



## Water Sector Circular Economy – an IFI Perspective

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# Defining Circular Economy (CE) investment



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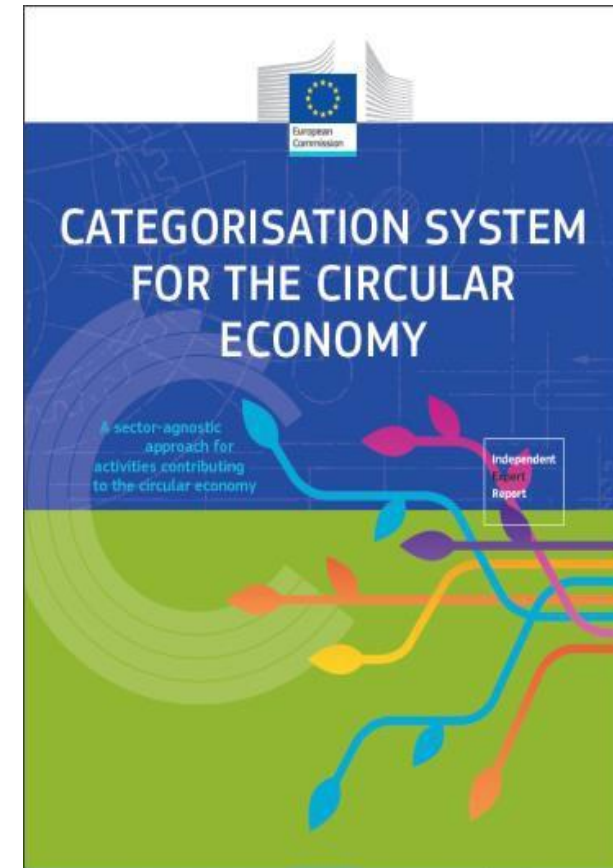
**Activities** in a market economy that preserve the added and inherent value of physical resources while keeping resources within the economy **as long as possible**, and capture value at the **end-of-life**, with the intention to minimise virgin material consumption, waste and value chain risks.

## Categorisation System for the Circular Economy - DG RTD & CE finance WG (2020)

“a generic, sector-agnostic circular economy categorization system that defines **distinct categories of activities** substantially contributing to a circular economy”

Work led by EBRD & EIB, aimed at developing a robust definition / framework for CE financing

EBRD & EIB are first adopters of the new framework in their operations



[https://research-and-innovation.ec.europa.eu/knowledge-publications-tools-and-data/publications/all-publications/categorisation-system-circular-economy\\_en](https://research-and-innovation.ec.europa.eu/knowledge-publications-tools-and-data/publications/all-publications/categorisation-system-circular-economy_en)



## 1. Circular design and production

- Design for modularity, easy repair, recycling and longer product life
- Substituting virgin materials with secondary raw materials
- Reducing hazardous substances to facilitate reuse and recycle
- Development and deployment of innovative materials and process technologies that enable circular economy strategies (e.g. reuse, recycle)

## 2. Circular use and life extension

- Reuse, repair, refurbishing, repurposing and remanufacturing of end-of-life or redundant products, and their components that would otherwise be discarded
- Product-as-a-service, reuse and sharing models that enable circular economy strategies
- Refurbishment and repurposing of redundant assets (buildings/infrastructure/facilities)
- Rehabilitation of degraded land to return to useful state and remediation of abandoned or underutilised brownfield sites in preparation for redevelopment

## 3. Circular value recovery

- Recovery of materials and chemicals from waste, residues and by-products
- Recovery of bio-resources, chemicals and nutrients from bio-waste, bio-residues and wastewater sludge
- Reuse or recycling of wastewater

## 4. Circular support

- Development/deployment of ICT technologies and services facilitating circular business models

# EU Taxonomy on Sustainable Finance

Published in the Official Journal of the European Union on 22 June 2020,  
entered into force on 12 July 2020



