Sustainable water management in the context of circular economy: current practices

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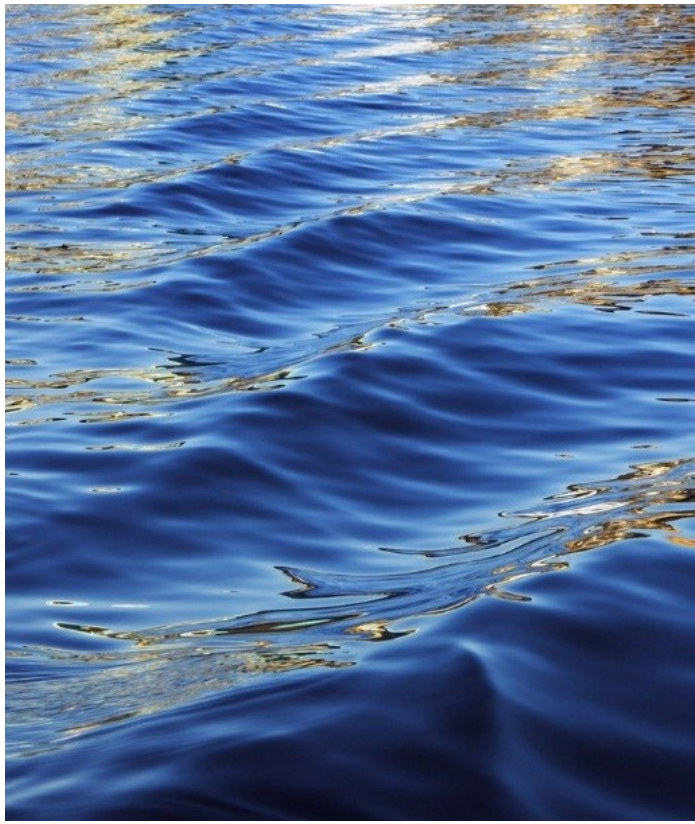
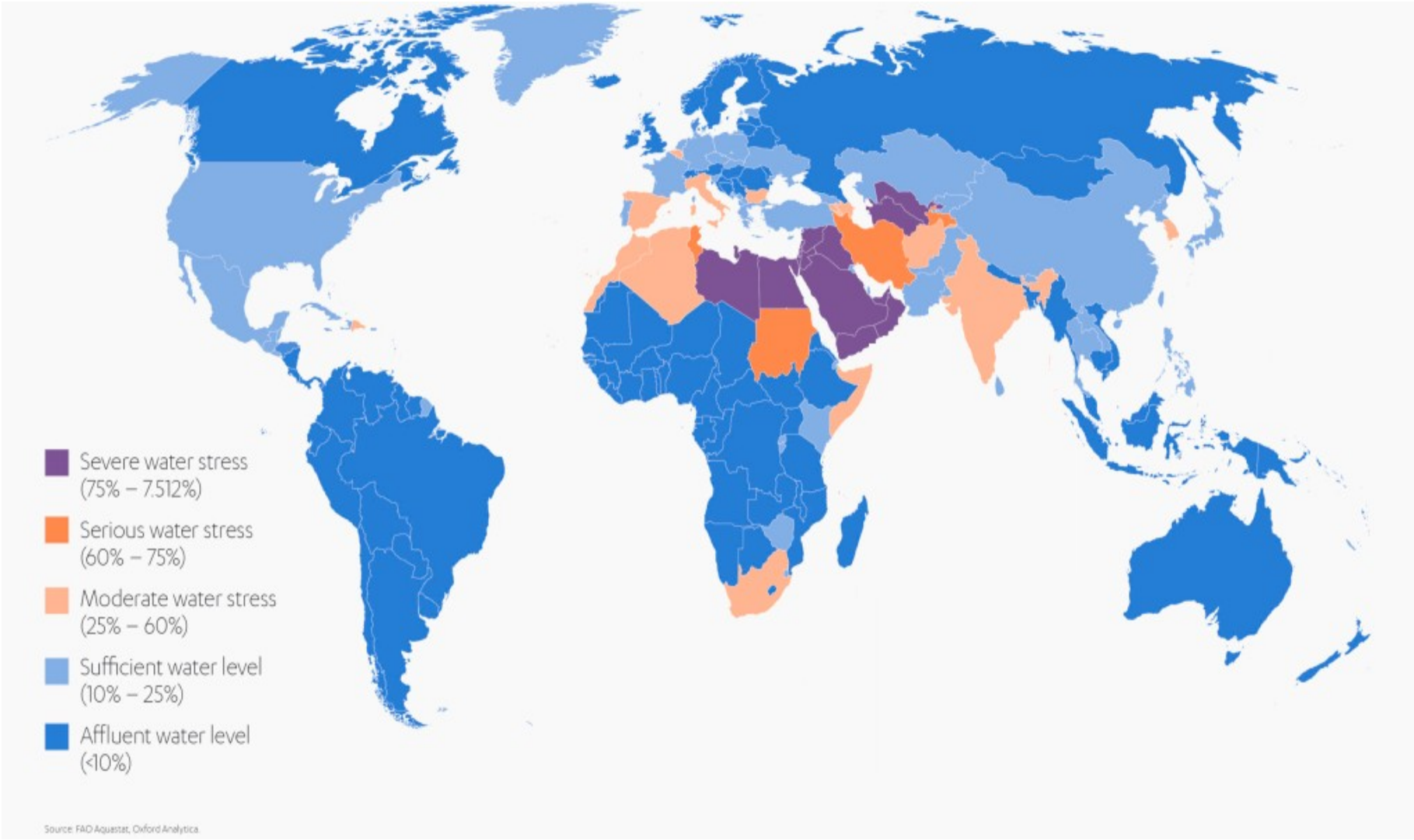
29 March 2023



