Support to the coordination of national research and innovation programmes in areas of activity of the European Energy Research Alliance

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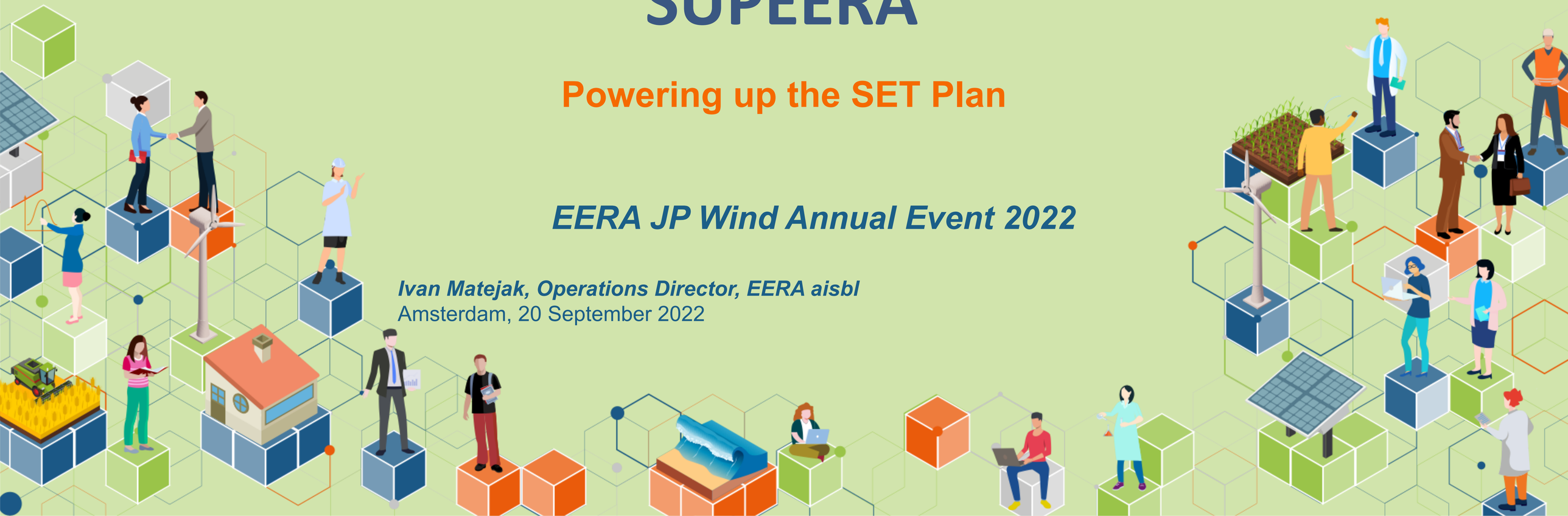
# SUPEERA

## Powering up the SET Plan

### *EERA JP Wind Annual Event 2022*

***Ivan Matejak, Operations Director, EERA aisbl***
Amsterdam, 20 September 2022



# EERA support to JP Wind Energy in 2022

October 2021
First webinar on uptake by industry

March 2022
- **JP Self-assessment process**
- JP Wind self-assessment

April 2022
First physical workshop uptake by industry
Delft, NL

April - May 2022
- **REPowerEU**
- JP Wind contribution

May 2022
- **SET Plan revamping**
- JP Wind contribution

December 2022
Second physical workshop on uptake by industry
Copenhagen, DK

# 1. SUPEERA
# Uptake by industry

# SUPEERA supports the SET Plan and the Clean Energy Transition

We...

- → Facilitate the coordination of the research community
- → **Accelerate innovation and uptake by industry**
- → Provide recommendations on policy
- → Promote the SET Plan and the Clean Energy Transition

## We connect the dots.

## Project approach → NECP analysis

→ **National Energy & Climate Plans (NECPs),** realized in 2019, outline MSs strategy, objectives and activities to meet the EU´s energy and climate targets for 2030

NB: currently under revision **(new version to be released in March 2023**)

– The plans include different **dimensions** (*decarbonisation; energy efficiency; energy security; internal energy market; research, innovation & competitiveness)* and address an array of **technologies**

→ **27 NECPs analysis**

- Status, objectives, examples of activities & collaboration, needs and barriers
- Examples from different countries/regions & across countries

→ **Key findings** Selection of most relevant six pathways (**wind**, hydrogen, storage, bio, energy systems integration and solar)

# Wind power findings in NECPs

source https://ged-project.de/

- **Onshore vs offshore wind power**
  - Onshore mature, cheaper than offshore
  - Onshore capacity growth greater towards 2030
  - Retiring onshore capacity

- **Significant onshore capacity in many MS**
  - Spain 18%, Sweden 11%, Austria 10%, Finland 9 % of annual generation 2017/2018
  - Even greater plans; Ireland 70%, Portugal > 30% in 2030, etc.