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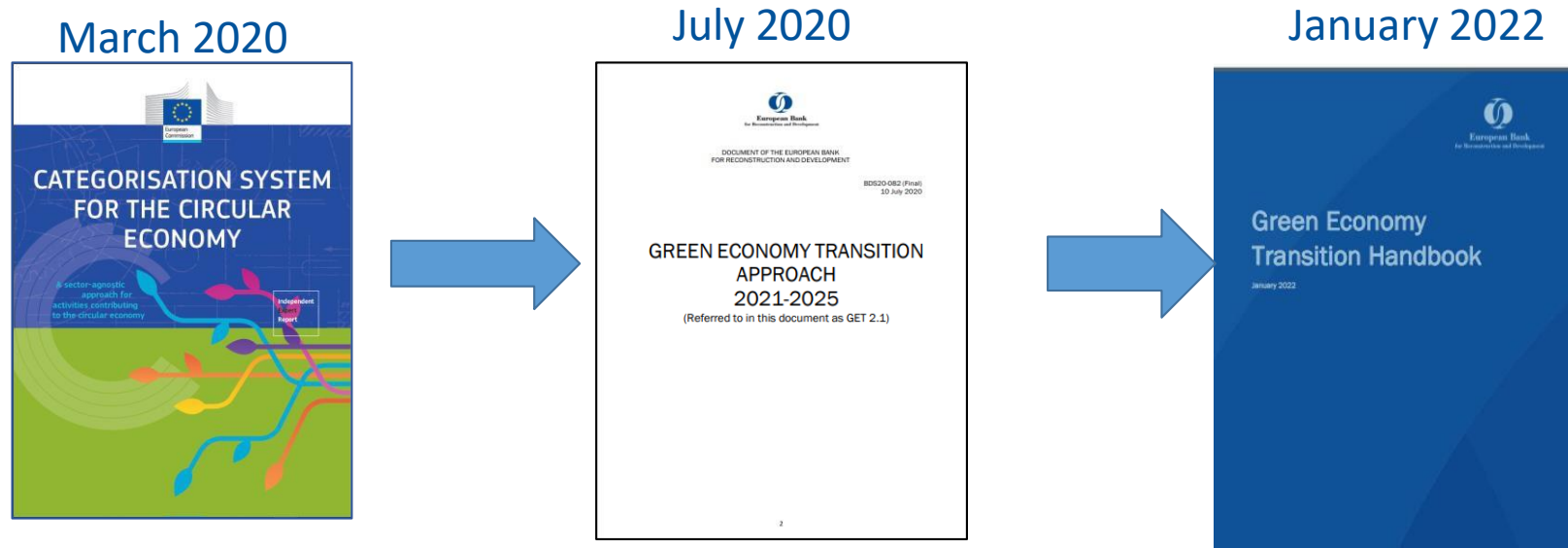


**EU Taxonomy will become the basis for reporting  
on climate and sustainability finance inside the EU**

# Use of CE Categorization in EBRD Operations



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- Guidance for CE deal origination and appraisal
- Basis for internal reporting on CE finance
- **EBRD currently apply the most robust CE finance definition globally**

# EBRD Supports Circular Economy

Since 2014, EBRD has invested over EUR 1.2 billion in projects that contribute to circular economy



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The Circular Economy is a **framework** that promotes a rethink of our production, use and consumption practices to **preserve the added and inherent value of physical resources** across value chains in order to increase competitiveness, manage risks and promote green outcomes.

It promotes decoupling economic productivity from material intensity, and **keeping materials in productive use through recovery and multiple lifetimes**.

It also seeks to reduce value chain risks, stemming from volatility in virgin commodity prices, improved control over resource supplies, or **increased revenues through the productive use of by-products or wastes**.

The EBRD is at the global forefront of financing the transition to a Circular Economy through its **Green Economy Transition approach 2.1**. EBRD has been supporting upstream and downstream solutions to promote reduction in material demands, reuse of resources and recovery at end-of-life.



