

living planet symposium | BONN 23–27 May 2022

TAKING THE PULSE
OF OUR PLANET FROM SPACE



EC Contribution to the Water Cycle Cluster

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Water Quantity and Availability

Water scarcity, overexploitation of groundwater aquifers, environmental flows, inefficient use in agriculture and industry, inefficient allocation, ineffective economic tools/pricing

Water Quality and Pollution

~30,000 new chemicals every year, pollution loads from diffuse agriculture and urban sources, contaminants of emerging concerns (e.g. microplastics, pharmaceuticals or antimicrobial resistant bacteria), drinking water quality

Aquatic ecosystem protection and restoration

Degradation due to barriers and other morphological changes, loss of wetlands and floodplains, over abstraction, land management

Water management, governance of water systems and circular use of water

Addressing multiple water challenges, governance and institutional issues, minimise wastewater and maximise resources recovery to realise greater value from water systems

WP topics that correspond to the identified research priority needs



Regular exchange with ESA and other stakeholders

Water Quantity and availability

- **HORIZON-CL6-2021-CLIMATE-01-01: Improved understanding, observation and monitoring of water resources availability (RIA)**
- **HORIZON-CL6-2022-CLIMATE-01: Climate sensitive water allocation systems and economic instruments.(IA)**

Water Quality and Pollution

- **HORIZON-CL6-2021-ZEROPOLLUTION-01-03: Preventing and managing diffuse pollution in urban water runoff (RIA)**
- **HORIZON-CL6-2022-ZEROPOLLUTION-01-01: Preventing groundwater contamination and protecting its quality against harmful impacts of global and climate change (RIA)**
- **HORIZON-CL6-2022-ZEROPOLLUTION-04: Securing drinking water quality by protecting water sources against pollution, providing innovative monitoring and treatment solutions and ensuring safe distribution (RIA)**

Aquatic ecosystem protection and restoration

- **HORIZON-CL6-2022-BIODIV-01-01: Observing and mapping biodiversity and ecosystems, with particular focus on coastal and marine ecosystems**

Water management, governance of water systems and circular use of water

- **HORIZON-CL6-2022-GOVERNANCE-01: Water governance, economic and financial sustainability of water systems (RIA)**

STARS4Water (Supporting Stakeholders for Adaptive, Resilient and Sustainable Water Management)



STARS4Water (RIA Project expected start in October 2022 for 4 years, led by Deltares)

STARS4Water aims at improving the understanding of climate change impacts on water resources availability and the vulnerabilities for ecosystems, society and economic sectors at river basin scale. STARS4Water will develop and deliver new data services and data driven models for better supporting the decision making on planning on actions for adaptive, resilient and sustainable management of freshwater resources.

<https://www.deltares.nl/en/news/deltares-led-horizon-europe-stars4water-proposal-selected-for-funding/>

Example of services delivered: Advancing data sets and services for water resources planning by leveraging existing EU data services (Copernicus, GEOSS etc.) through data science techniques

SOS-Water (Water Resources System Safe Operating Space in a Changing Climate and Society)

SOS-Water (RIA Project expected start in October 2022 for 4 years, led by IIASA)

SOS-Water will cocreate future scenarios and management pathways with stakeholders in five case studies in Europe and abroad. It will advance water system models and link them with impact models of ecosystem services and biodiversity, to create a novel integrated water modelling system. This **integrated water modelling system will be benchmarked against a wide range of state-of-the-art Earth observations** and will be used to calculate selected indicators covering all dimensions of water resources systems, to ultimately design a multi-dimensional SOS of policies and water management pathways evaluated across a broad set of scenarios

Example of activity: identify advanced requirements for basin scale to global geoinformation services based on the value-adding potential of water quality and quantity models on one hand, and conventional remote sensing product specifications on the other hand



