



ENERGY AND ENVIRONMENT CAPTECH

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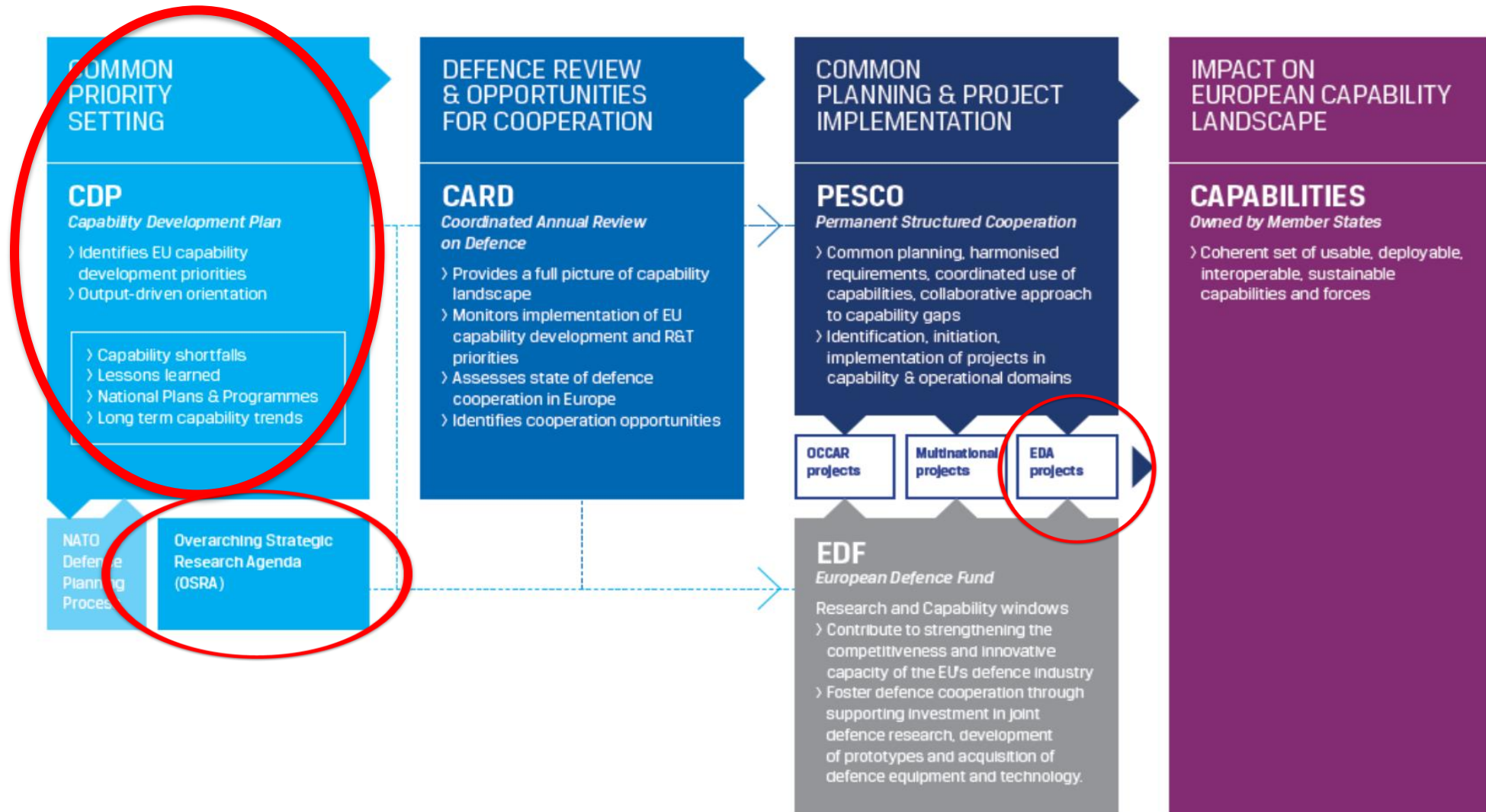
CAPTECH ENERGY AND ENVIRONMENT



The Energy and Environment Working Group (EnE WG) was formed in 2014.

...building on EDA's Military Green initiative, it was formed to consider transverse and complex nature of energy and environmental factors in defence...

EnE CapTech position in the EU capability development process



RESEARCH & TECHNOLOGY

- ▶ EDA promotes, facilitates and manages Research and Technology activities in 15 technology domains (CapTechs), in order to **develop knowledge and technologies needed for future defence capabilities.**

R&T CONTRACTING TOOLS:

- ▶ EDA studies from EDA operational budget (OB)
- ▶ Cat B projects funded by Member States, Bottom-up initiatives (Opt In)
- ▶ Cat A programmes funded by Member States, Top-down steering (Opt Out)
- ▶ Adapted mechanisms

R&T MANAGEMENT TOOLS:

- ▶ Identification of technologies - **Technology Watch and Foresight**
- ▶ Technology assessment and prioritisation:
 - **Overarching Strategic Research Agenda (OSRA)**
 - **Strategic Research Agendas (SRAs)**
 - **Technology Building Blocks (TBBs) Roadmaps**

CapTech Energy and Environment (EnE)

The EDA's Energy and Environment CapTech supports Member States' efforts to increase the **resilience** of their armed forces and the wider defence technological and industrial sector against threats related to **energy security**, dependence on fossil fuels, security of supply, water security and **climate change**.



