



Presentation of Annex XVI subtask 4 / Hydropower R&I in Horizon Europe

IEA HYDROPOWER TCP
Annex XVI Workshop
July 2021

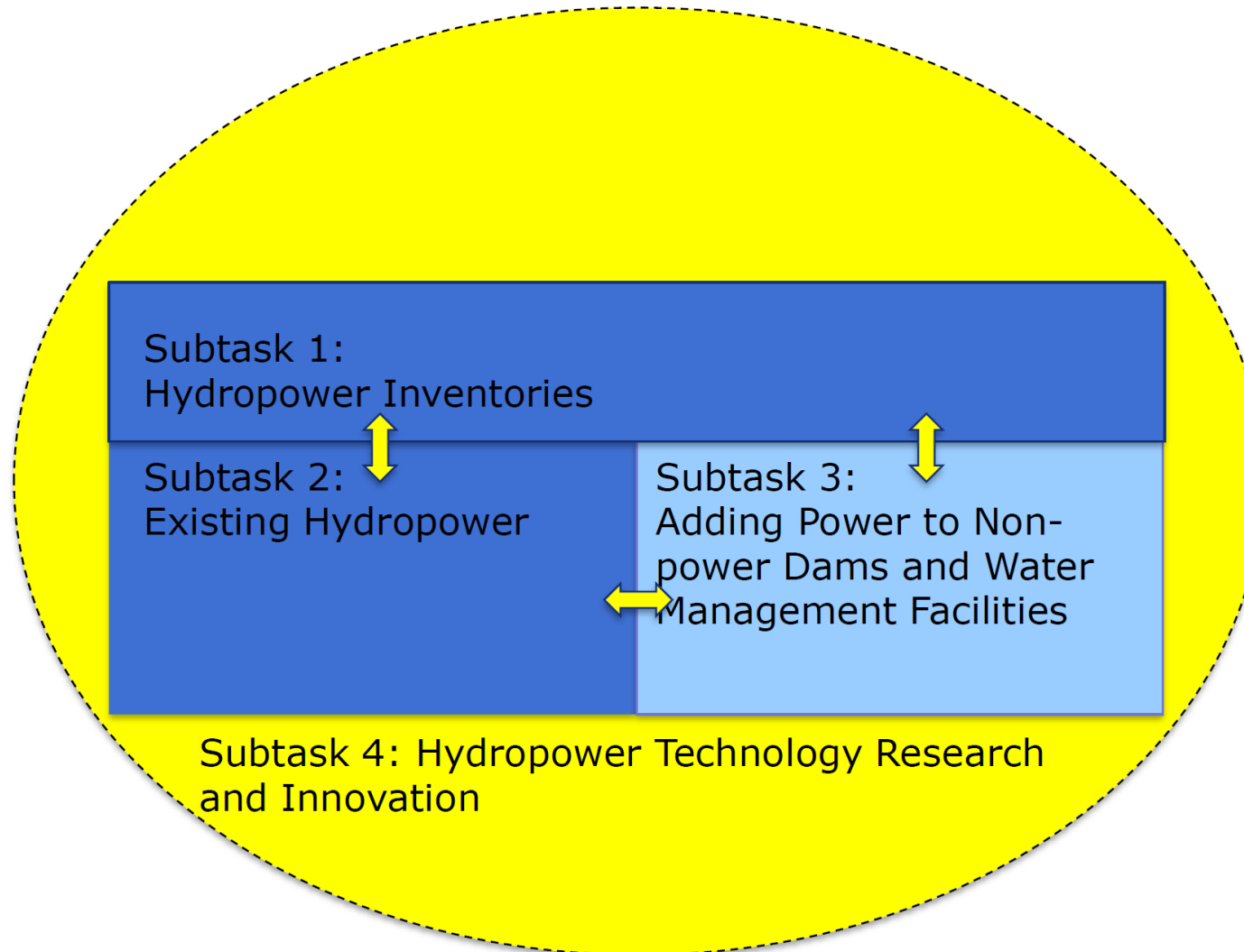
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RTD.C.1- Clean Energy Transition

