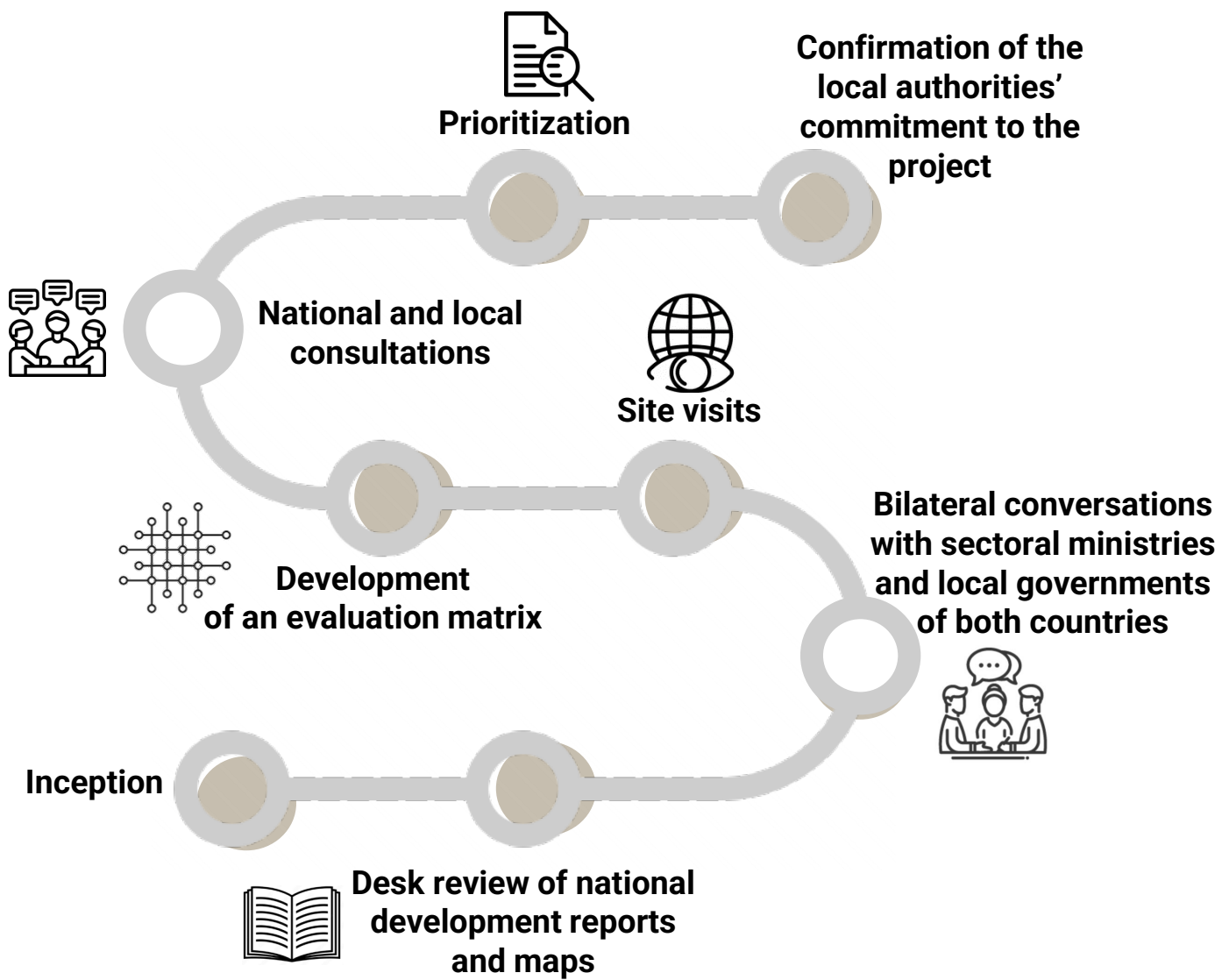
**Climate adaptation is a strongly localized process** due to particular geographical, socio-demographic and economic characteristics of any target area



**Local governments are best placed to steer and address climate adaptation in urban areas,** particularly in areas inhabited by low income and most vulnerable population groups.