Did you know

60%

of the world’s population living in ‘water poverty’



Did you know

2 billion people

do not have access to safe drinking

3.6 billion people*

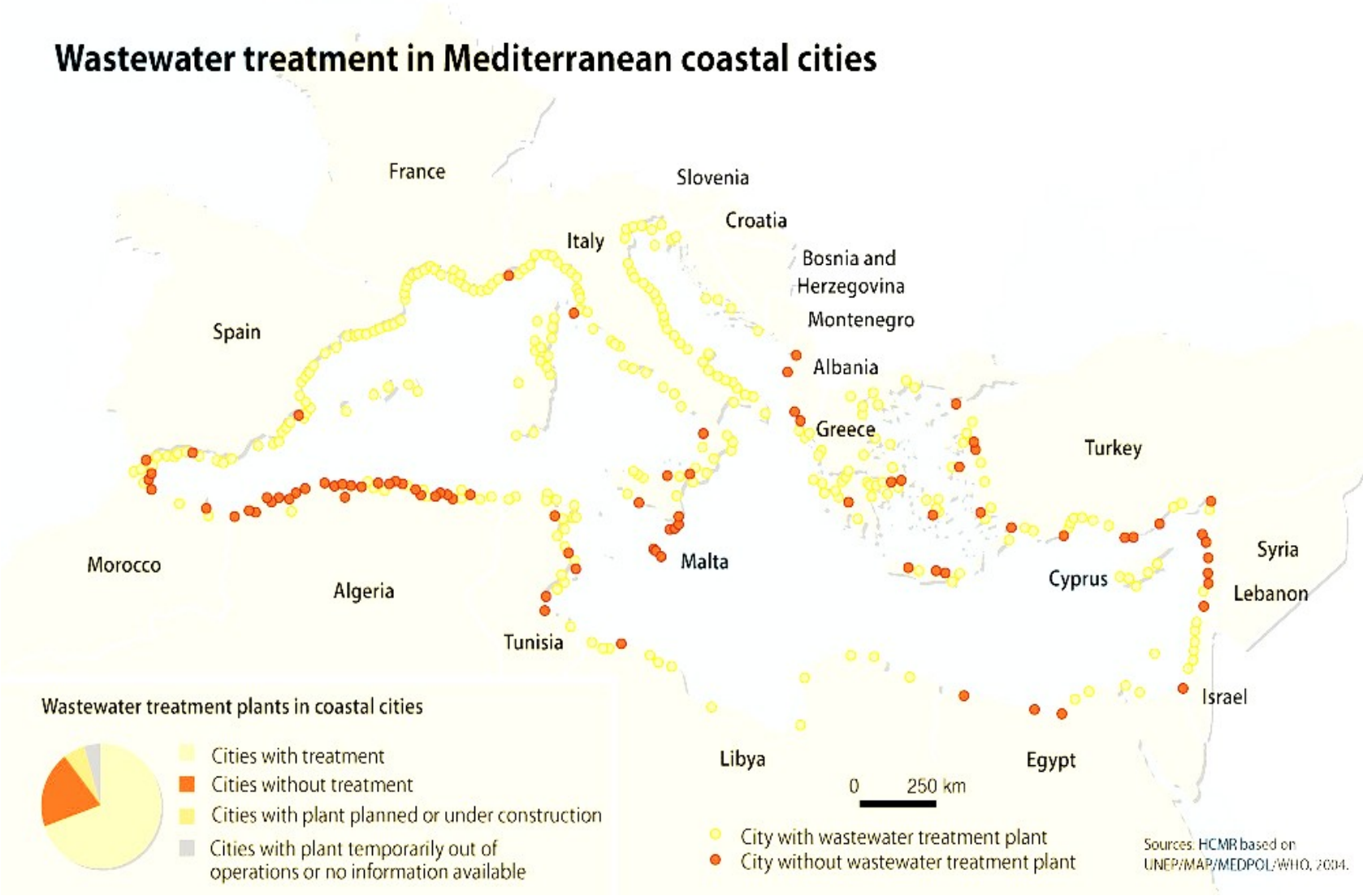
nearly half the world's population, do not have access to safely managed sanitation in their home

*2 700 000 in 2011

Did you know

37 %

of coastal settlements with more than 2.000 inhabitants **DO NOT operate** a wastewater treatment plant