- **Great interest in offshore wind development**
  - NSEC, Baltic offshore wind cooperation
  - More than 250 GW of installed offshore wind anticipated in 2050

# Barriers related to wind power development

- Obstacles in grid planning, market arrangements, common projects, de-risking of projects, research and innovation including in new business models, as well as technical challenges
- Environmental impact, conservation and protected areas onshore and offshore
- Participation, acceptance, indigenous rights
- Power system impacts from increasing intermittent generation
- Market impacts of policies, e.g. subsidies and grants used to stimulate expansion of RES generation
- Lacking ”flexibility capacity”, incl. generation, storage and grid capacity, interconnections and more…
- These are ongoing transition issues being addressed, constantly evolving with transition

# Best practises in wind power development

- **Participation and social acceptance**
  - Ireland National Wind Energy Development Guidelines´ rules for early community engagement and community benefit measures
- **Circular economy**
  - France, recycling equipment and components in decommissioning, restoring site
- **Repowering old wind power sites with new units**
  - France, Portugal, Sweden
- **Maritime Spatial Planning and environmental assessment of offshore wind**: EIA methodology development
  - North Seas Energy Cooperation (NSEC)

# Best practices in cooperation

→**North Seas Energy Cooperation** (NSEC) consists of 10 countries with participation from the European Commission
- BE, LU, FR, DE, NL, UK, IE, NO, SE and DK

→NSEC supports the offshore grid development and the large renewable energy potential in the region
- Objective: 70 GW by 2030; 12% of the EU's electricity consumption by 2030

→The **North Sea Wind Power Hub** to connect offshore wind power production to a central offshore hub and linking it to the European mainland using interconnectors

→**Baltic countries**: Estonia and Latvia are planning a joint auction for offshore wind

→**Nordic Energy Research**: platform for cooperative energy research and analysis in the Nordic region

# Best practices in investment

→**Public funding**

- CEF Project: Latvian – Estonian joint offshore wind farm in the Gulf of Riga of 1GW
- Two projects classified as PCIs in Portugal: (i) Internal line between Pedralva and Sobrado (PCI 2.16.1); (ii) Internal line between Vieira do Minho, Ribeira de Pena and Feira

→**Tendering processes**

- Denmark: new offshore capacity cover about 50% of Danish electricity consumption in 2020 (400 MW in the North Sea, 600 MW in the Baltic Sea and 350 MW – Vesterhav Nord and Syd)
- Finland: EUR 600–750 million
- France, Germany, Lithuania

# 2. SUPEERA Workshop series

# SUPEERA Workshop series on uptake by industry

JP Wind Energy
JP Energy System Integration

JP Energy Storage
JP Fuel Cells & Hydrogen

JP CSP
JP Energy Storage
Almeria, Spain - 15 Nov

JP Wind Energy
Copenhagen, Denmark - 15-16 Dec

JP Bioenergy
TBD, 2023

# Workshop in TU Delft for JP Wind Energy & JP ESI, April 2022

- →40 participants (online & onsite)
- →Research-industry collaboration on Wind Energy and Energy System Integration
- →Key speakers: EC, EERA Joint Programmes, TNO, TU Delft, GROW, ETIP SNET, Ørsted, Van Oord

## Main takeaways (based on pre-energy crisis observations)

- **R&I is crucial to spur innovation** and enable faster carbon free technologies uptake by the industry
- In the **Netherlands, offshore wind is considered as a key technology** and the entire value chain is developed domestically
- **Floating offshore wind**, as a less commercially mature technology - still **requires large amounts** of R&D projects
- Focus on **energy system integration** and sustainability issues would be a key enabler for lowering the overall electricity costs
- The **right regulatory framework** would enable renewable electricity to be highly competitive against fossil fuels
- The **synergy between wind energy and hydrogen** production should have clear objectives (e.g. hydrogen use domestically or exported)