CAPABILITY NEEDS

- ▶ Reduced reliance on fossil fuels
- ▶ Increased resilience - future operating environment & resources security
- ▶ Enhanced mission endurance, interoperability & reduced operational risk
- ▶ While maintaining capability effectiveness and controlling costs

TECHNOLOGIES & RESEARCH DOMAINS:

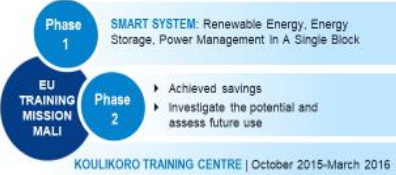
- ▶ Alternative fuels
- ▶ Energy storage
- ▶ Engine & power distribution systems efficiency
- ▶ Energy management technologies
- ▶ Solar energy
- ▶ Militarization of environmental technologies (water & waste)
- ▶ Energy harvesting /scavenging
- ▶ Wind energy
- ▶ Energy & Environment technology systems integration

SMART ENERGY CAMPS TECHNICAL DEMONSTRATOR - MALI

AIM:

- Practical implementation of an intelligent **power management system** (energy demand management, renewable production and storage) in a challenging military environment

CONCEPT



Latest News
EDA's Smart Energy Camps Demonstrator transferred to MPCC



An agreement was signed today between EDA, represented by David Boudier, JLL Boudier, and the EU's Military Planning and Conduct Capability (MPCC), represented by the General Staff, on the transfer of ownership of the Agency's Smart Energy Camps Demonstrator located at the 10th Training Mission (EU TBM10) in Mali.

The Smart Energy Camps Demonstrator (SECD) is a portable, self-contained, and self-sufficient energy system designed to provide a sustainable and secure power supply for military operations in remote areas. It is a key component of the EU's Military Planning and Conduct Capability (MPCC) and is being transferred to the MPCC for use in Mali.



OPERATIONAL CONCLUSION AND IMPACT

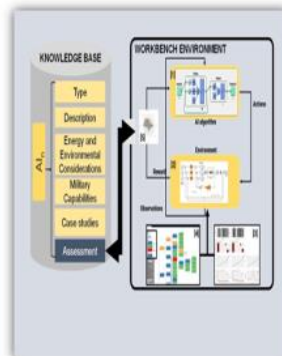
- Proof of EDA's capability to support actual EU operations
- Handover of this innovative project to the EU's MPCC
 - ✓ Enhances the operational resilience of EUTM Mali to function in harsh conditions
 - ✓ Reduces environmental footprint

ARTENET - Artificial Intelligence for Energy and Environmental performance in Defence



Aim

Explore the potential for incorporating AI to improve the energy and environmental performance within a context of military capability development



What is ARTENET producing?

- A knowledge base
- A workbench environment
- Three case studies
- Roadmaps

SMART BLUE WATERS CAMPS

- Seeks to examine **water management** on defence land from hydro-informatics, conservation, sustainability and technological innovation perspectives.
- Commitment to the project in 2016 from lead nation – EL, with CY, ES, IE, IT, and PT
- Lead technical partner: NTUA

All infrastructure (civil and military) is facing pressures due to Climatic Changes and Limited New Investment.

Two major trends:

- Smarter Infrastructures: more efficient (water & energy), more proactive (leakages & bursts, more robust (failures)
- More environmentally integrated (blue-green) infrastructures: Integrate human needs with environmental sustainability



WASTE TO ENERGY TECHNOLOGIES IN DEFENCE PROJECT

Military systems use increasing amounts of energy

Waste management is usually a problem



...turn the waste burden into useful products and energy and create a circular system...