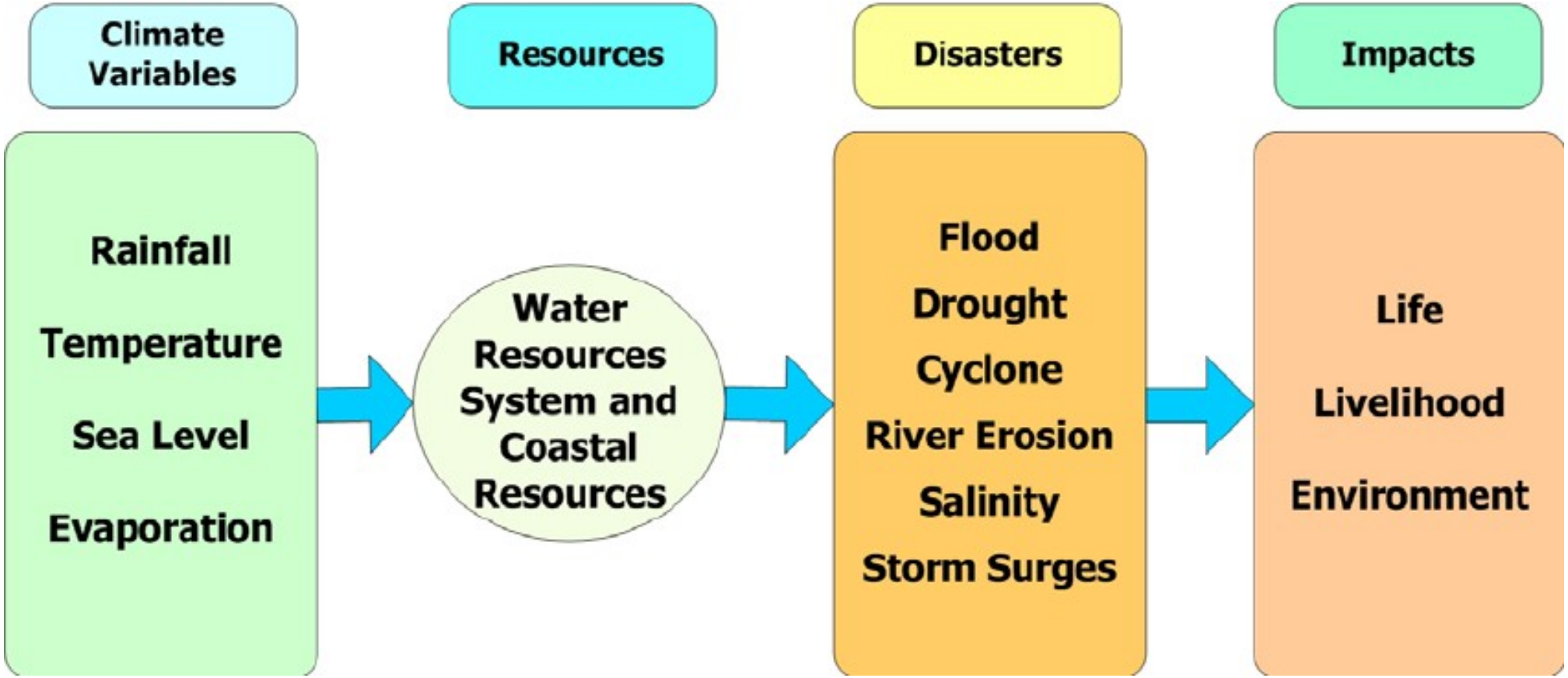


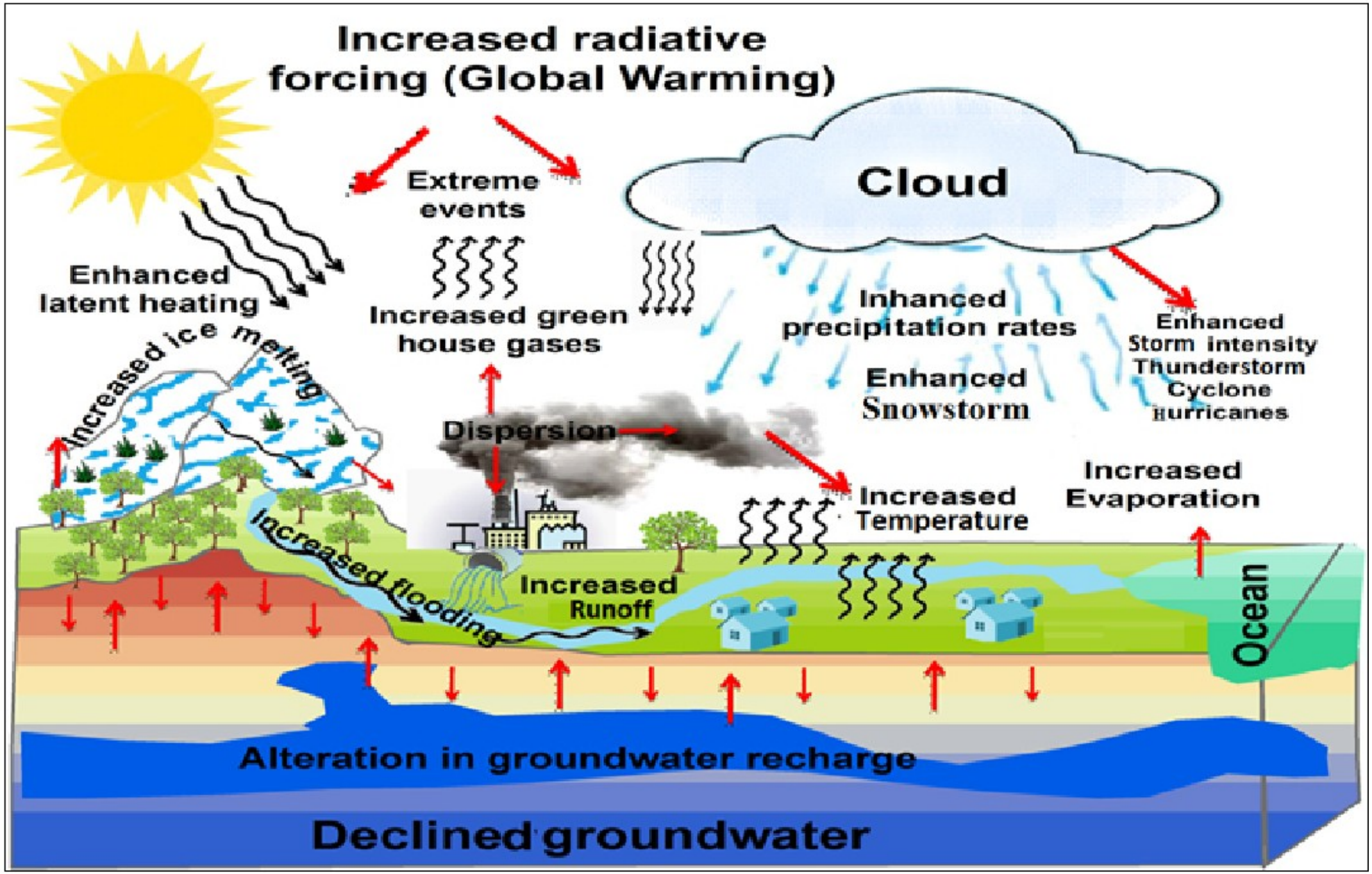
UN environment programme

Over 90%

of natural disasters and climate impacts are water-related.