# Workshop in DTU, Copenhagen, Denmark (15-16 December 2022)

## Research-industry collaboration on key cross-cutting issues: Marine biodiversity

- European **expert workshop** on Marine biodiversity and offshore renewables
- **Break out sessions** to discuss 4 areas of the marine environment – offshore renewables nexus
- Open European **policy workshop** on Marine biodiversity and offshore renewables
- **Replication strategies**: From the North Sea to the rest of Europe (Baltic sea and Mediterranean)
- Panel discussion on **Copenhagen declaration** on Marine biodiversity and offshore renewables
- Open **European policy workshop** on Marine biodiversity and offshore renewables

# 3. Toolkit for Joint Programmes Self assessment

# Objectives and added value of the self-assessment

1. Provide a reference framework for **critical self-assessment**, monitoring and further development;
2. **Fosters exchange** and implementation of best practices across JPs;
3. Identify new **areas of collaboration** and synergies
4. Trigger reflection on possible **more effective** approaches (e.g., tJP)
5. Better **align JP focus to EU priorities** and novel approaches (e.g., mission orientation)
6. Develop, promote and propose **EU Centres of Excellence** as a scaled-up EU collaborative research platform
7. **Globally reshape**, where relevant, EERA body of knowledge to better support EU CET objectives
8. Bring EERA **image, reputation and influence** to a higher level into the EU political agenda
9. Attract **new members**, grow excellence network

# Self-assessment - toolkit (main sections)

## 1.- Role and strategic direction

1. Mission, goal, impact, and SRIA (e.g., alignment with corresponding ETIP, SET Plan target)

## 2. - Open Innovation Arenas

1. Open publishing, data, innovation, model development (lower TRL) (e.g., number of publications)
2. Open arena to interact with Industry – with structured IPR handling (higher TRL) (e.g., formal participation in common initiatives - ETIPs)
3. Open arena to interaction with policymakers and help shape fact-based policies at MS and EU level

## 3. - Shared resources

1. Mobility of researchers (e.g., existence of mobility schemes, level of participation - PhD, researchers)
2. Shared infrastructures (e.g., projects with shared infrastructures)

## 4. - Co-funded projects

1. Common projects with one or more funding sources (EU programs, MS, Industry) by successfully responding to calls (e.g.,number and volume of projects consistent with the SRIAs)
2. Projects initiated by ECoE members and funded by a variable geometry of MS and industry with co-funding from EU when appropriate (e.g., existence of and /or participation in ERAnet type of framework)

## 5. - Interaction with innovation partners

1. EU COM related to setting agenda and participating in EU (e.g., participation in EU agenda setting processes)
2. MS/AC government bodies or networks relevant to R&I (e.g., participation in national agenda setting processes)
3. Industrial network (ETIP, Industrial Associations, Partnerships…) (e.g., participation in industry networks)

# Self-assessment - toolkit – JP Wind Energy

| | II Open Innovation Arenas | | | Comments | |
|---|---|---|---|---|---|
| 1 | Open publishing, data, innovation, model development (lower TRL) | Zero: None | ☐ | | Please indicate good practices and examples |
| | | Low: 1-10 over the 2 last years with minimum 2 JP member co-authors | ☐ | | |
| | | Medium: 11-20 over the 2 last years with minimum 2 JP member co-authors | ☐ | We are not aiming for scientific publications from JP Wind. We have an open data initiative (see website) | |
| | | High: > 10 over the 2 last years with minimum 3 JP member co-authors | ☑ | Many publications are done with several members (mostly connected to EU projects). The EERA DEEPWIND conference leads to >10 peer reviewed scienrific publications. | Please indicate positive trends which will enable further progress |
| | Any co-created patents with at least 2 JP members in last 3 years? | | No | Maybe, but this is not in the strategy or priorities of JP Wind | |
| | Data sharing space in existence and used by JP members? | | Yes | Yes - on the JP Wind website | |
| | Common arena for data sharing and model development in existence and used by JP members? | | Yes | Yes, we created it, but we need to further improve it | Please indicate areas for improvement and possible follow-up |
| 2 | Open arena to interact with Industry – with structured IPR handling (higher TRL) | Is there any open arena for continuous interaction with industry in place? | Yes | Yes: JP Wind has 8 seats in the ETIPWind SC, annual event is organised with ETIPWind, we have regularly workshops (mostly organised by ETIPWind). We have a not so active industry advisory board. | |
| | | If an open arena for exchange of relevant data and results exists (e.g. from model runs, projects, simulations, etc.) –is it shared with industry? | No | No - that would be against competition rules. RTOs are not allowed to transfer knowledge for free to (a selection of) industry. | |
| | | Is a strategy for handling industry related IPR issues in place? | No | we have once made a strategy, in the IRPWind project. This was not a great success with large impact - we abandoned the route. This is not hindering collaborations. | |
| 3 | Open arena to Interact with policy makers and help shape fact-based policies at MS and EU level | Is there any open arena for continuous interaction with policy makers in place (yes/no)? | Yes | The SETWind project aimed to have close contacts to member states and EU. This was difficult and has ended. It is a good idea to have a process where JP Wind stimulates the interaction with EU policy makers and member states. The annual event in any case is a strategic systematic manner to have the interaction. | |
| | | If an open arena for exchange of relevant data and results exists, is it shared with policy makers: | | No | |
| | | At EU level? | Yes | at EU level the exchange is mostly on energy strategy and EU calls | |