Annex XVI Task 4: Hydropower Technology Research and Innovation in the context of Hidden Hydropower opportunities



Annex XVI Task 4: Objectives

- Summarize and evaluate the current state of the art of individual hydropower technologies and non-technological areas for the harvesting of “hidden hydropower” potential;
- Document and analyse, based on the results obtained in subtasks 1-3, current solutions and future development and demonstration needs for hydropower technology, as well as research and innovation needs for non-technological fields for maximising the use of sustainable “hidden hydropower” potential;
- Establish a world-wide research and innovation agenda for hidden hydropower technology development and demonstration with the aim to contribute to the future sustainable use of “hidden hydropower” potential and also outline research and innovation needs of non-technological fields and the whole innovation chain.

Annex XVI Task 4: Scope of work

- A literature/case review of the current individual hydropower technologies and related fields available for the harvesting of “hidden hydropower” potential and review their applicability;
- A literature and case review of methodologies for forecasting sustainable “hidden hydropower” potential;
- Formulate, based on the documented state of the art for hydropower technologies, future needs for hydropower technology development and demonstration, research and innovation in related non-technological fields and methodologies for maximising the future use of sustainable “hidden hydropower” potential;
- Determine, with best practices and success stories, the contribution of hydropower technology development and demonstration for bringing sustainable “hidden hydropower” opportunities to the market;

A European Green Deal

Striving to be the first climate-neutral continent

The EU will:



Become
climate-neutral
by 2050



Protect human life,
animals and plants,
by cutting pollution



Help companies
become world leaders
in clean products and
technologies



Help ensure a
just and inclusive
transition

COM(2019) 640 final . The European Green Deal
COM(2020) 21 final: Sustainable Europe Investment Plan; European Green Deal Investment Plan
COM(2020) 22 final: Proposal for a REGULATION OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL
establishing the Just Transition Fund

Hydropower in Europe

- Limited potential if only focused on power production but high potential in energy system services
- Strong technology base
- Challenges and opportunities
 - Refurbishment
 - Flexible operation / grid balancing
 - Sustainability, e.g. water/river connectivity

Hydropower in Horizon 2020 SC3

RIA:

FIThydro Fishfriendly Innovative Technologies for Hydropower

HydroFlex Increasing the value of Hydropower through increased Flexibility

AFC4Hydro Active Flow Control system FOR improving HYDRaulic turbine performances at off-design Operation

ALPHEUS Augmenting grid stability through Low-head Pumped Hydro Energy Utilization & Storage

IA:

XFLEX HYDRO Hydropower Extending Power System Flexibility

Hydro4U Hydropower For You - Sustainable small-scale hydropower in Central Asia

CSA:

HYDROPOWER-EUROPE *LC-SC3-CC-4-2018 - Support to sectorial fora*

HYPOSO Hydropower solutions for developing and emerging countries

From other parts of H2020: AMBER, SHYDRO-ALP, DAFNE, KEEPFISH, Hykinetics, HYPOS...

Hydropower: European R&I strategy

Overall strategy is to target the following sector challenges:

- Sector faces long-term challenges and requires continuous efforts
- To maintain European hydropower research and industry value chains
- Global cooperation on sustainable hydropower



#HorizonEU

HORIZON EUROPE

THE EU RESEARCH & INNOVATION PROGRAMME 2021 – 27

This presentation is based on the political agreement of 11 December 2020 on the Horizon Europe. Information on some parts is pending revision.