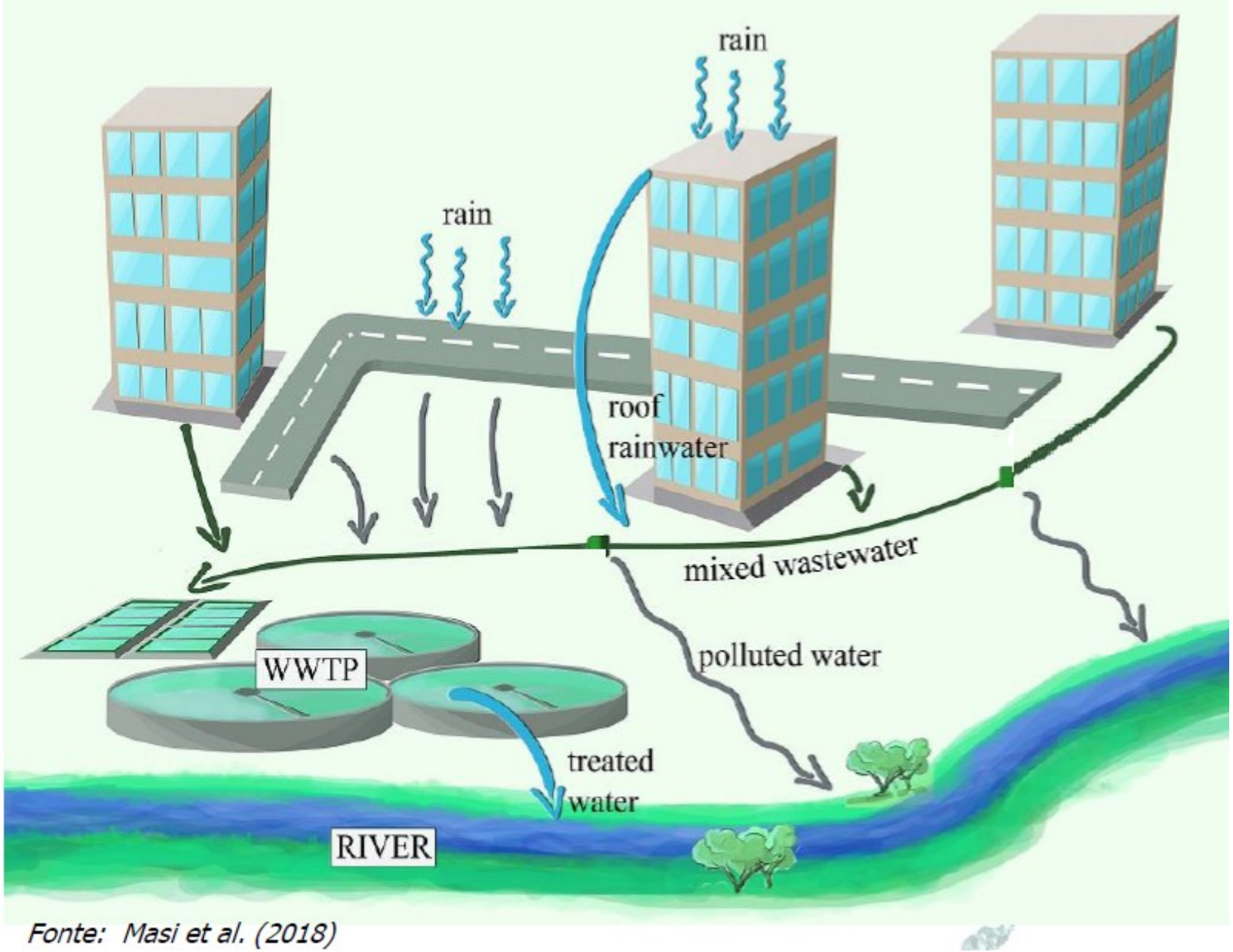
Climate change impacts




Increased radiative forcing (Global Warming)
Extreme events
Cloud
Enhanced latent heating
Increased green house gases
Inhanced precipitation rates
Enhanced Storm intensity
Thunderstorm
Cyclone
Hurricanes
Enhanced Snowstorm
Increased ice melting
Dispersion
Increased Temperature
Increased Evaporation
Increased flooding
Increased Runoff
Ocean
Alteration in groundwater recharge
Declined groundwater