Defence Energy Suite (DEneS) project

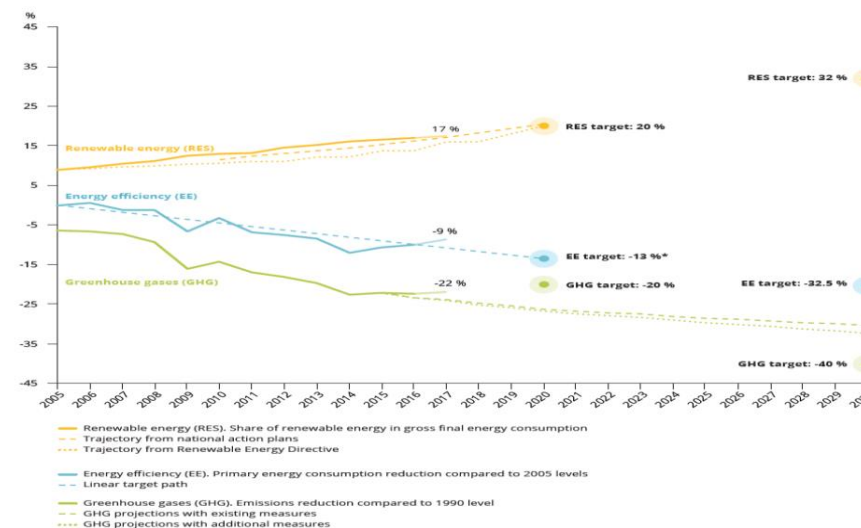
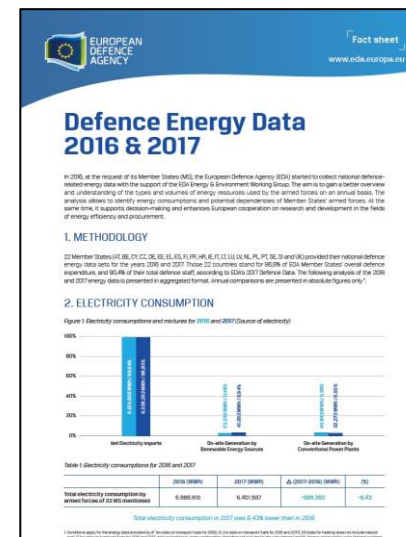
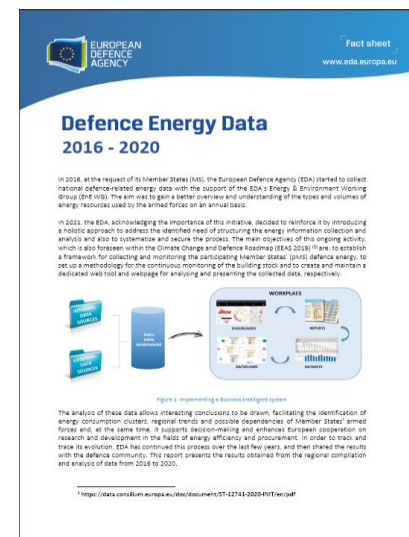
PHASE I (2015-2022):

EDA collects and analyses national defence related data to support MoD's decision-making process to

- ✓ increase energy performance
- ✓ reduce costs

PHASE II (2023-2026) :

- Establish DEneS platform
- Collect inputs and generate energy related relevant information and CO2 emissions
- Organise workshops to improve the tool
- Assess energy production/consumption models and determine lifecycle payback.





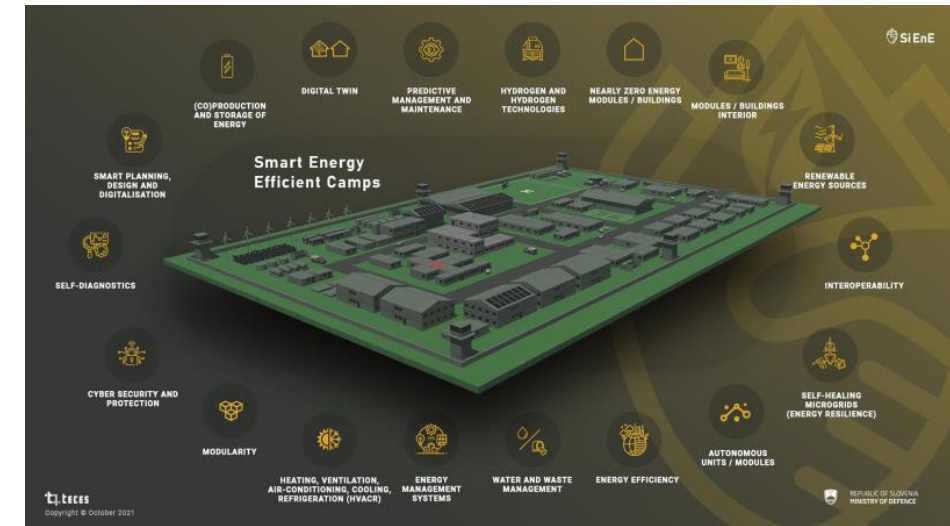
EnE Captech Relevant Activities

CAT B Project E+ZERO

(Energy Positive and Zero Emission Rapidly Deployable Buildings)

pMS: SI (L), BE, DE, FR, IT, LU, NL

- Main goal : decrease energy needs, energy by RES, fossil excluded, minimise logistics burden, flexible and rapidly deployable
- Currently at developing the Outline Description (OD)
- **Open for joining**



OB Study

Operational Energy OB Study

- Addressing through a framework contract (2023-2026) the energy tri-fold perspective for deployable camps: Energy Generation, Storage and Distribution



CF SEDSS – PHASE III

Consultation Forum for Sustainable Energy
in the Defence and Security Sector

Boosting the defence energy transition





Consultation Forum for Sustainable Energy in the Defence and Security Sector (CF SEDSS phase III)

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(CF SEDSS, H2020) and Symbiosis (Offshore Renewable Energy
in Defence, Horizon Europe)

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A European Green Deal

Striving to be the first climate-neutral continent



EUROPEAN
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European
Commission