## EBRD Support

- **Near Zero Waste Programme (NØW)** supports waste minimisation and sustainable waste management investments in **Turkey**
- Support agricultural operation in **Lithuania** that created a cycle of nutrients and wastes as feedstocks.
- Support production of aluminium in **Greece** from recovered, secondary scrap and consumer materials



## Circular Economy delivers many benefits

Minimize virgin resources use	Cut costs
Avoid waste	Create jobs
Turn waste into a resource	Reduce greenhouse gas emissions

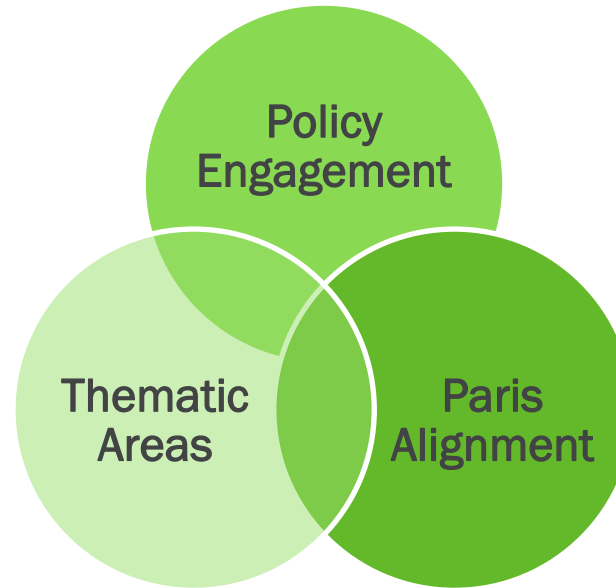
# EBRD Green Economy Transition Approach (GET 2.1 covering 2021-2025)



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Through GET, the EBRD aims to **accelerate the transition to a green, low-carbon, resilient economy** and to contribute to achieving a net zero carbon world by 2050.

By 2025, EBRD is committed to reach **a green finance ratio > 50% of the Bank's annual investments** and at least 25 million tonnes of GHG emissions avoided (2021- 2025 cumulatively)



The EBRD's green financing hit 50% of total business volume of €13.1 billion in 2022

- Green Financial Systems
- Industrial Decarbonisation
- Sustainable Food Systems
- Energy Systems Integration
- Energy Efficiency
- **Green Cities** and Environmental Infrastructure – **Water and Waste Water**, Waste, etc
- Sustainable Connectivity
- Green Buildings
- Natural Capital

# EBRD GET 2.1 – water and waste water projects



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Category	Eligible activity	Screening criteria and guidance
Energy and resource efficiency and demand management in water supply	Brownfield energy efficiency improvement in water supply systems through the deployment of low-energy consumption technologies or equipment, or reduction of water losses	The project shall demonstrate a substantial increase in resource efficiency, EE or a substantial reduction in net GHG emissions
Lower-carbon water supply	Lower-carbon greenfield and brownfield water supply projects that replace tanker use or local coping mechanisms with a piped utility water supply system	The project shall demonstrate a substantial reduction in net GHG emissions. The treatment technology will need to be the best locally available technology to prevent the continued lock-in of highly emissive behaviours or technologies.
Energy efficiency and demand management in water supply	Greenfield water supply projects meeting high energy efficiency standards or making use of demand management	The project shall demonstrate that equipment meets at least one criteria (i) it substantially exceeds applicable EE requirements; (ii) it employs the best technology available in the country; or (iii) it is a zero-emission system, such as gravity-fed pipelines
Energy and resource efficiency and GHG emission reduction in water supply and wastewater management	Greenfield and brownfield projects that promote improved operation and maintenance to reduce water losses, promote energy savings, or meet or exceed wastewater treatment targets	Leak detection and prevention, improved maintenance or EE; supervisory control and data acquisition (SCADA) systems expected to reduce water losses or reduce energy use; programmes ensuring that BOD, BOD5, COD or nitrogen6 removal levels reach or exceed their targets
GHG emission reduction in wastewater management	Greenfield projects that reduce methane or nitrous oxide emissions through wastewater and sludge collection and treatment / use	The project shall demonstrate a substantial reduction in net GHG emissions and the treatment system shall remove BOD. For projects using anaerobic treatment technologies only, the generated methane shall be used in energy generation or production processes, if economically viable. Appropriate mitigation measures shall be put in place to minimise and control methane leakage.
Energy efficiency and GHG emission reduction in wastewater management	Brownfield projects for wastewater that reduce emissions through EE improvements or improved treatment targets	Projects that aim to improve treatment standards of BOD, BOD5, COD or nitrogen should result in net emission reductions of methane or nitrous oxide
GHG emission reduction in wastewater collection	Greenfield or brownfield projects that improve the collection of wastewater or sludge	The project shall demonstrate a substantial reduction in net GHG emissions once treatment of the collected material is taken into account.
Efficient use of wastewater	Wastewater reuse	The project shall demonstrate a substantial reduction in net GHG emissions between the wastewater reuse activity and the activity expected to be replaced or prevented.



