



## SNETP Forum – EU SMR Partnership – Work Stream 1

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# Content

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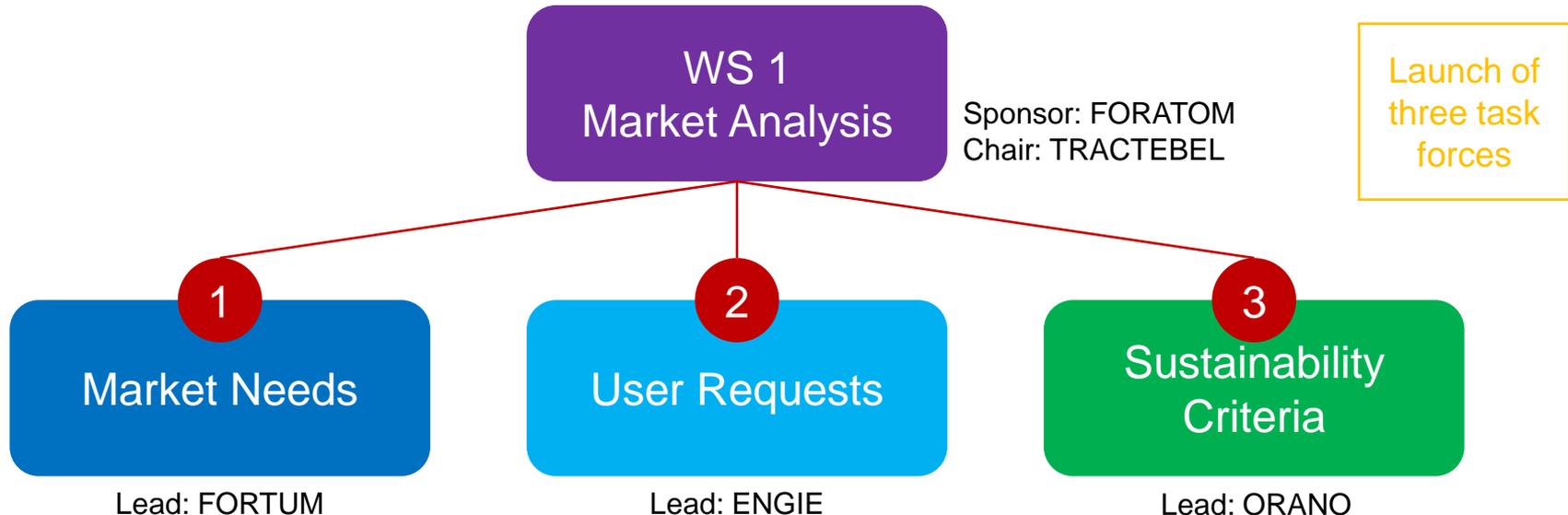
- 1. Overview of Work Stream 1 – Market Analysis**
- 2. Task Force 1 – Market Needs**
- 3. Task Force 2 – User Requests**
- 4. Task Force 3 – Sustainability Criteria**
- 5. Timeline of Work Stream 1**



# Overview of Work Stream 1 – Market Analysis



*How large do we anticipate the SMR deployment could be in Europe and what are the required technical/economical capabilities of SMRs to help reaching carbon neutrality by 2050?*



# Task Force 1 – Market Needs

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## Objective

Identify future needs of the EU energy market (electricity, industrial and residential heat, hydrogen), SMR capabilities for these needs in a context of high RES deployment, market size, and global competitiveness.

## Actions

- ✓ 1. Analyze the EU power/heat/H2 market's future needs and size
- ⚙️ 2. Identify the technical/economical capabilities of SMRs to respond to the market needs (flexibility/load-balancing capabilities, complementarity with renewables, integration to the energy mix, time-to-market...)
- ⚙️ 3. Size the corresponding market potential for SMR deployment
- ⚙️ 4. Analyze the competitiveness opportunities of SMRs with respect to other energy solutions (economies of mass, workshop production, fundability...)

Members: Fortum (Lead), Engie, EDF, Rolls-Royce, SCK CEN, CEA, Tractebel, Foratom



# Task Force 2 – User Requests

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## Objective

Several operators and industrials have expressed interest in SMRs as a technology to replace coal plants and decarbonize assets/processes.

This task shall assess the range of users, their requests/applications, and the criteria/specifications for SMRs to meet these requests.