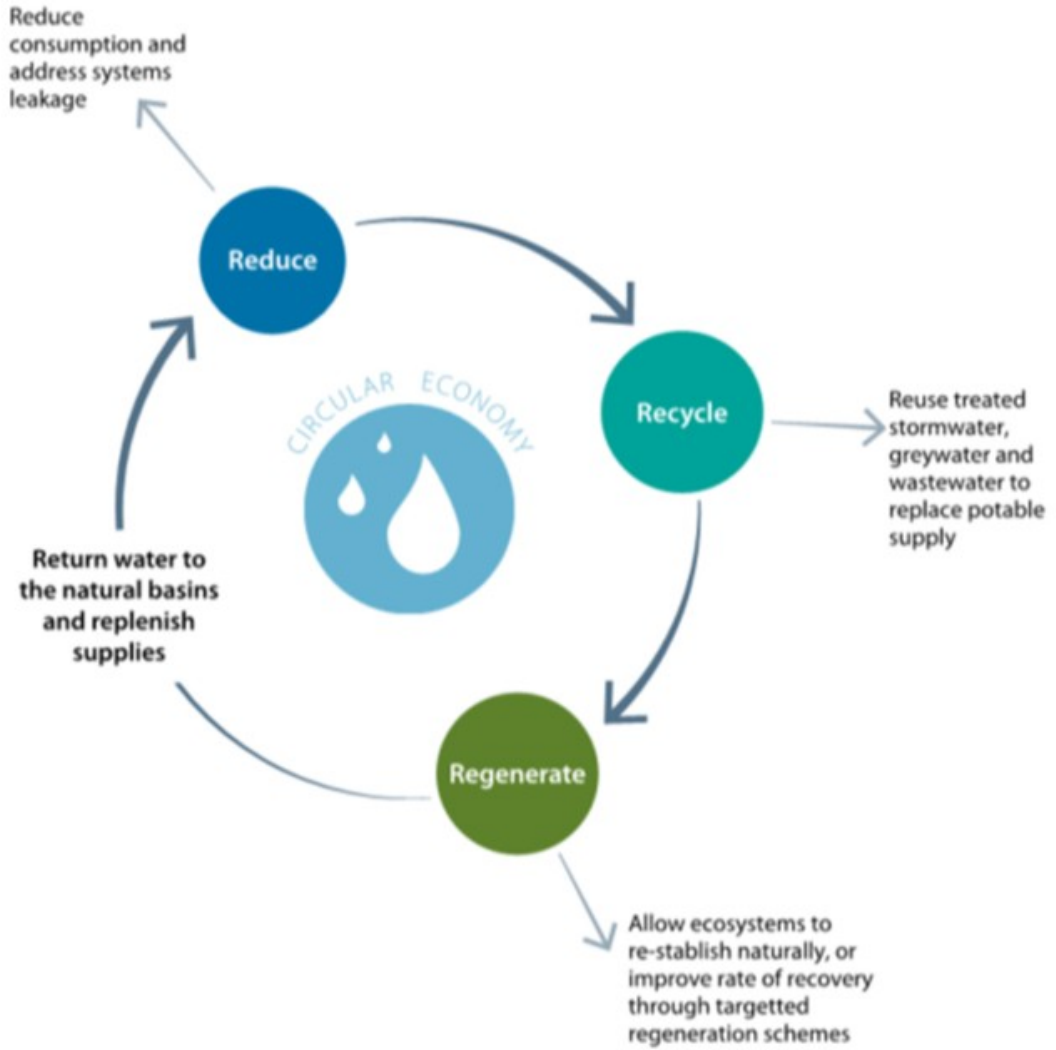

The Water Cycle
in the Sustainable Development Goals
6.5
Water resources management
6.4
Water use and scarcity
6.6
Ecosystems
11.5
Water-related disasters
6.a-6.b
Cooperation & participation
6.3
Water quality and wastewater
6.1
Drinking water
6.2
Sanitation and hygiene
UN WATER
SUSTAINABLE DEVELOPMENT GOALS
17 GOALS TO TRANSFORM OUR WORLD

The present Conventional Scheme



Fonte: Masi et al. (2018)

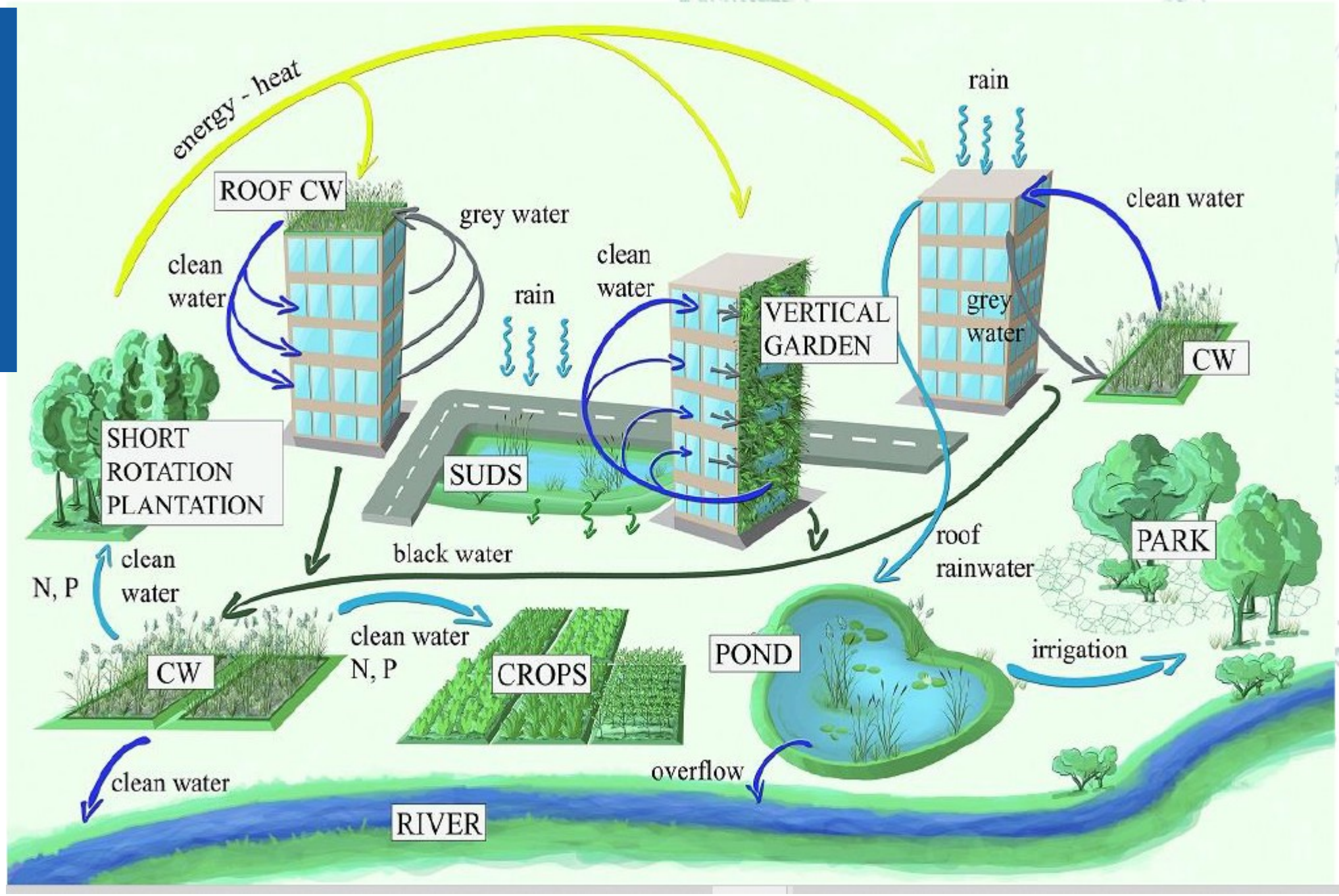
The Concept of Circular Economy Transition