€5 billion framework to support cities to identify, benchmark, prioritise and invest in Green City measures to improve urban environmental performance through:



Delivery of strategy and policy support

Green City Action Plan (GCAP)

Policy dialogue



Facilitating and stimulating Green City infrastructure investments

Urban Transport

Water & Wastewater

Solid Waste

Renewable Energy

Smart solutions

District Heating

Building Energy Efficiency

Distribution network

Street Lighting

Climate Change Resilience

Nature Based Solutions



Building capacity of city administrators and key stakeholders



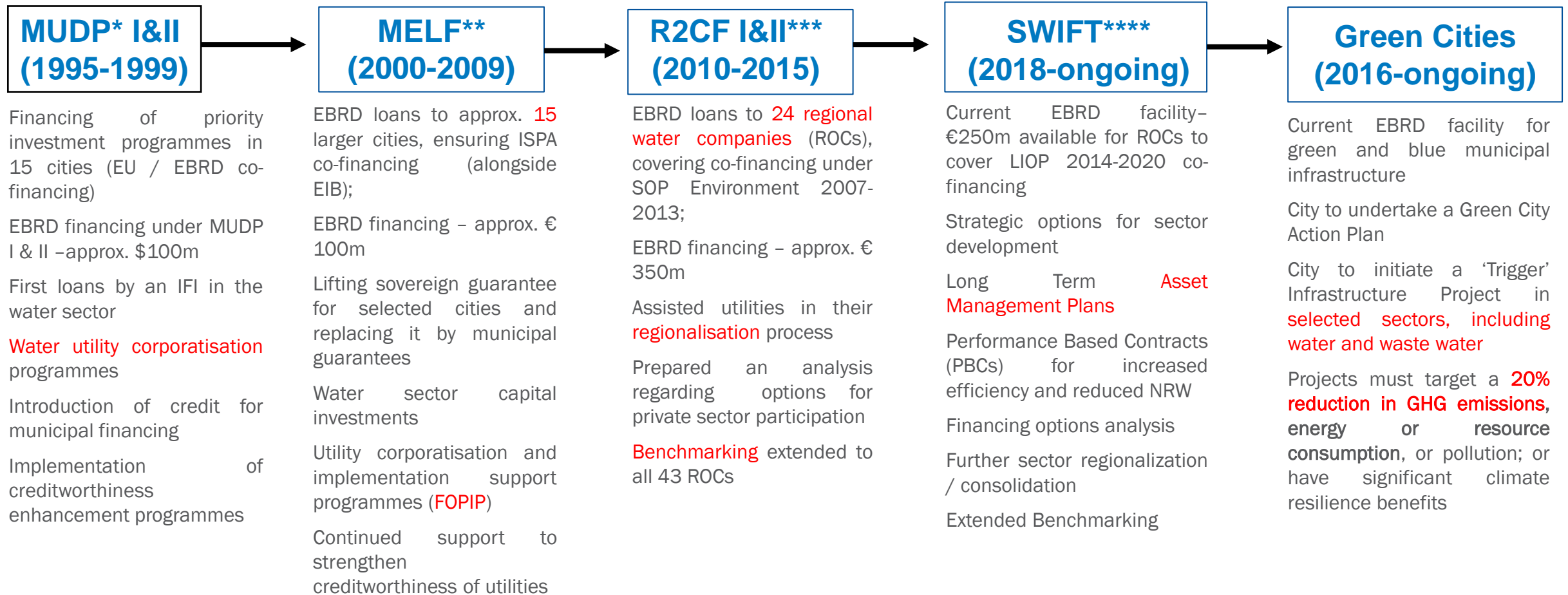
Supporting access to green finance

# Water and waste water sector

## EBRD investments and reforms in Romania



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\* Municipal Utilities Development Programme  
 \*\* Municipal Environmental Loan Facility  
 \*\*\* Romania Regional EU Cohesion Fund Co-financing Framework  
 \*\*\*\* Sustainable Water Infrastructure Facility To Support Transition

