Клъстер АЕРО-КОСМИЧЕСКИ ТЕХНОЛОГИИ, ИЗСЛЕДВАНИЯ И ПРИЛОЖЕНИЯ

Cluster AERO-SPACE TECHNOLOGIES, RESEARCH AND APPLICATIONS

# The EU Green Economy transition - basic needs for GHG emissions estimate when implementing large infrastructural projects in the water sector by the International Financial Institutions

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**www.copernicus-user-uptake.eu**

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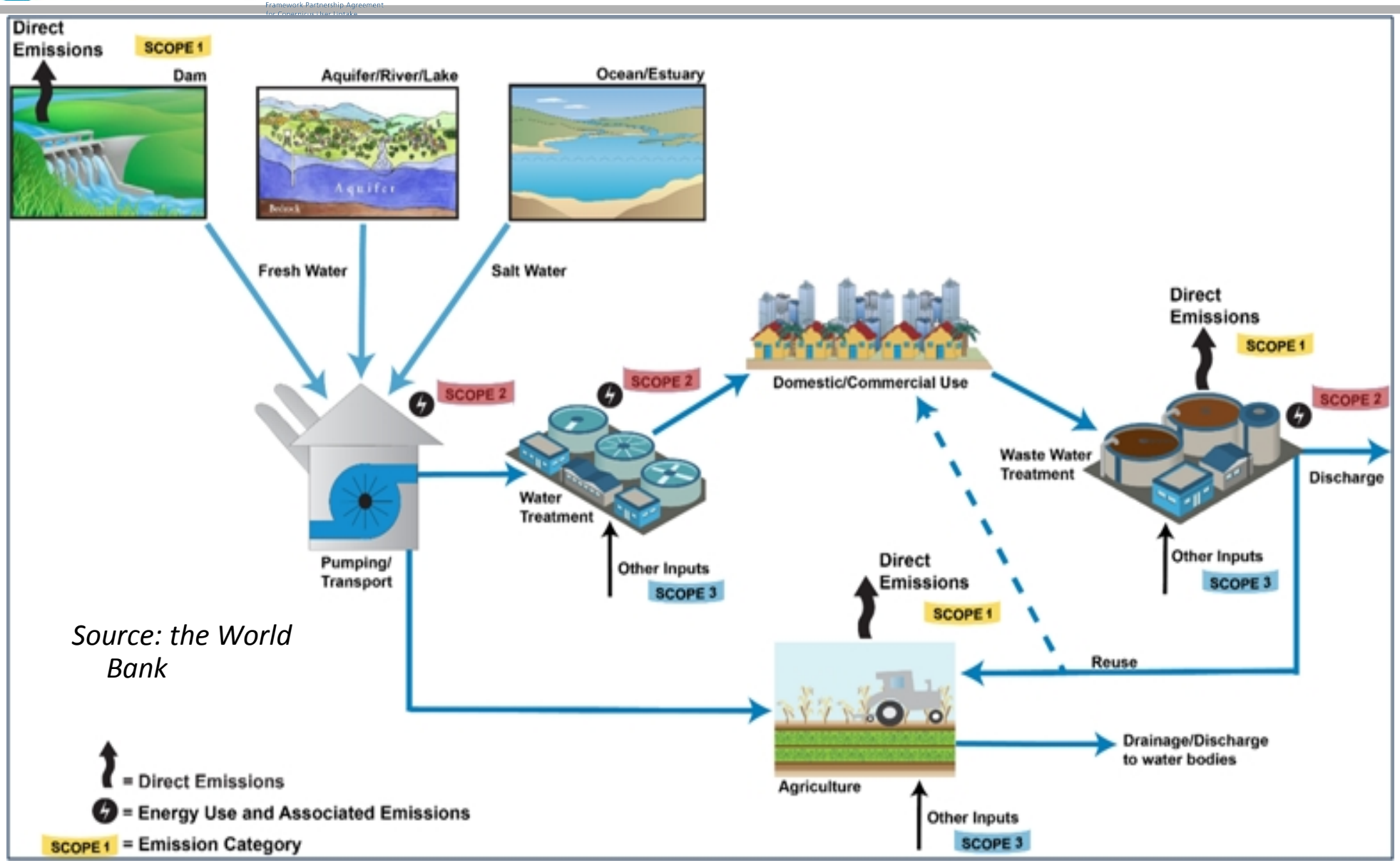
# Objectives

- Identify practical user cases in the global water sector (EU region, pan-European, worldwide scale)
- Identify user needs and requirements for reliable and accurate GHG emission evaluation as function of typical infrastructure project implementation options
- Develop a GHG emission evaluation methodology based on establishing unified data layers using Copernicus data targeting pre-identified specific water sector project cases applications