**EDA Energy
and
Environment
Capability
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EnE CapTech

**Energy
Defence
Consultation
Forum**
CF SEDSS
H2020 funded

**Offshore
Renewable
Energy in
Defence**
SYMBIOSIS
**Horizon
Europe funded**

**Incubation
Forum for
Circular
Economy in
European
Defence**
IF CEED
**Co-funded LIFE
programme and
Luxembourg**

cross-cutting



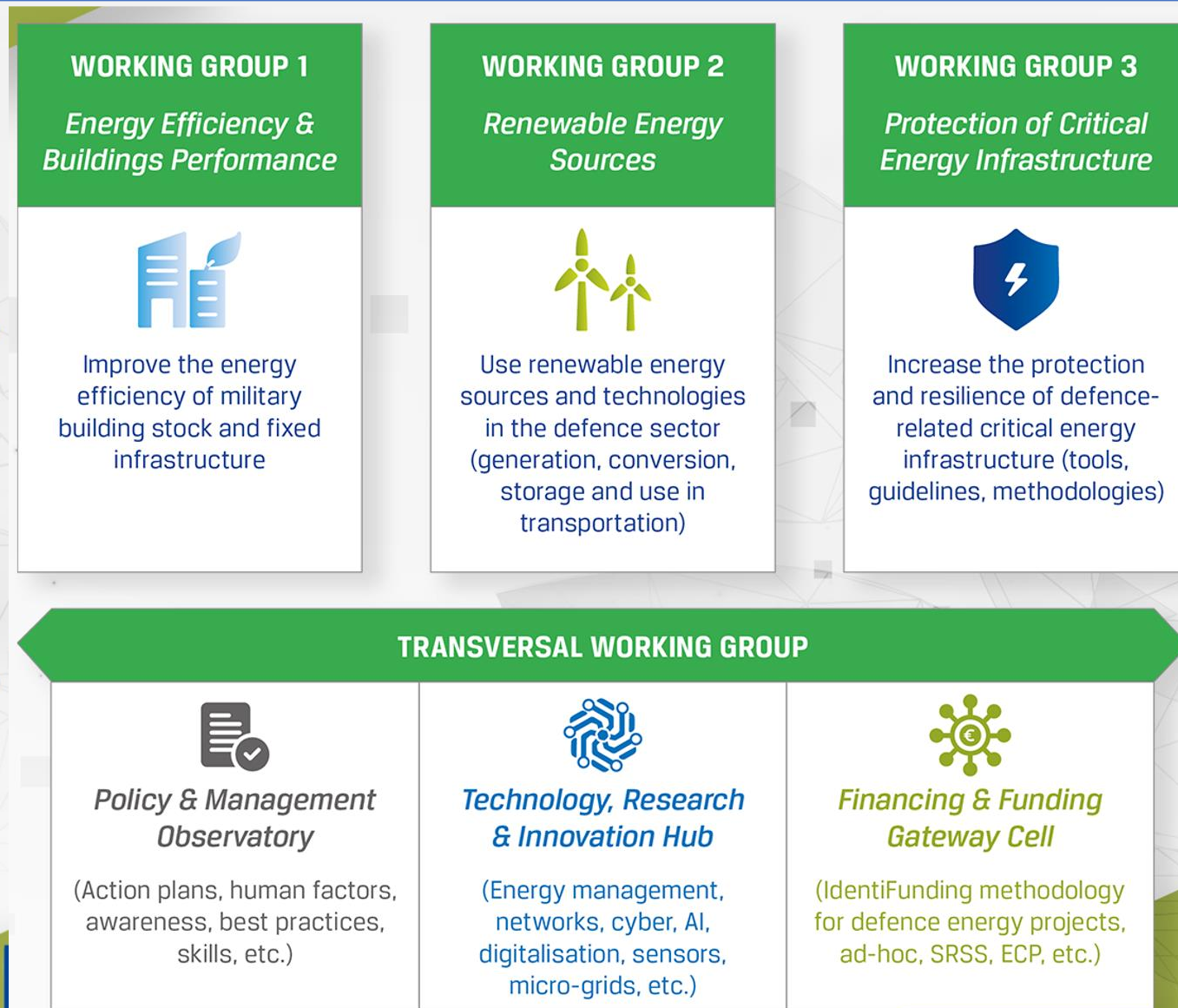
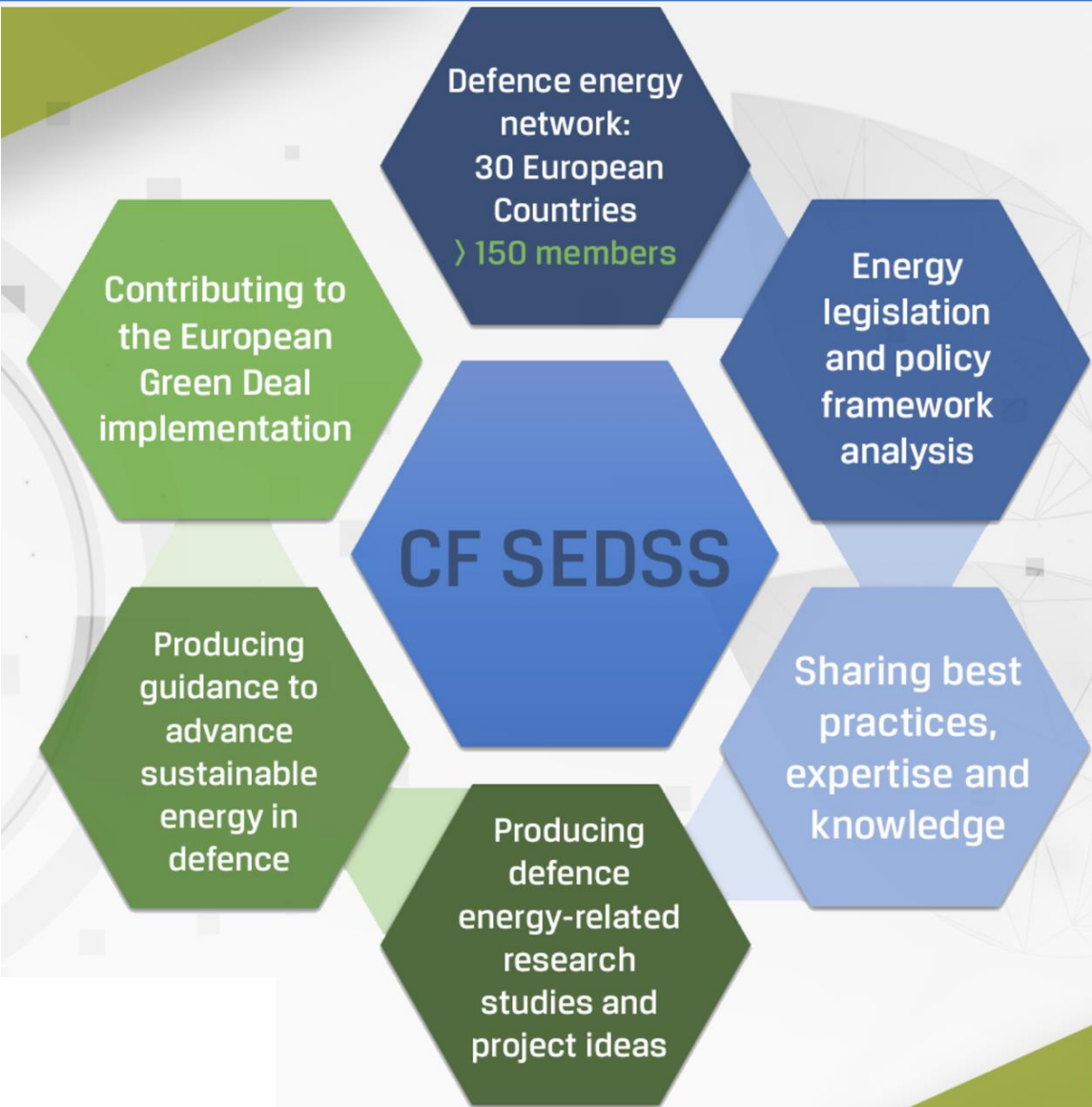
European Defence
Energy Network