# Circular economy in the water and waste water sector



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By applying circular economy principles to the water sector, it is possible to minimize water waste, optimise resource use, and reduce the environmental impact of water-related activities.



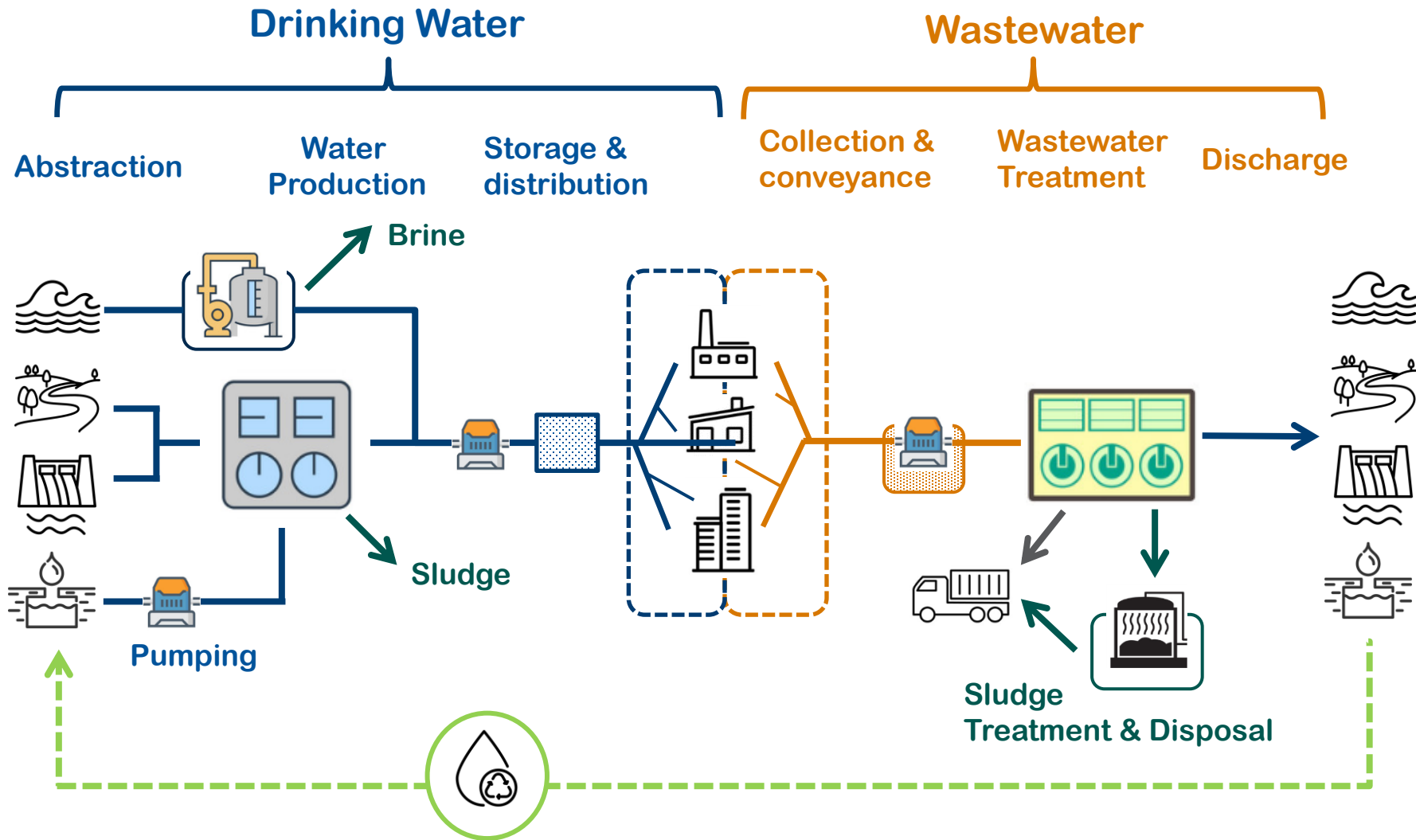
This approach contributes to long-term water sustainability, resilience, and the preservation of ecosystems



