Webinar organised and hosted by nereus network of european regions using space technologies

esa

Space solutions for the green energy transition

Asimina Syriou
Energy Lead
Business Applications and Space Solutions
Directorate of Commercialisation, Industry and Competitiveness

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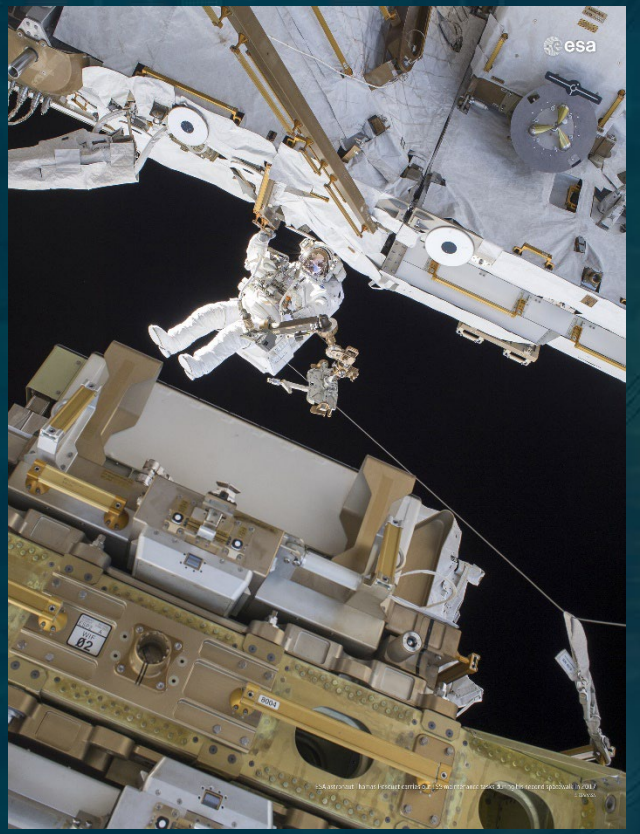
We Are European Space Agency (ESA)

EUROPE'S GATEWAY TO SPACE

WHAT	23 Member States, 5000 employees
WHY	Exploration and use of space for exclusively peaceful purposes
WHERE	HQ in Paris, 7 sites across Europe and a spaceport in French Guiana
HOW MUCH	€6.49 billion = €12 per European per year

What do you picture when you think of space?

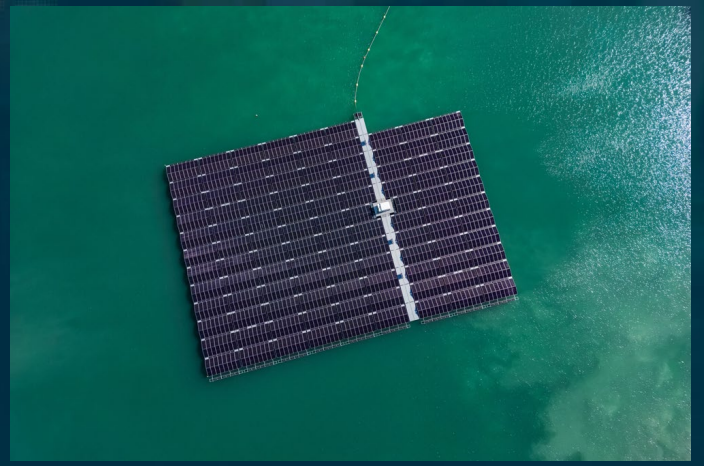
Maybe this?



But space can also be this…

How?