- Initiated by EERA Secretariat in March 2022
- Pilot for 5 Joint Programmes (e.g. JP Wind Energy, JP Energy Storage etc.)
- Sent to the Management Board of the JP Wind Energy on 24 March 2022

## INTERNAL EERA

**EERA JP** → **EERA CoE**

**EECoE**

- Reaching pre-defined KPIs
- Self-assessment & Monitoring tool
- Peer Reviewed
- All JPs can become EECoEs

## EXTERNAL

→ **European CoE**

**EUCoE**

- Strategic priorities of the EC + MS/AC
- Political agreement EC + MS/Acs
- New platform & governance
- Integration with industry initiatives
- Opportunity for new funding/collaboration opportunities

# 4. The revamp of the SET Plan

# SET Plan revision

- In 2022, the European Commission is taking stock of the 14 years of experience of the SET Plan implementation, undertaking a **second revision of the Plan** to pursue several objectives:
- **Adjust to the evolving policy landscape** and in particular deliver on the EU Green Deal by making the SET Plan a more mission-oriented, impactful and politically visible tool;
- **Reinvigorate its governance** by introducing more simplification and legibility into the existing structure - without the addition of an extra layer or body – to increase its flexibility and tackle cross-thematic areas;
- **Support the European Research Area (ERA)** Policy Agenda and the goals of the Energy Union;
- Make **R&I** contribution **essential** in achieving the objectives of the Green Deal;
- **Reinforce the synergies between the SET Plan and other financial instruments** and supporting schemes (e.g. Next Generation EU, REACT-EU, ESIF, etc.);
- Accelerate **innovation and deployment** by making the SET Plan **consistent with the NECPs** and other relevant national policies and measures;
- Address **environmental and social aspects** (just transition, citizen engagement); encompass training and education challenges for energy research.

For Reference

# SET Plan revision – SUPEERA actions

- →SUPEERA supports the SET Plan's revision process, enabling to structure EERA community's contribution and to delineate R&I challenges to reach 2030 goals
- →A survey was filled in by 17/18 EERA Joint Programmes and the European Technology and Innovation Platforms (ETIPs)
- →Thorough analysis of the inputs that resulted to **high level** and **operational recommendations** on how the SET Plan should be revised. Download the full report in this link!
- →SET Plan Conference - 9-10 November 2022 in Czech R. – EERA will have three slots (one of them is about SSH)

V HIGH LEVEL AND OPERATIONAL RECOMMENDATIONS ON THE FUTURE OF THE SET PLAN

Following the information presented in the previous chapters, reflecting *inter alia* on EERA's consolidated expertise accumulated through the direct execution of the SET Plan, the aim of this chapter is to provide recommendations for the revamping process of the SET Plan at the disposal of the EC officials and relevant policy makers involved in it. The recommendations consist of two parts: the first part includes **high level recommendations** which are aligned with EERA's strategic role in the SET Plan and in the CET and aim to suggest improvements both on its content and governance structure at high level. The second part of the recommendations is based on the aggregated knowledge of the EERA Joint Programmes from their actual, practical, involvement in the execution of the SET Plan, which was collected via the SUPEERA survey and the JP Coordinators' meeting (17-18 May 2022). It aims to provide a set of **operational recommendations** categorised by overarching objectives. Both set of recommendations are summarised in **Table 9** on page 51.