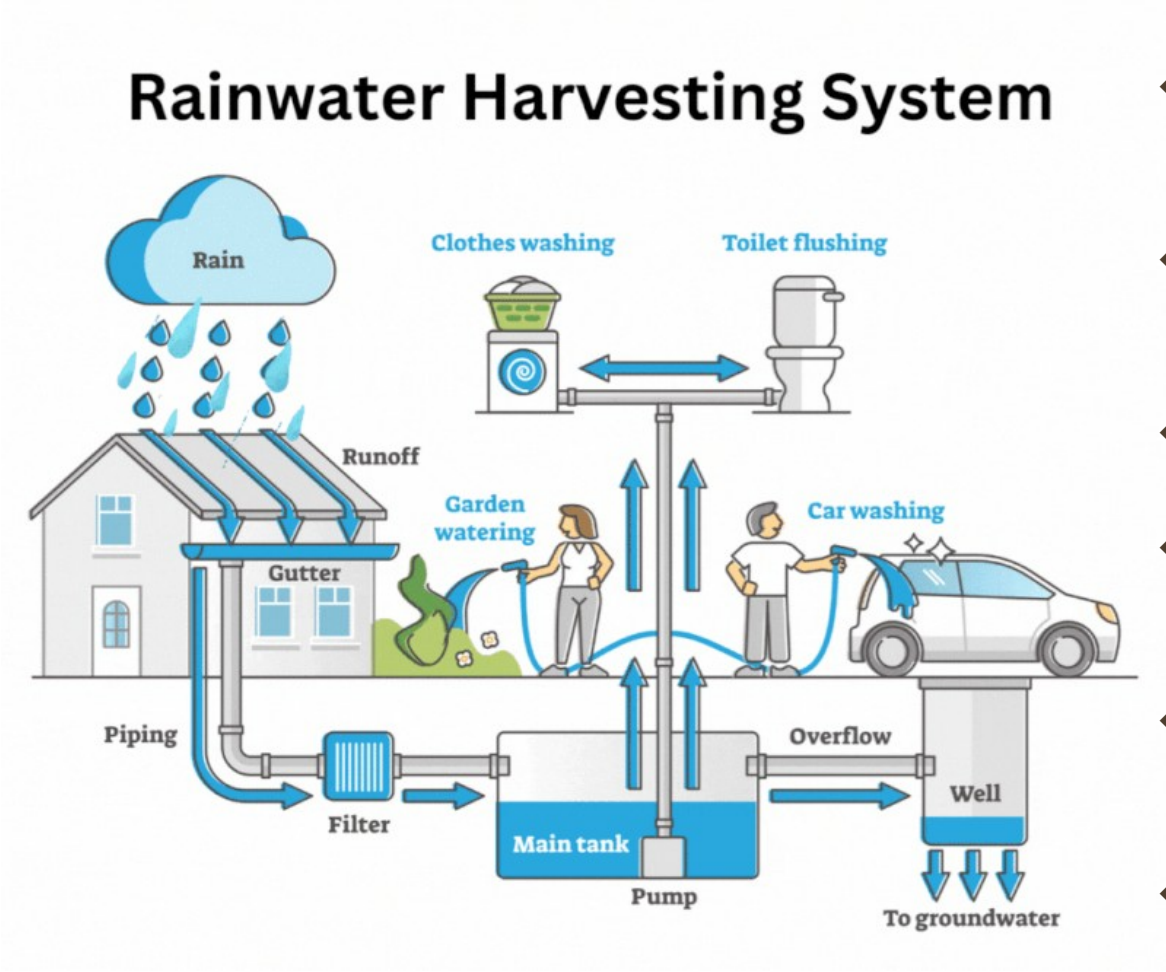


What can we do?