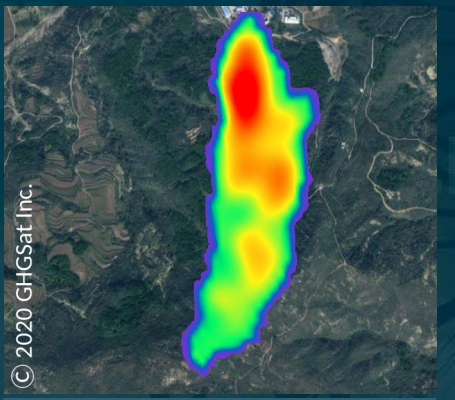
Locating…Visualising…
Connecting…



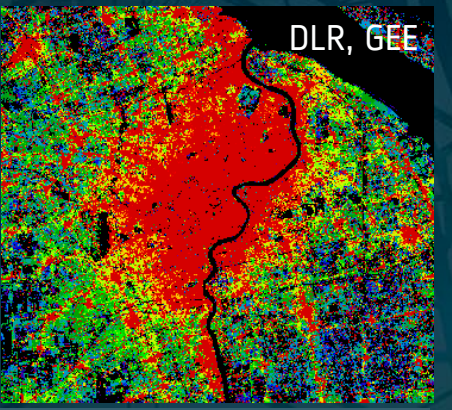
What we can ‘see’ from space

Deforestation monitoring

Vehicle detection



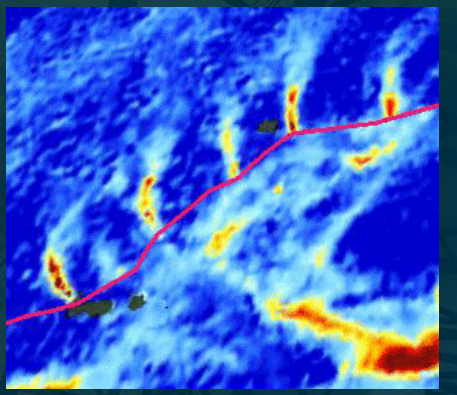
Methane over coal mine, China



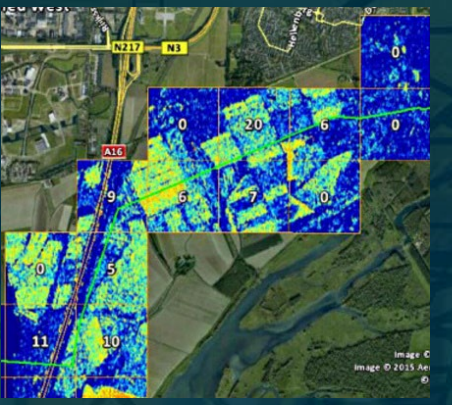
Settlement growth

Water pollution

Land cover and vegetation growth



Nitrogen dioxide over Siberian pipelines



Monitoring pipelines

The role of Business Applications and Space Solutions (BASS)

What we offer

Our aim is to work together to make your idea commercially viable, with:

- Zero-Equity Funding (€50K-€2M+)
- Tailored Project Management Support
- Access to our Network and Partners
- Use of ESA Brand for Credibility

A variety of markets and space technology

ESA Business Applications and Space Solutions, work across various markets/verticals. Today's presentation focus is on the **energy** market.

We advocate for space technology (SatCom, SatEO, SatNav, etc.) and complementary tech (IoT, AI/ML, Robotics, blockchain, etc.).

Advancing Clean Energy with Future Tech and Digitalisation

Clean Energy Transition:

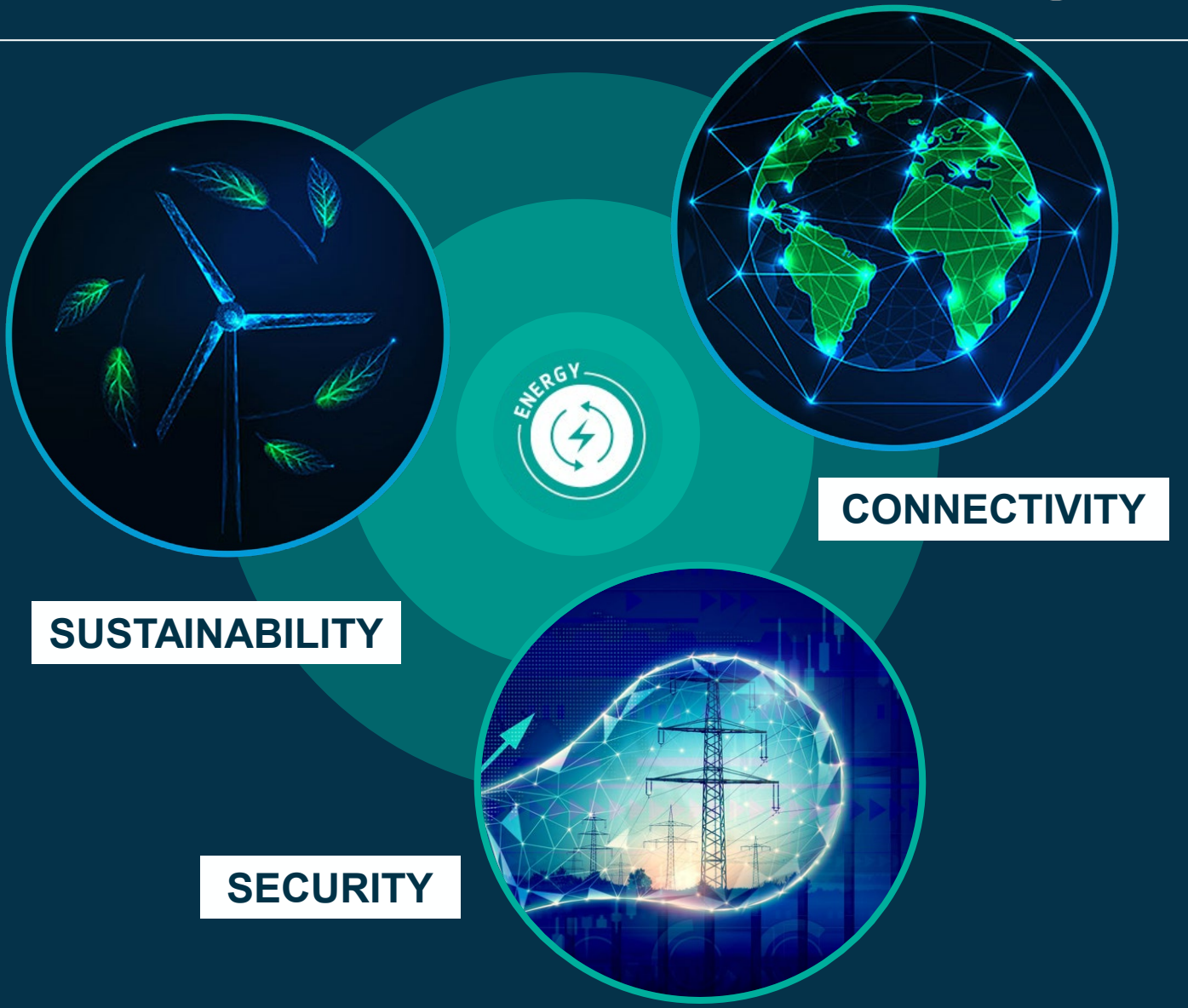
Countries are transforming the global energy sector by adopting clean energy transitions, broadening energy security to include availability, accessibility, affordability, and acceptability.

Future Technologies:

By 2030, electricity generation will largely rely on variable renewables, with diverse low-carbon technologies developed beyond 2030.

Role of Digitalisation and Satellites:

Digitalisation, satellite connectivity, and applications will enhance energy security and support the green energy transition.