19 March 2021

Research and
Innovation

Our Vision

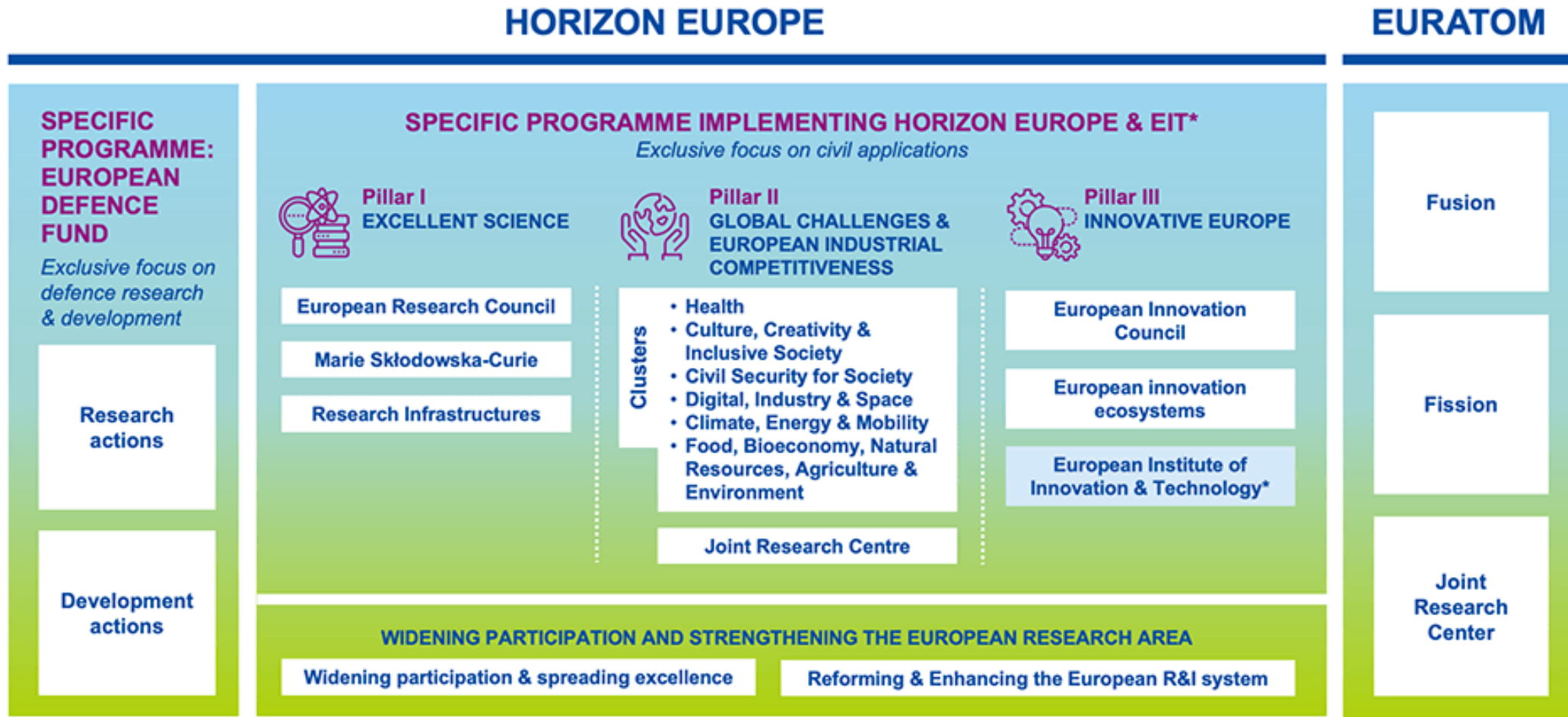
The EU's key funding programme for research and innovation:

- Tackles climate change
- Helps to achieve the UN's Sustainable Development Goals
- Boosts the EU's competitiveness and growth
- Facilitates collaboration and strengthens the impact of research and innovation in developing, supporting and implementing EU policies while tackling global challenges
- Supports the creation and better diffusion of excellent knowledge and technologies
- Creates jobs, fully engages the EU's talent pool, boosts economic growth, promotes industrial competitiveness and optimises investment impact within a strengthened European Research Area.