# The anthropic water cycle



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## Centralised systems:

**Raw water** is taken from the **natural environment** (ground, rivers, sea..), converted to drinking water, distributed and used by consumers.

**Dirty water** is collected, conveyed to a wastewater treatment plant and **converted to a product** (treated effluent) **safe to return** to the natural environment.

**Itself a circular process** and ideally with **all waste streams are fully utilised**.

# Wastewater sludge treatment and disposal



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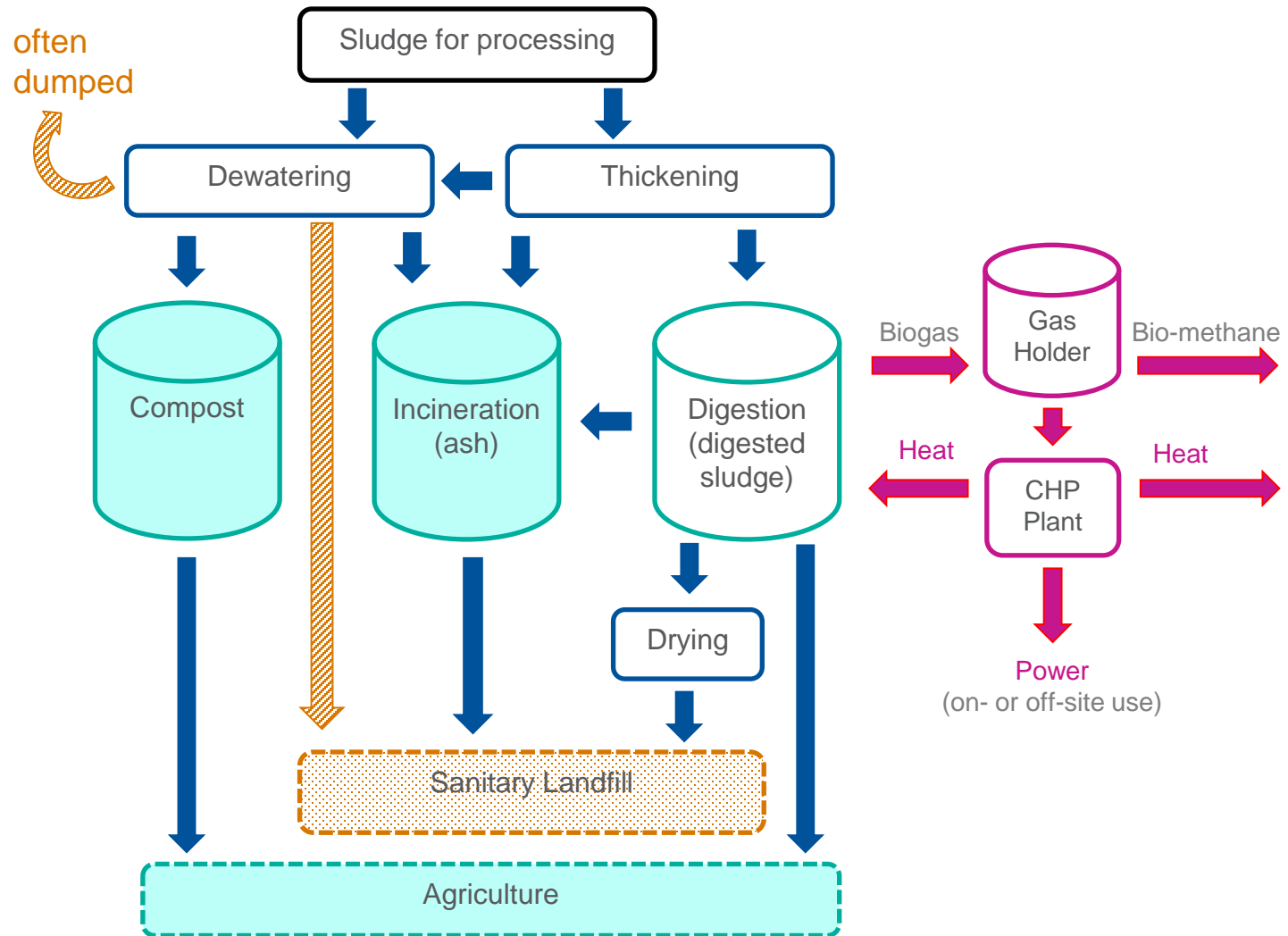
Sewage sludge is the **residual product** from the wastewater process; it originates from primary and secondary wastewater treatment stages; typically **dewatered**, and is often dumped or disposed at a sanitary **landfills**.