Energy Roadmap & Initiatives

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PAST


Hydro Energy


Marine Energy


Smart Grids


Sustainable Digitally Connected Solutions for the Commodities Crisis


Space for Microgrids


Digital Transformation for Green Economy


Space Acting for Decarbonisation


Decommissioning of Energy Assets


Waste to Energy


Space & Digital Transformation for Green Energy Utilities


Energy Task Force launch in Oct. 2022

2017 - 2024

CURRENT


Space for Infrastructure (Energy)


Space for Electromobility


Commercial Applications for space enabled robotics (Energy)


Maritime Decarbonisation

2nd Energy Task Force Steering Committee Meeting in Dec. 2024

2024

FUTURE AREAS


Green Hydrogen as a Sustainable Energy Source


Integrated Digital Solutions for the Energy Sector


Commercial Applications of Space Weather Data

2025


Heat Sector Decarbonisation


Assets Management

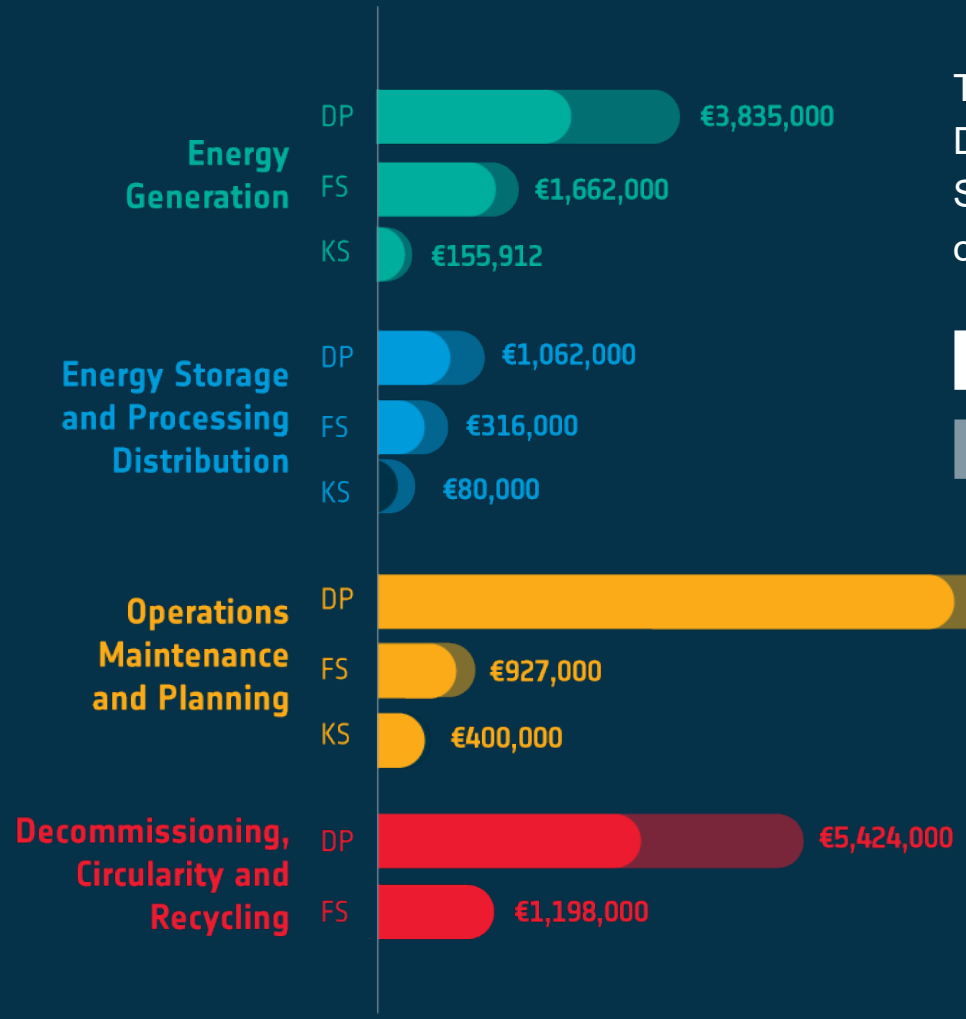

Advanced Batteries Integration/ Recycling

2026

2027

→ THE EUROPEAN SPACE AGENCY

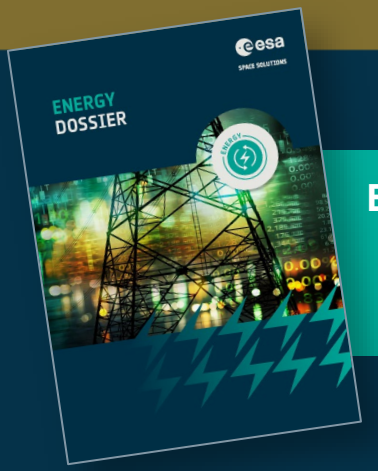
ESA BASS Energy portfolio



Total cost of downstream activities Demonstration Project (DP), Feasibility Study (FS) and Kick Start (KS) per stage of the energy life cycle (2018-2023)

Sum of **ESA Price**

Sum of **Industry Contribution**



Energy Dossier launched, May 2024

47
Activities Implemented(*)

34m
Euros invested
16m from Industry

15
Member States

(*): in the period of 2018-2023

Example use-cases on Energy where space technology has been utilised

How can space technology contribute – what has already been done

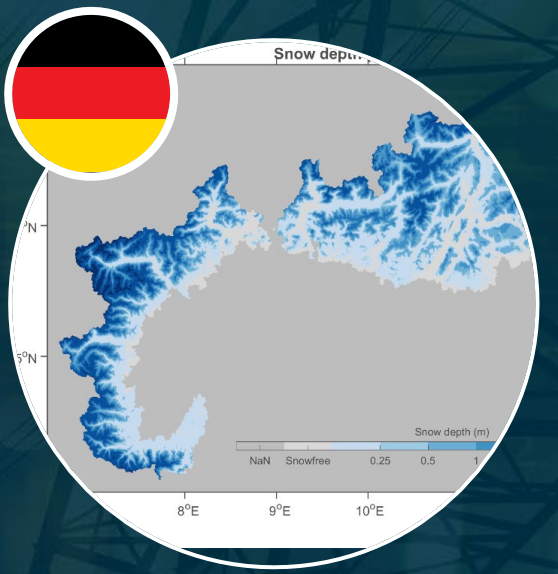
CLIMATE RESILIENCE

Example: SIM, LiveEO