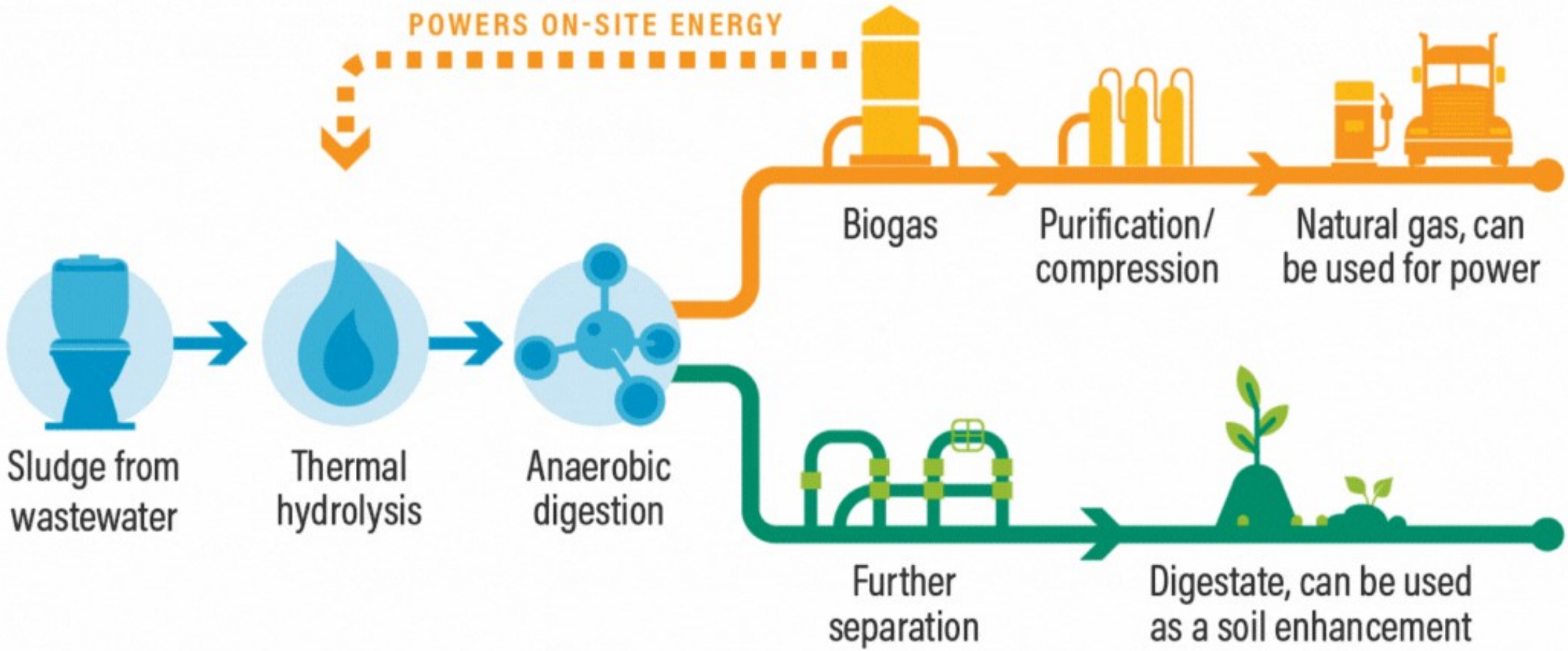
- Water saving
- Water reuse
- Rainwater harvesting
- Investing in circular cities
- Creation of green areas