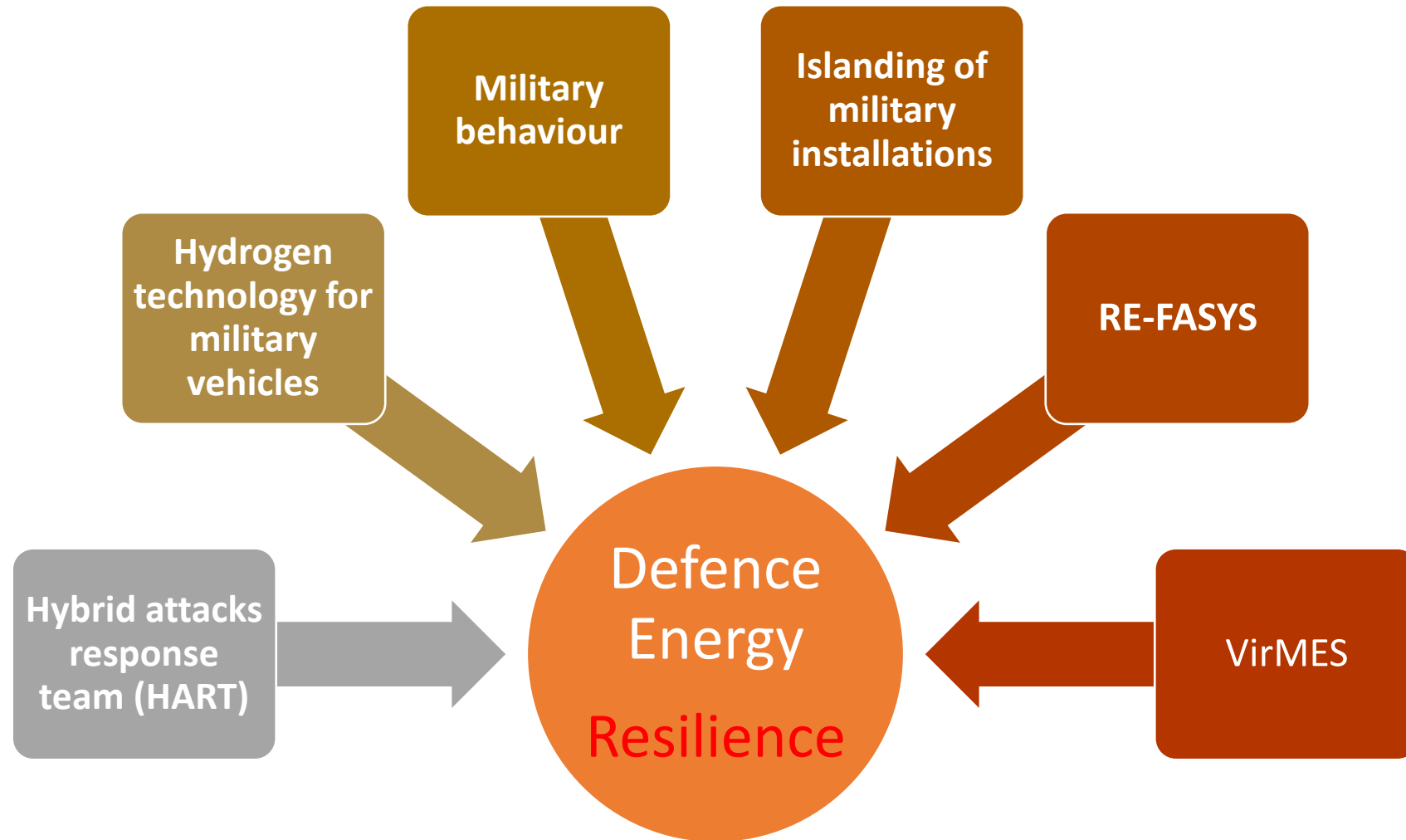
This project has received funding from the
European Union's Horizon 2020 research and
innovation programme under grant agreement
No 882171