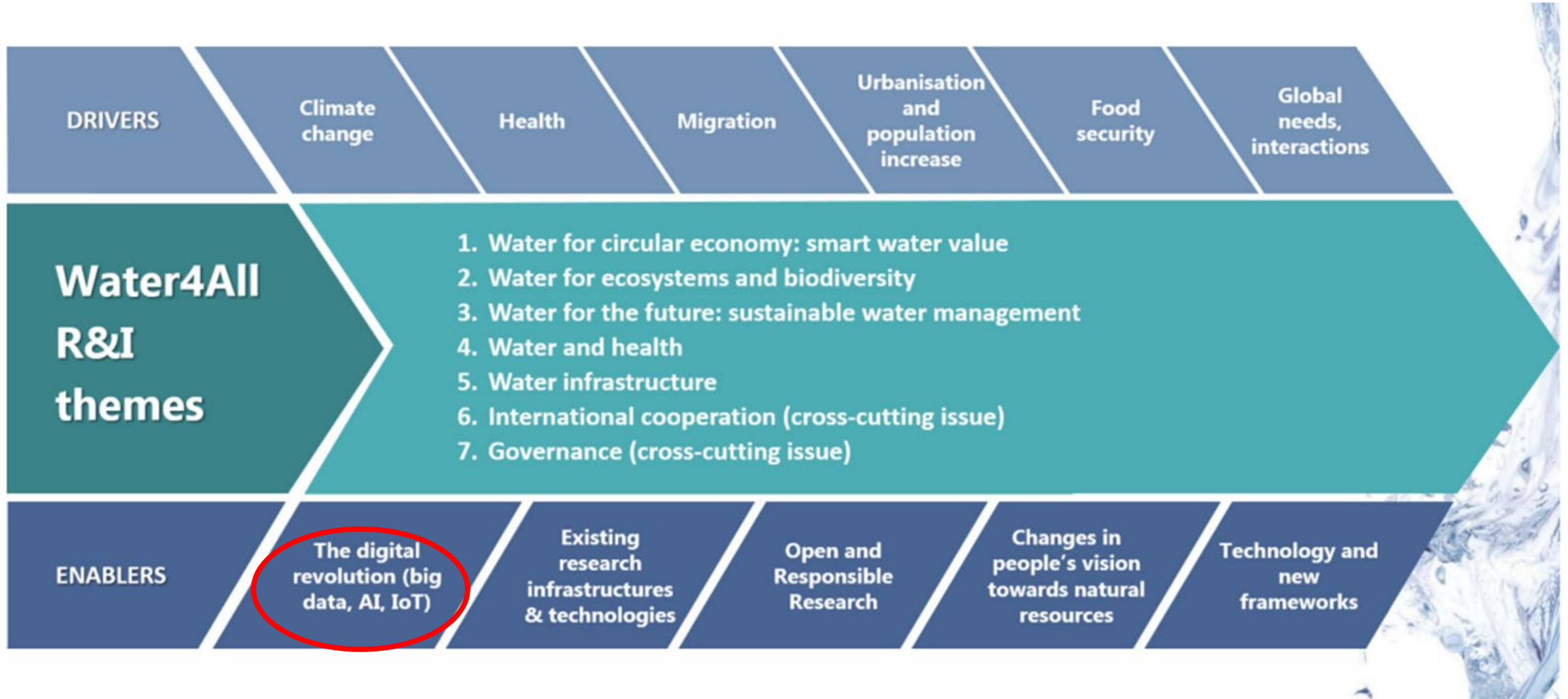
The objectives presented by Water4All are:

- To provide solutions to the current and increasing water crisis in the context of the Green Deal and Sustainable Development Goals;
- To strengthen scientific evidence for new policies or update existing ones;
- Supporting efficient collaboration and integration of EU, MS and international R&I activities in a multi-actors innovative approach; and
- Increase implementation of solutions and therefore global impacts.