5.1 EERA - High Level recommendations

EERA is committed to address the revamp of the EC SET Plan in a way that will allow for a fast-track implementation of the CET in the new political context, with particular reference to the priorities highlighted in the EC relevant strategies and policies (EGD, Fit-4-55, the recently published REPowerEU action plan, et sim). Against this backdrop and building also on the several actions already undertaken in this context both at internal and vis-à-vis the EC and other external stakeholders' level, EERA wishes to put forward the following high-level recommendations to further inform this most topical exercise.

*5.1.1 Revamp of the SET Plan – Content-related recommendations*

1. **A new mission-focused approach centred on cross-cutting collaboration**

EERA believes that the revamped SET Plan should be reshaped along the lines of a mission-focused approach based on cross-cutting collaboration to deliver effectively on the short-, medium- and long-term energy priorities. Missions should be organised along the lines of "Energy Transition Pathways" detailing concrete short-term objectives (e.g., connected to the REPowerEU Action Plan) as well as medium- to long-term ones (e.g., linked to the EU climate-neutrality goals 2030-2050). In addition, they should include systemic considerations, for example, those stemming from SSH and those understanding the energy system as a whole across sectors and energy vectors. This approach would enable a closer and much-needed collaboration across Industry (ETIPs), MS/ACs (IWG) and research (EERA JP) and allow to break away from the initial silos-based structure of the SET Plan to ensure increased speed of performance and enhanced impact.

2. **NECPs as a concrete tool for better communication between EU and MS**

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rammes
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SUPEERA survey
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# Contribution of JP Wind Energy

## Overarching comments

- The SET Plan is the only platform where country representatives can actually meet and talk about R&I priorities for energy (to be included in their respective strategies forward)
- A closer connection between national energy strategies and corresponding research funding opportunities at EU and national levels is needed
- The revised IP of the IWG Wind has incorporated R&I challenges of JP Wind Energy (through the SETWind project)
- The R&I community could better exploit the outcomes of the IP that would lead to funding opportunities both in the European as well as national context. Currently, there is no leverage available.
- The offshore wind sector should create a ECoE with the input from both ETIP Wind, IWG and research community to define the strategic goals and commit significant funding to programmatic approach.

For Reference

# Main takeaways by JP Wind Energy

| | |
|---|---|
| **Overarching strategic objectives and targets for the energy sector identified by JP Wind Energy** | Investing in renewable energy technologies |
| | Ensuring EU leadership in renewable energy technologies |
| | Accelerating the EU energy system transformation in a cost-effective way |

| | |
|---|---|
| **Long-term challenges of the energy system expected to impact energy R&I priorities as identified by JP Wind Energy** | Building an extensive offshore wind sector in Europe in all different seas |
| | Integrating large amounts of offshore wind power into the energy system |
| | Dedicating R&I efforts to address human capital and infrastructure needs |
| | Support R&I actions for wind energy technologies, wind farms operating as power plants, wind power system integration, assessment of the environmental impacts, optimal use of space, infrastructure and grid development, and manufacturing, processing and circularity |

For Reference

# Barriers and obstacles that prevent the smooth execution of the R&I components of the IP of IWG Offshore Wind

→1. **Cost**: R&I can contribute significantly to cost reduction;

→2. **Value**: Energy system integration and sector coupling is key to this, as it enables greater scale and flexibility in the market for green electricity;

→3. **Sustainability**: (Offshore): Full integration of environmental and social sustainability. Address impact on marine environment. (Onshore): citizen engagement - affected by installations, power lines etc. Circularity by design needs to be addressed;

→4. **Regional Conditions**: Offshore wind energy is currently dominated by the development in the North Sea, but other regions are now following suit with ambitious plans for offshore wind power.

For Reference

# Non-technological topics that should be addressed by one or more IPs

## R&I funding programmes and measures


Scaling up the offshore wind sector with a factor of 10 requires technology development in order to make further steps in efficiency and costs reduction. For this purpose, R&I funding programmes are required across all TRL levels.

## Social awareness, acceptance, engagement

The energy system consists also people employed to develop and manage the system, the people using its output, and the people who are affected by its presence both positively and negatively. We must think of energy system integration as a system including people and society.

## Education and Training

Realising the energy transition requires a lot of investments and activities, the people required to do the work still need to be trained and made available.

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