Consultation Forum for Sustainable Energy in the Defence and Security Sector (CF SEDSS) – since 2015 (3.2 million Euro)

a European Commission initiative managed by EDA to assist the EU MoDs to move towards green, resilient, and efficient energy models



CF SEDSS III indicative project ideas



CF SEDSS III research studies

Trends in energy efficiency and buildings performance

Barriers to implementing energy efficiency measures in defence buildings

Green public procurement options in defence

Energy storage selection decision support tool for homeland defence installations

Impact of COVID-19 pandemics on defence-related CEI

European Defence Sustainable Energy Digital Profiles

EDA-JRC research studies

- **Two ongoing studies:**

- Assessing the **impacts of climate change** on defence-related critical energy infrastructure and military capabilities
- Increasing the resilience of defence-related CEI against **hybrid threats**

➤ **Table-top exercise (TTX) to explore the dependencies on the defence sector when defence-related CEI is compromised or cannot operate due to hybrid threats – May 2023 (Sofia, BG)**



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 882171.

Key upcoming events

2nd CF SEDSS III WG-1/WG-2 joint thematic workshop “decarbonising defence installations”

26-27 April 2023, Crete, EL

CF SEDSS III PCEI WG-3 Hybrid threats table-top exercise

25-26 May 2023, Sofia, BG

2nd CF SEDSS III High-level Joint Defence and Energy Meeting

8-9 June 2023, Stockholm, SE

**1st Symbiosis Plenary conference
BE**

28 June 2023,

**6th CF SEDSS III Conference and 2nd CF SEDSS III Energy Technology Solutions Conference (onsite exhibition)
ES**

22-24 November 2023, Malaga,

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CONSULTATION FORUM SUSTAINABLE ENERGY

A European Commission initiative managed by the European Defence Agency to assist the European Union Ministries of Defence to move towards green, resilient, and efficient energy models.



Home Phase I Phase II Phase III Policy & Legislation Funding Media

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News

11 OCTOBER 2022

Consultation forum explores
hydrogen technologies for green
defence



News

04 JULY 2022

1st Energy Technology Solutions
conference and exhibition held



News

29 JUNE 2022

Consultation Forum concludes first
round of defence energy
deliverables

SUSTAINABLE ENERGY FOR SUSTAINED DEFENCE

Thank you for your
attention

SYMBIOSIS: OFFSHORE RENEWABLE ENERGY FOR DEFENCE

A European Commission and European Defence Agency action to promote coexistence of offshore renewable energy projects and defence operations and systems.