Water4All Joint Transnational Call foreseen to be launched in September 2022 addressing topics:

- Topic 1. Resilience, adaptation and mitigation to hydroclimatic extreme events
- Topic 2. Tools for water management - in the context of hydroclimatic extreme events
- Topic 3. Improved water governance in the context of hydroclimatic extreme events and international contexts





Examples of topics of interest to the EO community in the WP2022 (**DEADLINE 27 SEPTEMBER 2022**)

HORIZON-MISS-2022-CLIMA-01-01 User driven Applications and tools for regional and local Authorities, and other end users focusing on climate Impacts, data and knowledge (RIA – EUR 6 million)

HORIZON-MISS-2022-CLIMA-01-06: Testing and demonstrating transformative solutions on climate resilience, mainstreaming nature based solutions in the systemic transformation (IA – EUR 88,32 million)

The Mission Adaptation to Climate Change aims at supporting around 150 regions and communities in Europe towards reaching climate resilience by fostering the development of innovative solutions.

Important steps

- **May 2022: Opening of Horizon Europe WP 2022 Mission calls**
- **17-18 May 2022: EU Missions info-days:** (https://ec.europa.eu/info/research-and-innovation/events/upcoming-events/horizon-europe-info-days/eu-missions_en)
- **7 June 2022: First Mission Forum** (<https://cor.europa.eu/fi/events/Pages/forum-mission-adaptation-climate-change-7-june-2022.aspx>)
- **December 2022: Signature of grants and first Mission projects**



This Mission will provide a systemic approach for the restoration, protection and preservation of our ocean, seas and waters.

The objective of this Mission is to restore, protect and preserve the health of our ocean, seas and waters by 2030.

Examples of topics of interest to the EO community in the WP2022 (**DEADLINE 27 SEPTEMBER 2022**)

HORIZON-MISS-2022-OCEAN-01-01: European Blue Parks – Protection and restoration solutions for degraded coastal and marine habitats (IA – EUR 17 million)

HORIZON-MISS-2022-OCEAN-01-03: Mediterranean sea basin lighthouse - Actions to prevent, minimise and remediate chemical pollution (IA – EUR 17 million)

HORIZON-MISS-2022-OCEAN-01-06: Lighthouse in the Baltic and the North Sea basins – bringing sustainable algae-based products and solutions to the market (IA – EUR 17 million)

HORIZON-MISS-2022-OCEAN-01-07: Integration of biodiversity monitoring data into the **Digital Twin Ocean** (IA – EUR 10 million)