The future smart circular city

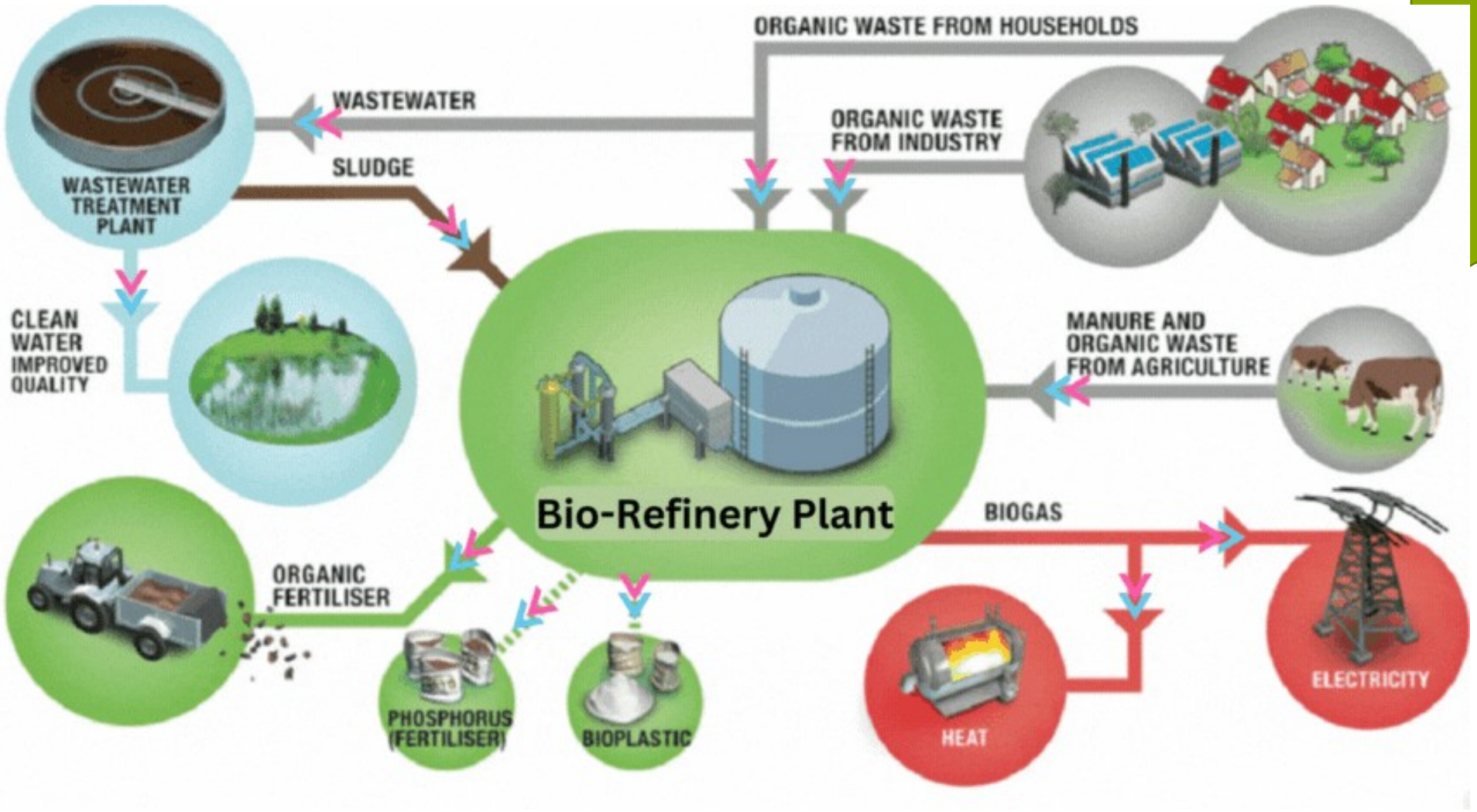




- Reduced water bills: Rainwater harvesting reduces water bills as it provides a free, natural source of water.
- Reduced strain on water infrastructure: By using rainwater harvesting, municipalities can reduce the strain on their aging water infrastructure.
- Drought relief: Rainwater harvesting can be used to supplement water during droughts.
- Improved water quality: Rainwater is naturally filtered by the atmosphere, so it is usually of better quality than tap water.
- Increased plant growth: Rainwater harvesting can provide plants with better quality water than tap water, leading to improved growth.
- Reduced water pollution: Rainwater harvesting reduces the number of pollutants in the water supply.
- Reduced energy usage: Rainwater harvesting requires less energy to pump and treat than regular tap water.


POWERS ON-SITE ENERGY
Biogas
Purification/
compression
Natural gas, can
be used for power
Sludge from
wastewater
Thermal
hydrolysis
Anaerobic
digestion
Further
separation
Digestate, can be used
as a soil enhancement

Revolutionizing Biomass Processing: An Introduction to Bio-Refineries



A bio-refinery plant is a facility that converts biomass, such as plant materials and agricultural waste, into a variety of products, including fuels, chemicals, and materials.

Key drivers for projects

RESULTS

Make results and knowledge available

SYNERGIES

Build effective and tangible synergies with other initiatives

VISIBILITY

Increase the visibility with policy-makers and other stakeholders

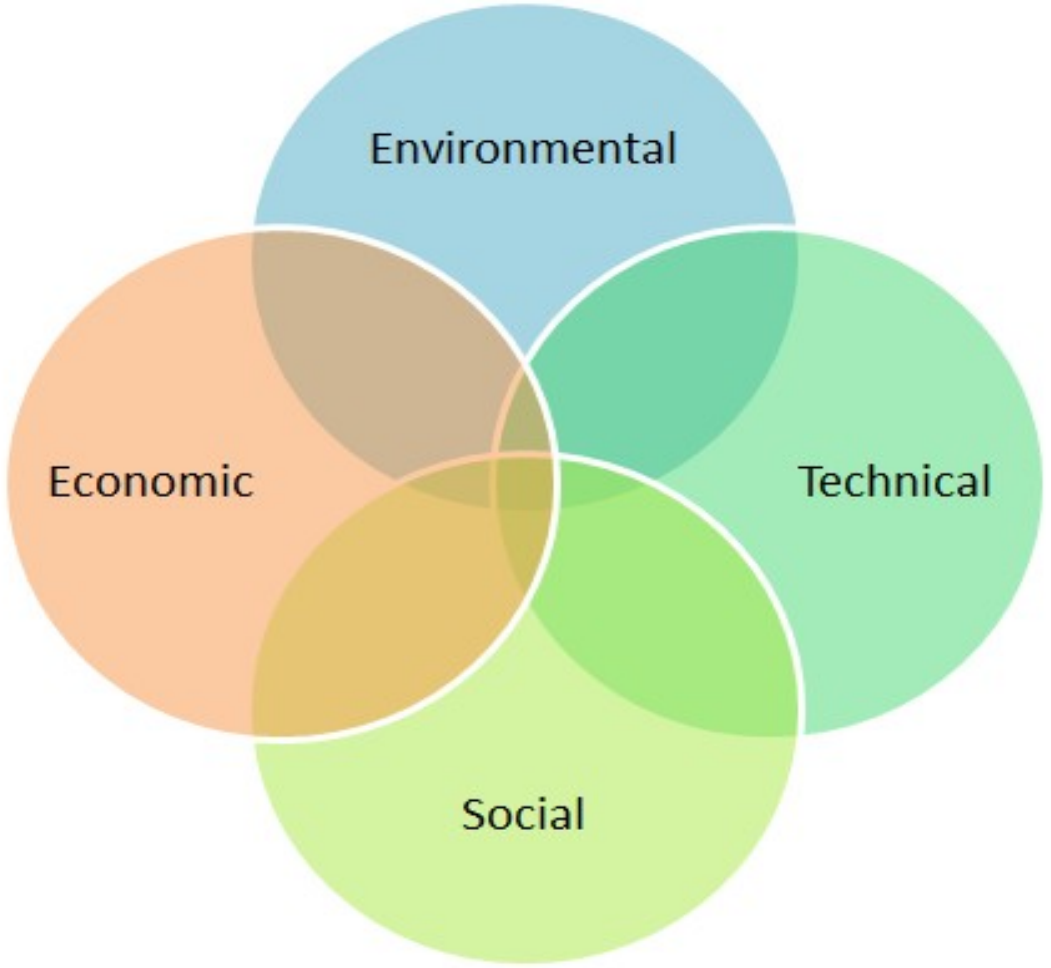
POLICY IMPACT

Support evidence-based policy development

Different situations offer different challenges and opportunities

What we have	What we need
Lack of policy environment	Clear policy environment
Informal open market has developed through necessity	Regulated tariff, covering O&M costs
Capacity and quality of service unknown	Long experience and well-established operators
Unregulated tariff and lack of government/donor investment therefore price of water more fully reflects costs	Mechanisms for regulating quality and level of service
Main challenge is to harness this situation to delivery of safe affordable water	Well established government investment/procurement procedures so limited willingness to look at innovative new models

The Enabling Environment



Thank you!

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