SYMBIOSIS

Offshore renewable energy for defence



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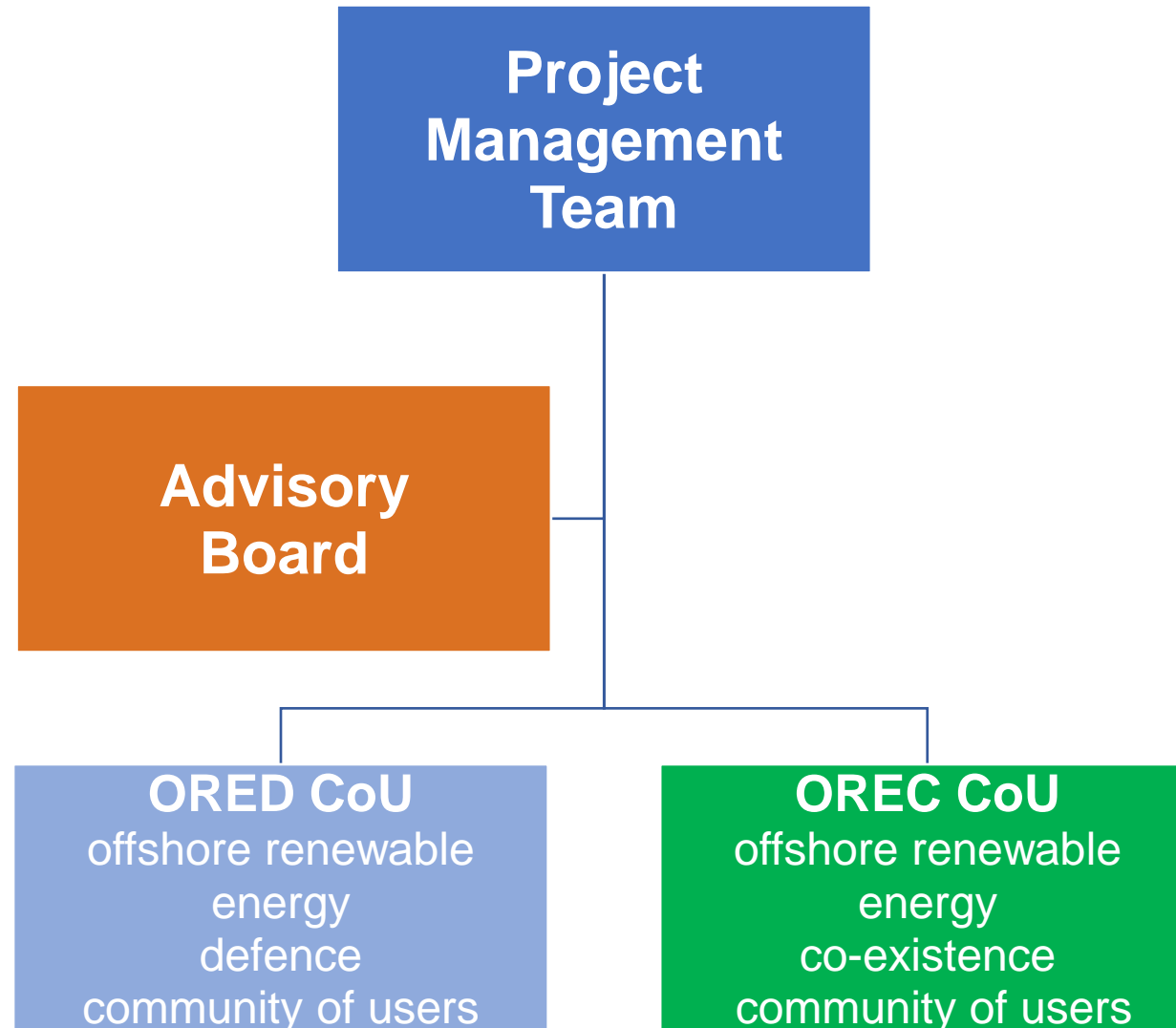


This project has received funding from the European Union's Horizon Europe Coordination and Support Actions under the grant agreement No 101077477

Symbiosis - Offshore Renewable Energy for Defence

- **29 August 2022:** CINEA (granting authority) and EDA **signed the grant agreement** (GA) of the new ***Symbiosis project***.
 - **1 October 2022:** **Symbiosis project** was launched and will have a duration of 30 months, i.e., until 31 March 2025
 - **Budget:** EU contribution of EUR 2 000 000
 - 4 October 2022: pre-financing payment
 - **Type:** Horizon Europe Coordination and Support Action (CSA)
- ✓ *As this project has been conceptualised in the context of the CF SEDSS and has strong links with WG-2 RES, it will build on the best practices, including administrative, contractual and financial aspects followed in EDA.*

SYMBIOSIS – Structure



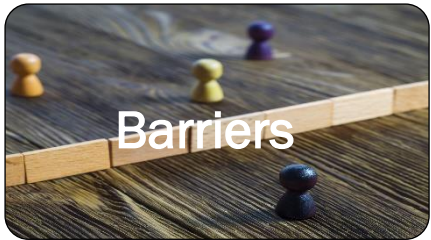
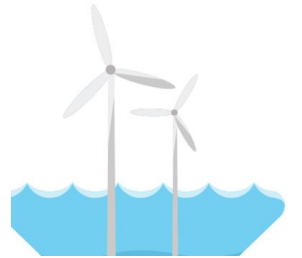
SYMBIOSIS - Offshore renewable energy for defence

First EDA Horizon-Europe funded project to improve co-existence between defence and offshore renewable energy developments (EUR 2 million)



Stakeholders

- ✓ *Identify key stakeholders in reaching a shared understanding of each other's concerns and requirements and create conditions for coexistence*



Barriers

- ✓ *Map the maritime defence areas for military activities, assess their suitability for the deployment of offshore renewable energy projects and identify barriers, and risks constraining their development and exploitation*



Solutions

- ✓ *Present solutions to address the identified barriers and provide recommendations for enabling sustainable conditions for coexistence*

Advisory Board Composition

- The Advisory Board will be established by EDA, in coordination with DG ENER.
- It will consist of selected prominent experts (approximately 10) coming from:
 - EDA staff and its network (CF SEDSS, EnE WG, CapTech Radar, etc);
 - Relevant EU institutions (DG ENER, CINEA, DG MARE), EU MS with advanced offshore energy defence-related projects;
 - On a case-by-case assessment of skillful individuals from the private sector (RTOs, industry, and academia).