# Identification of communities vulnerable to climate change and 'hot spots'



Target areas and communities along the Caspian Sea shore identified through bilateral meetings, consultations, Evaluation Matrix, prioritization and confirmation of commitment

# Main challenges

- Lack of comparable data
- Greater levels of multi-dimensional poverty and inequalities along the coast
- Limited institutional capacities and coordination mechanism across sectors
- Gaps in the legislative frameworks and sector strategies (e.g. Azerbaijan does not have a Coastal Management Plan)
- Weak climate change related coordination mechanisms causing delays in fulfilling global commitments
- Poorly serviced and remote communities
- Inadequate irrigation and fertilizing practices





# Programme approach

An aerial photograph of a coastal town, likely in a developing region, showing a dense cluster of buildings with various roof colors (red, grey, blue) and a large body of water in the background. The town is built on a slight rise, and the water appears to be a bay or a large river. The sky is clear and blue.

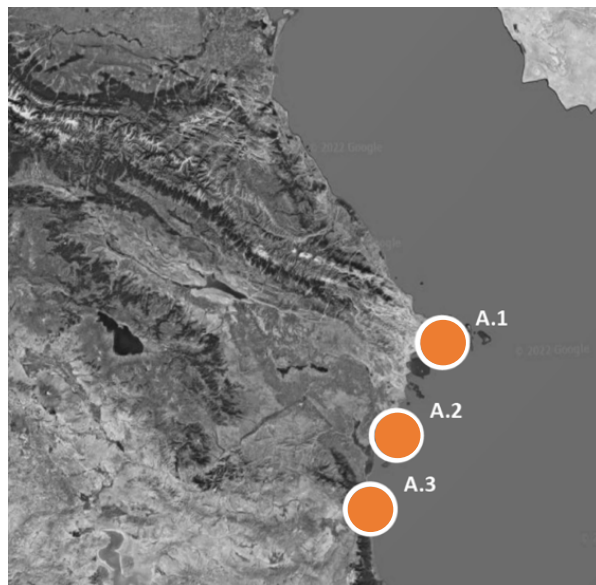
- Full alignment with:
  1. national and local government / institutional priorities and gaps identified,
  2. identified community and vulnerable groups needs
  3. the Adaptation Fund outcomes



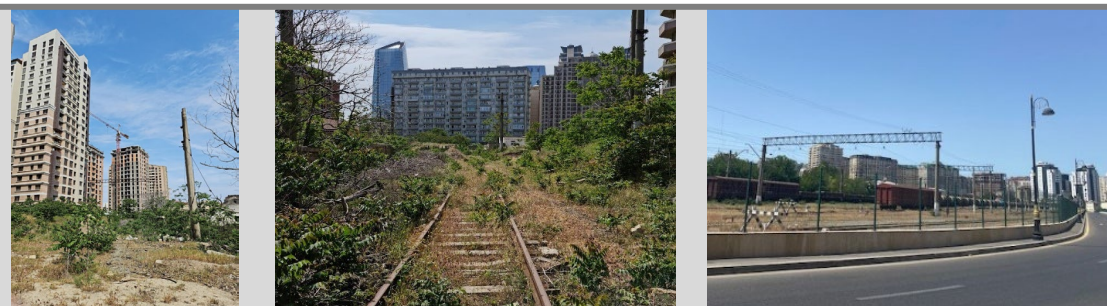
- Comprehensive approach to enable and improve the adaptive capacity of communities and institutions
- 
- Adoption of innovative solutions that have economic, social and environmental benefits
  - Integrated planning and resilience building for long-term sustainability
  - Regional cooperation, knowledge & data sharing, cross-fertilization and scaling up opportunities

# Target areas in the Republic of Azerbaijan

## DIAGNOSIS



**A.1: Greater Baku** – Wasteland along old rail tracks and depot through high-rise residential area lacking green spaces



**A.2: Neftchala** – Subject to flooding along River Kura in spring, but also intrusion of sea water due to drop of river level in summer



**A.3: Astara** – Low lying area prone to flooding and severe summer droughts causing the loss of green areas and tree cover



# Target areas in the Republic of Azerbaijan

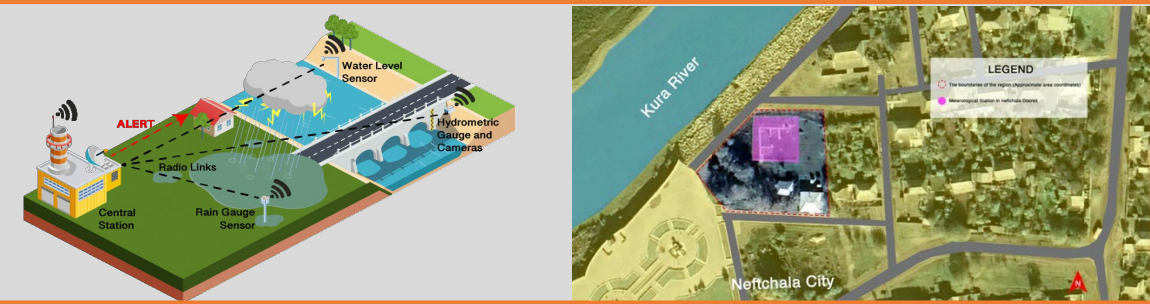
## PROPOSED PROJECTS



**A.1: Greater Baku** – Development of a public multi-purpose green corridor serving new development area



**A.2: Neftchala** – Delivery of an Early Warning System for salinity, droughts and flooding with monitoring devices and dashboard