# Typical Water Sector Projects Types




*Source: the World Bank*

**Various sources of GHG emissions need to be evaluated in each specific project case**

# Direct and indirect GHG emissions

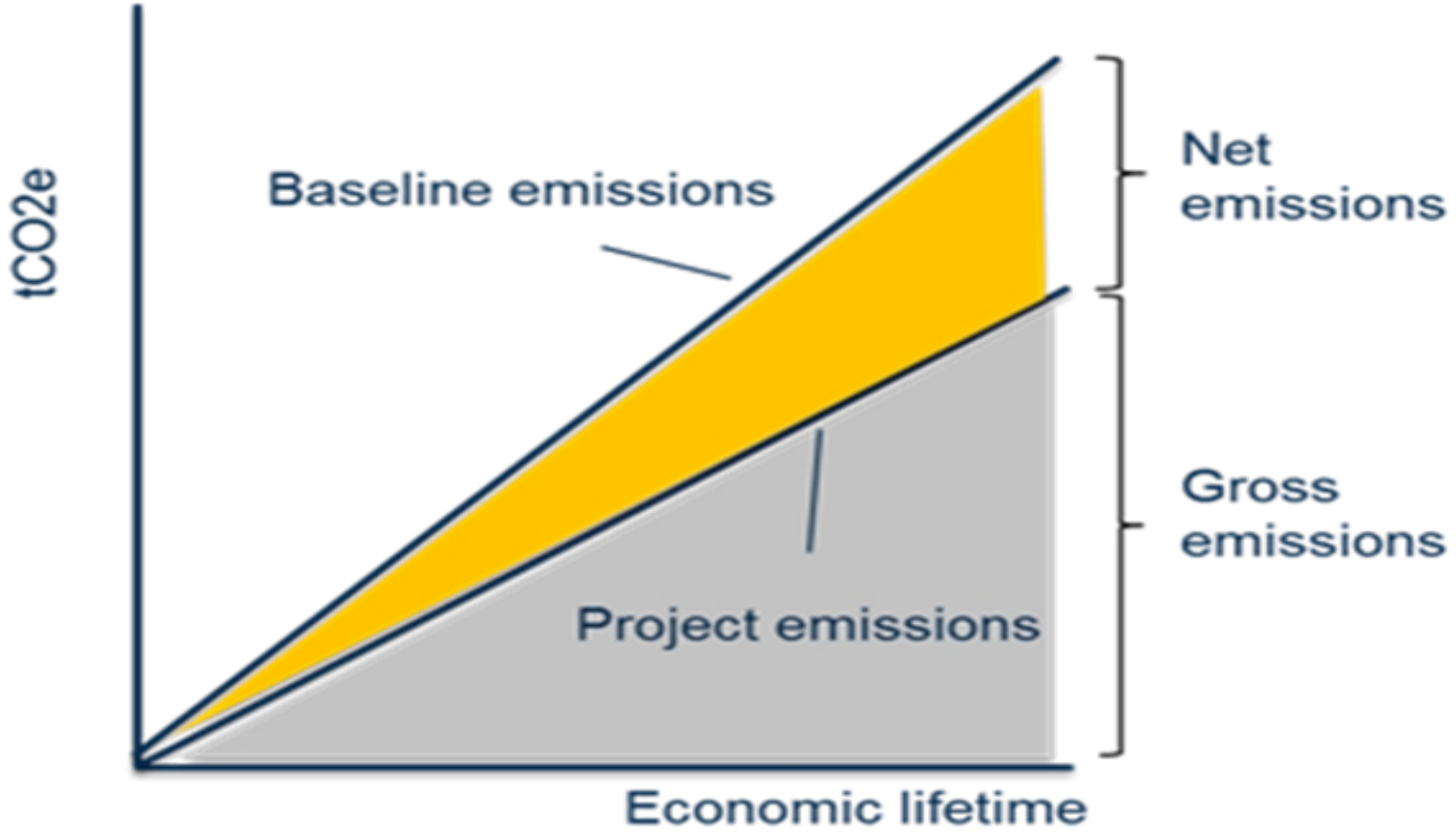
- **Scope 1**: direct emissions from sources **the project owns or controls**. These emissions can be directly linked to project activities and some examples include; GHG emissions from WWTPs, reservoirs bubbling, CO2 emissions from deforestation for irrigation or reservoir projects, etc.
- **Scope 2** emissions: indirect emissions **associated with energy use**— i.e. purchased electricity, steam, heating, or cooling necessary for the operation of the project.
- **Scope 3** emissions: all other indirect emissions. These result from activities associated with the project, **but from sources that are not owned or controlled by the project**— such as extraction and production of purchased materials, downstream emissions associated with the products/services of the project, etc.

*Source: the World Bank*

# High - level GHG emissions evaluation requirements for the water sector

- Required by all IFIs
- Required for water supply, desalination, waste water, waste water reuse, irrigation, and multipurpose reservoir projects
- *ex-ante* analysis required;
- *ex-post* analysis required.

# Project scenario vs. Baseline scenario: GHG emission levels forecast is needed to cover the whole economic lifetime of a project




*Source: the World Bank*

# Typical IFI experts' needs for GHG emissions evaluation

- **Historical data on the direct GHG emissions- before starting a water sector project: Emissions needed for the ex-ante evaluation and for the project base line impact evaluation.**
- **After water sector project : direct GHG emissions needed for the ex-post evaluation.**
- **CH4, CO2, N2O impact?**
- **What about indirect emissions?**

# Practical R&D tasks in support of a water sector project

## Suggestion for next technical actions

- identification of the needed Copernicus datasets & the availability of historic data for evaluating the GHG emissions for a specific project type in the water sector;
- detailed identification of the project specific business/decision making chains based on information about the GHG emissions - e.g. what is needed when during the implementation of a typical water sector project
- develop a prototype of a data processing methodology chain based on e.g the combination of Copernicus data and other (existing) data sources (can it be implemented as an 'on-demand' tool ? )
- verification of the approach in a relevant test case - a specific major water sector project in Bulgaria
- execute the verification aiming 'operational' GHG emissions evaluation

# Summary

- **EU's Green Economy Transition motivates strongly the accurate accounting of the impact of implementing large scale infrastructural projects (in the water sector), on the GHG emissions**
- **Specific needs for GHG emissions evaluation exist from both technical and project management sides, which imply the development of dedicated methods and tools**
- **Due to IFI's projects complexity, project related GHG emissions need to be evaluated in an integrated approach, accounting for all possible sources and factors (water, soil, human actions, etc..)**
- **Copernicus Earth Observation data, in combination with other data (e.g. in-situ, or model-based), could become the main 'real-time' or 'on demand' source for GHG emissions evaluation in practical IFI's projects in the water and other sectors**