Symbiosis

community of users

Offshore renewable energy defence community of users ORED CoU

- EU MoDs and armed forces
- On a case-by-case assessment, and subject to the approval of the EDA's pMS, experts from Norway, NATO, UN, DEFNET.

SYNERGIES

Offshore renewable energy co-existence community of users OREC CoU

- Member States: governmental and public entities
- EU institutions, bodies and agencies
- Concerted actions for RES
- Experts from the industrial community and private sector: SMEs, designers, developers, investors, RTOs, academia, etc.

Symbiosis - events plan 2023-2025



Two conferences (first – 28 June 2023 in Brussels and second – 2024) – 100 experts each



Three Advisory Board meetings (10 experts from the defence and civilian community)



Five regional workshops (20 experts each, cover the entire EU's maritime space: the North Sea, the Baltic Sea, the Black Sea, the Mediterranean and the Atlantic)



Five ad-hoc expert group meetings (8 experts each, development of regional multinational collaborations leading to specific projects)



Bilateral meetings with the contractor (support mapping the eligible defence maritime areas for deploying offshore renewable energy and executing simulation modelling)

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SYMBIOSIS: OFFSHORE RENEWABLE ENERGY FOR DEFENCE

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SYMBIOSIS

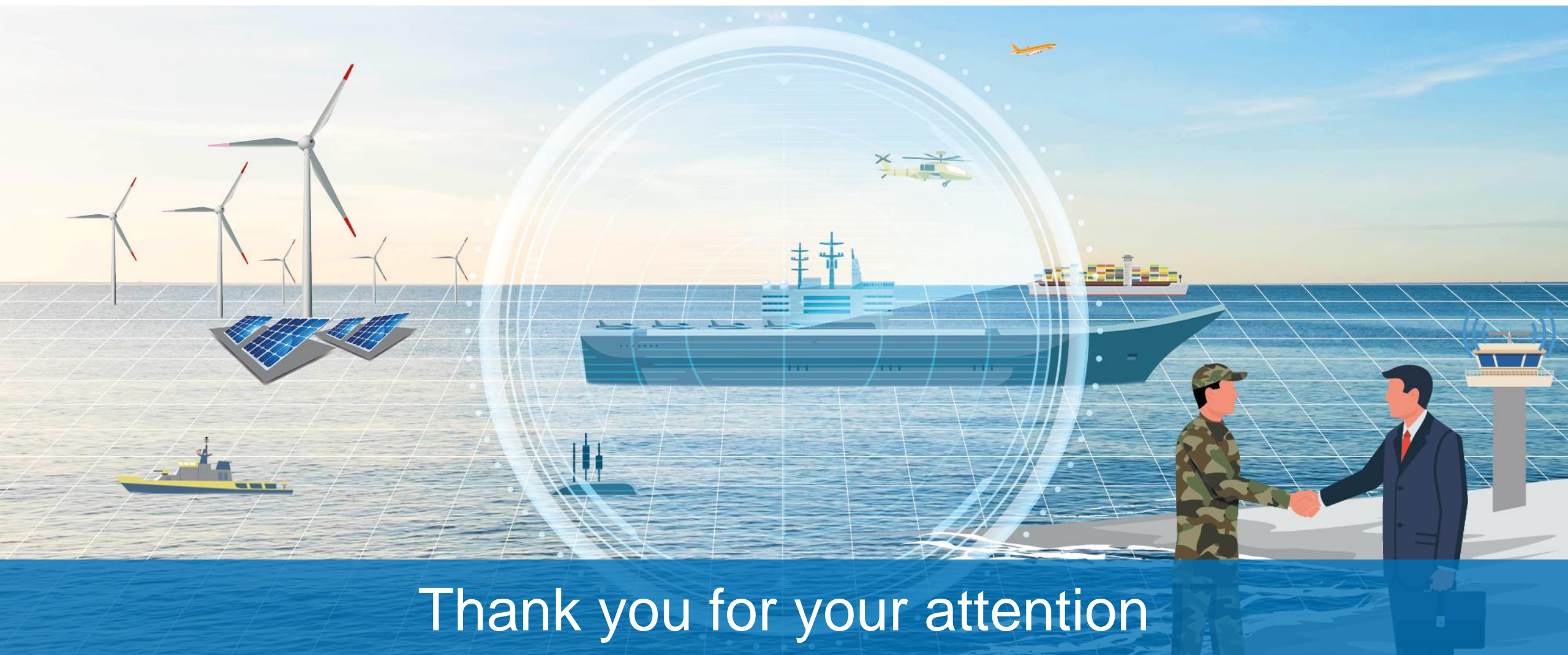
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in European
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IF CEED

cross-cutting



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