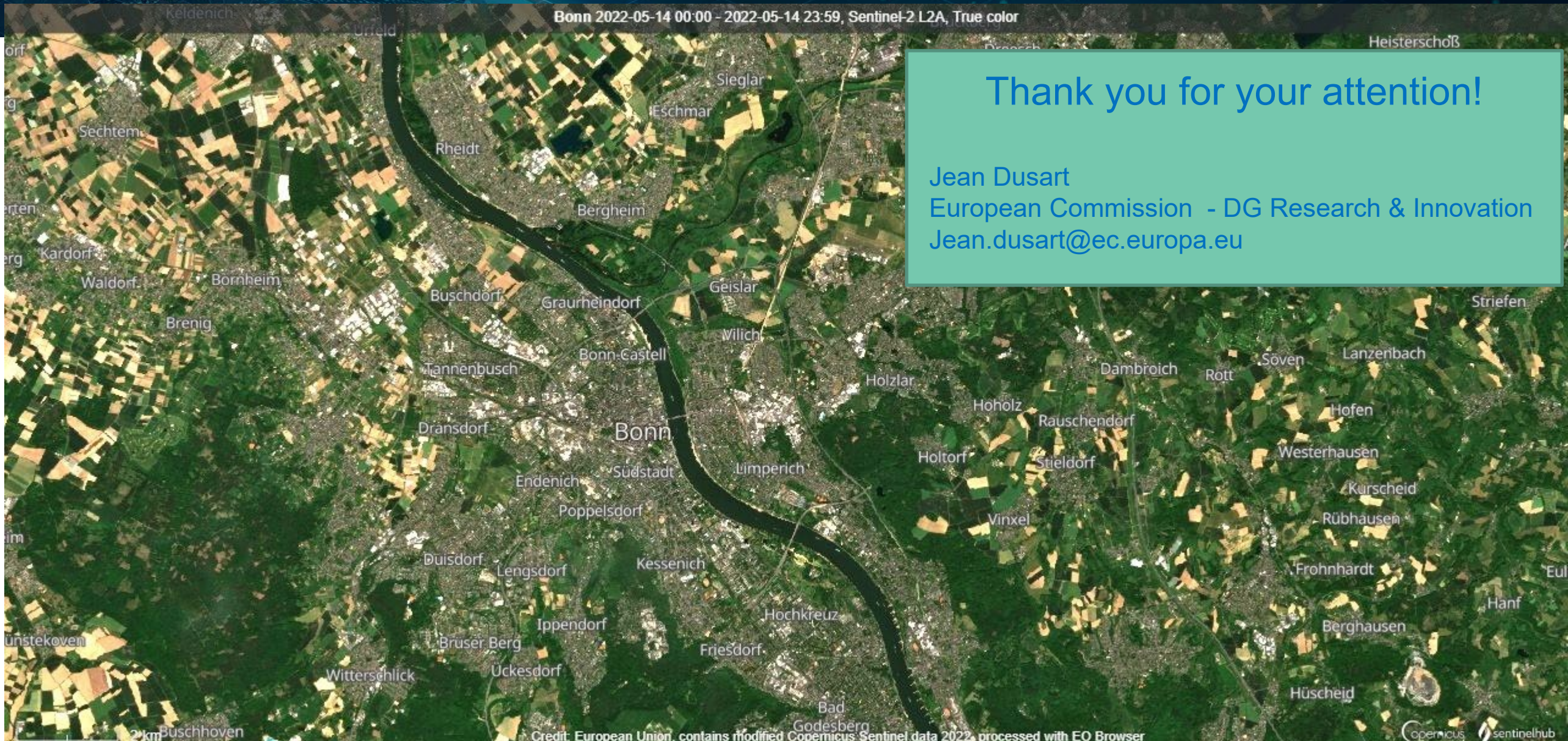
HORIZON-MISS-2022-OCEANCLIMA-01-01: Mission Climate adaptation and Mission Ocean and waters - Joint demonstration for coastal resilience in the Arctic and Atlantic sea basin (IA – EUR 20 million)

- Water4All partnership related topics (EC commitments for 23-24)
- Few additional topics with sufficient budget to attract critical mass:
 - Holistic approaches for effective monitoring of water quality in urban areas - (contribution to Zero Pollution Action plan with strong digital dimension)
 - Alternative water resources, including supply technologies (e.g. improving desalination technologies, aquifer recharge, rainwater harvesting) – (contribution to Climate Change Adaptation Strategy)
 - New circular solutions and decentralised approaches for water and wastewater treatment – (contribution to Circular Economy Action Plan – relevant for international cooperation)
 - Harnessing the innovation potential and market uptake of successful circular economy and water related projects (CSA to take stock of technologies, business models, results)

Horizon Europe WP 2023-2024 drafting process



- Strong ongoing H2020 portfolio on water reuse, recycling and valorisation of wastewater, water/energy/food nexus, freshwater ecosystems restoration, human health and water pollution assessment and removal technologies
- Missions will support large scale demonstration activities on river restoration, plastic pollution reduction and resilience/adaptation to climate change
- Water4All partnerships will cover a wide range of water problems/drivers
- There is a need to strengthen synergies between Water4All and Missions as concerns water related demonstration activities



Thank you for your attention!

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Credit: European Union, contains modified Copernicus Sentinel data 2022, processed with EO Browser