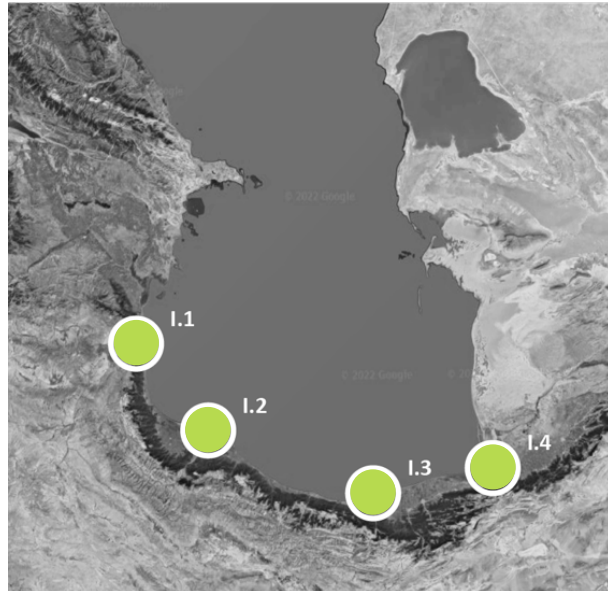


**A.3: Astara** – Construction of a rainwater harvesting system to store excess water from winter for reuse for summer irrigation



# Target areas in the Republic of Iran

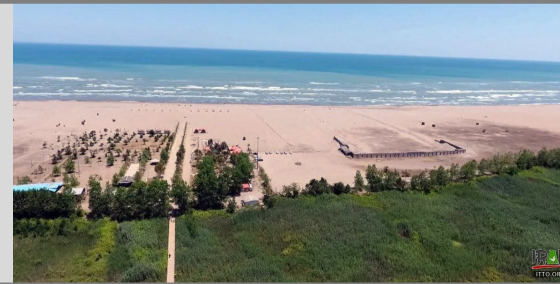
## DIAGNOSIS



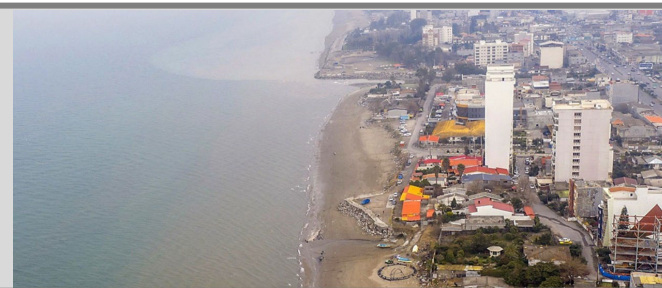
**I.1 Astara** – Low lying area subject to both flooding, waterlogging of the terrain and prolonged droughts



**I.2 Bandar-e- Kiashahr** – Suffering droughts, heat, land degradation and strong dust phenomenon that are affecting people's health



**I.3. Mahmoudabad** – Low lying area affected by severe stormwater runoff during flash floods and damage to infrastructure

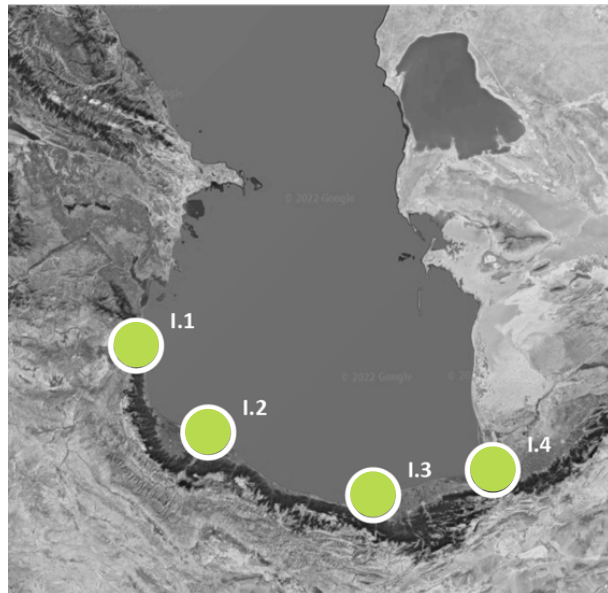


**I.4 Bandar-e-Torkaman** – Low lying area prone to torrential rainfall, damage to infrastructure and severe summer droughts