*Raw wastewater sludge represents around 1-2% of treated wastewater by volume but its management is highly complex with costs ranging between 20-60% of the total operating cost of a wastewater treatment plant.*

Traditionally, sewage sludge has been considered to be waste. A preferred outlet is **agriculture** because of its high nutrient content and soil conditioning properties of stabilised sludge.

Anaerobic digestion (“AD”) is the most common form of biological sludge stabilisation and can facilitate ‘biogas’ utilisation for the production of a sustainable source of heat and power.

Alternative sludge treatment pathways also exist.



# From Wastewater Treatment to a 'Resource Factory'



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- **Biogas recovery:** a renewable energy source generated from the anaerobic digestion of sludge used for **heat and power production**, lowering dependence on fossil fuels and lowering greenhouse gas emissions – a prime example of how the circular economy promotes *resource recovery and energy efficiency*. In the best of cases **a WWTP can be entirely energy self-sufficient**.
- **Water reuse and recycling:** Implementing water reuse and recycling systems allows for the recovery of treated wastewater which can be used for non-potable purposes such as **irrigation, industrial processes, and toilet flushing**. By treating and reusing water, the circular economy approach *reduces the reliance on freshwater sources and minimises wastewater discharge*.
- **Use of closed-looped systems:** where materials and resources are kept in circulation for as long as possible; this can involve **designing** wastewater treatment processes that maximize water recovery and reuse e.g. *treated effluent for screening washing*
- **Grit recycling:** can be washed and reused in various applications such as *construction, road maintenance and soil improvement*



- **Nutrient recovery:** Wastewater treatment plants can further incorporate technologies to extract valuable **nutrients**, such as phosphorus and nitrogen, from wastewater. These nutrients can be processed into **fertilizers or used in agricultural or industrial applications**, closing the nutrient loop and reducing the need for synthetic fertilizers.

# A wider perspective – what else helps CE?



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**Innovation and eco-design:** The circular economy promotes innovation and eco-design principles to **optimize the efficiency and sustainability of water systems**. This can involve designing water treatment plants and infrastructure **to minimize energy consumption and reduce the generation of waste**. Innovations in technologies, such as advanced filtration and membrane processes, can enable more efficient treatment and resource recovery



**Rainwater harvesting:** **Capturing and utilising rainwater can reduce the demand for freshwater sources**. Rainwater can be collected from rooftops and stored for various non-potable uses, such as irrigation, flushing toilets, and cleaning.



**Smart water management:** The adoption of **digital technologies and data analytics can optimize water management** in a circular economy context. **Smart meters, sensors, and real-time monitoring systems** can help detect leaks, track water consumption, and improve water efficiency, leading to reduced water waste.



**Water-efficient practices:** Encouraging **water-efficient practices at individual and industrial levels** is crucial in the circular economy. This includes promoting water-saving technologies, optimizing water use in industrial processes, and implementing water-efficient irrigation systems in agriculture.



**Education and awareness:** Raising awareness among individuals, communities, and industries about the **value of water and the importance of sustainable water management** is a key aspect of the circular economy in the water sector. Educating stakeholders about water conservation, pollution prevention, and the benefits of adopting circular water practices can drive positive **behavioural changes**,