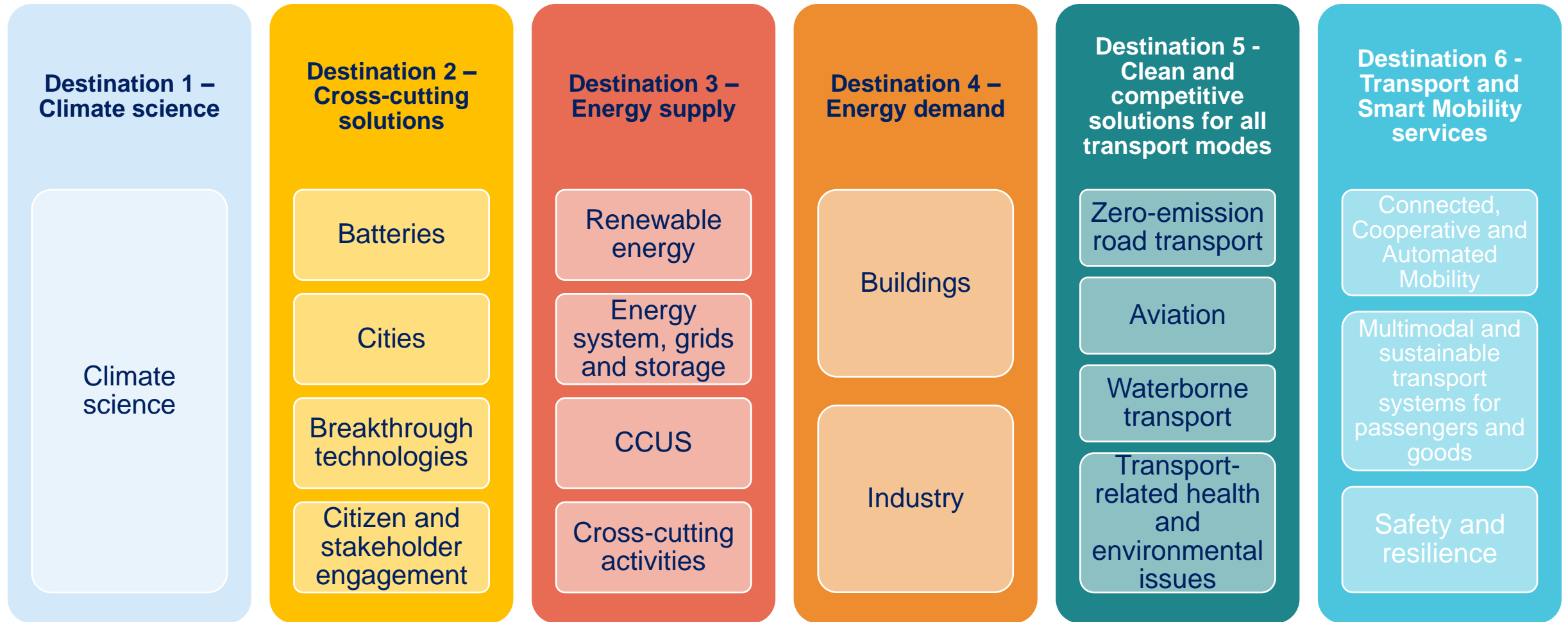
Credits: <https://www.un.org/sustainabledevelopment/sustainable-development-goals/>

Horizon Europe: investing in R&I to shape our future



* The European Institute of Innovation & Technology (EIT) is not part of the Specific Programme

Cluster 5 Work programme – overview (draft)



Hydropower – topics

- HORIZON-CL5-2021-D3-03-11: Development of hydropower equipment for hidden hydropower (RIA)
- HORIZON-CL5-2022-D3-03-08: Development of digital solutions for existing hydropower operation and maintenance (RIA)
- **Other relevant themes addressed with topics:**
 - Digital solutions addressing synergies in international renewable energy value chains
 - Energy system modelling and tools
 - Innovative forms of storage and their successful operation and integration into innovative energy systems and grid architectures
 - Innovative plug-and play solutions for system management and renewables storage in off-grid applications

HORIZON EUROPE

Info days 2021

From June 28th till July 9th

Cluster 5 - Climate, Energy & Mobility

Cluster 5 - Climate, Energy and Mobility focusses on the twin green and digital transitions to achieve climate neutrality in Europe by 2050



📅 05/07/2021 - 06/07/2021

Cluster 5 - Climate, Energy and Mobility addresses issues relevant to the twin green and digital transitions and the post-COVID 19 recovery, focussing on the transformation of our economy, industry and society with a view to achieving climate neutrality in Europe by 2050.

Thank you

Keep in touch



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