## Actions

-  1. Identify the range of users of SMRs, i.e., EU sectors that could benefit from SMR technology for decarbonization purpose (in processes such as direct electrification, district heating, industrial heat processes, and hydrogen production)
-  2. Perform a survey among the potential users (existing power/heat fossil fuel facilities, industrial facilities, district heating users, stakeholders engaged in hydrogen generation) about their requests
-  3. Analyze the survey and propose a set of criteria and specifications for SMRs in the EU

Members: Engie (Lead), Fortum, Orano, EDF, Rolls-Royce, Vattenfall, CEA, Tractebel, Foratom



# Task Force 2 – User Requests

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## Surveys

Three customized surveys have been prepared to gather relevant data from potential SMR users:

### 1. Industrials

- Interested in industrial heat, H2, electrification, district heating, etc.

### 2. Member States

- Interested in expertise and workforce management, sustainability, back-end, etc.

### 3. TSOs

- Interested in grid flexibility and load-balancing services

Surveys will be sent together with an introductory/explanatory letter of the European SMR pre-Partnership Steering Committee



# Task Force 3 – Sustainability Criteria

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## Objective

Several operators and industrials have expressed interest in SMRs as a technology to replace coal plants and decarbonize assets/processes.

This task shall assess the range of users, their requests/applications, and the criteria/specifications for SMRs to meet these requests.

## Actions

- ✓ 1. Establish a list of sustainability criteria relevant to SMRs
- ✓ 2. Include questions on sustainability criteria in the user requests surveys
- ⚙ 3. Select a limited number of reactor technologies (SMR/AMR)
- ⚙ 4. Adapt the current information on nuclear technology to the specificities of SMRs (short report)

Members: Orano (Lead), Engie, SCK CEN, EDF, Rolls-Royce, Tractebel, Foratom



# Task Force 3 – Sustainability Criteria



## List of criteria from the TS3 – Sustainability of SMRs

### Color codes:

- **Green** → Sustainable Finance
- **Blue** → UN Sustainable Development Goals
- **Orange** → Task 3

Category	Criteria	Relevance for SMR
<b>ENVIRONMENTAL SUSTAINABILITY</b>	Substantial contribution to climate change mitigation Climate action	<ul style="list-style-type: none"> <li>• High density and reliable low-carbon energy</li> <li>• Easy retrofit of fossil-fuel units</li> <li>• Rapidly deployable</li> <li>• Solution to power small islands and remote places</li> <li>• Complementarity to high intermittent RES fed grid (introduce nuclear source to guarantee stable source of energy when coupling with intermittent RES)</li> <li>• Support production of high temperature industry (for instance synthetic fuels, chemicals, steel and hydrogen)</li> <li>• Target net Zero infrastructure and operations</li> </ul>
	Climate change adaptation	<ul style="list-style-type: none"> <li>• Resilience to severe climate events</li> </ul>
	Sustainable use and protection of water and marine resources Clean water and sanitation	<ul style="list-style-type: none"> <li>• Low water consumption</li> <li>• Low water warming</li> <li>• Minimum water contamination</li> <li>• Competitive and sustainable water desalination solution</li> </ul>
	Pollution prevention and control Good health and well-being Protection and restoration of biodiversity and ecosystems Life below water Life on land	<ul style="list-style-type: none"> <li>• Minimum environmental radioactive and hazardous chemical releases, including from normal operation, accidents, waste disposal and dismantling.</li> <li>• Minimisation of hazardousness of residual waste</li> <li>• Minimisation of land-use and lower materials footprint”</li> </ul>
<b>SOCIAL SUSTAINABILITY</b>	Transition to a circular economy	<ul style="list-style-type: none"> <li>• Allow responsible use of fuel primary resources</li> <li>• Allow and valorise treatment and recycling of used fuels and radioactive waste</li> <li>• Minimum unvaluable waste generation</li> </ul>
	Decent work and economic growth Fair transition Job creation Economic growth	<ul style="list-style-type: none"> <li>• Generation of local, sustainable and skilled jobs (including supply chain) generated by SMR deployment &amp; allowing to benefit from a local and skilled supply chain to support facility lifecycle and possible reuse of workforce from the carbon-intensive sectors</li> </ul>

# Timeline of Work Stream 1