# Target areas in the Republic of Iran

## PROPOSED PROJECTS



**I.1 Astara – Delivery of rainwater harvesting system (RHS) to improve water management and public education**



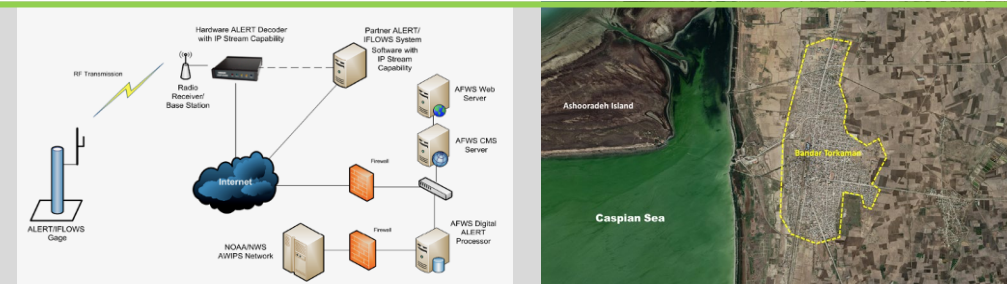
**I.2 Bandar-e- Kiashahr – Ambitious reforestation and training project through local NGO and community labour – including women**



**I.3. Mahmoudabad – Delivery of stormwater drainage system (SDS) and water catchment areas within the settlement**

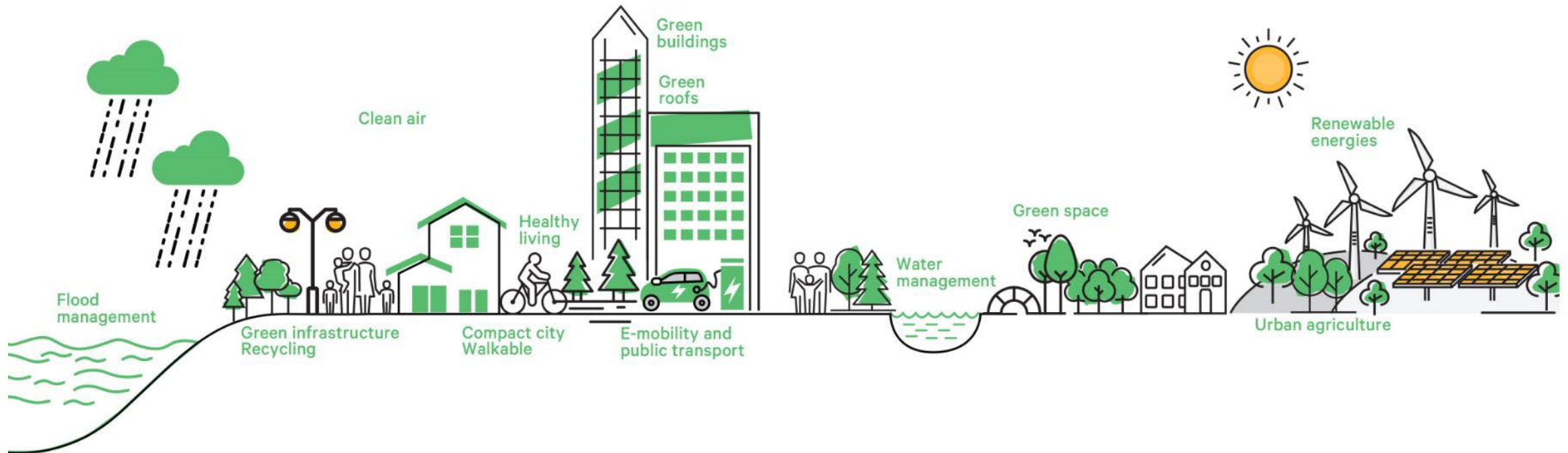


**I.4 Bandar-e-Torkaman – Delivery of Early Warning System and creation of climate-resilient non-farm livelihoods and awareness**



# A Green (and 'Blue') Transition of the Built Environment

The City we need  
is one that is **Resilient to  
Climate Change**



**Thank you!**

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