- Space-enabled full-stack solution for infrastructure monitoring (SIM) Platform: Targets railway, energy, and pipeline operators in Europe and North America
- Predictive Maintenance: Identifies issues to cut operational costs by 25%

ENERGY SECURITY

Example: SNOWPOWER, EOMAP GmbH & Co. KG



- SnowPower: Revolutionises hydropower management in mountains.
- Decarbonisation: Eases hydropower management, cuts carbon footprint, and boosts clean energy.
- Performance: Improves snow parameter estimation by 20%

The Energy Task Force & the way forward

Energy Task Force for Innovation in Energy through Space

Task Force Members:

areg Aberdeen Renewable Energy Group
Decommission
E.DSO SHAPING SMARTER GRIDS FOR YOUR FUTURE
entsoe
EPRI
Global Alliance for Sustainable Energy
IESA India Energy Storage Alliance
Net Zero Technology Centre Technology Driving Transition

Latest Members:

dena Deutsche Energie-Agentur
دیوا dewa
FRIENDS OF SUSTAINABLE GRIDS

Key Objectives

- Utilise space technology to enhance sustainable services for the green energy ecosystem and promote a sustainable green economy.
- Amplify the impact of space-based applications in the energy sector through collaboration with energy stakeholders.

Priority Areas

- Renewable Energy (Net Positive)
- Ensuring Energy Supply Security
- Decarbonisation
- Small-scale Renewable Generation
- Electric Mobility Planning
- Energy Asset Operation & Maintenance
- H_2 Green Hydrogen & Alternative Energy Carriers
- Circularity & Decommissioning

Integrated Digital Solutions for the Energy Sector

Fixed Call for Proposals (CfP):

The call aims to support the development of sustainable space-based services to advance resilience and sustainability in the energy sector.

With a focus on digital transformation, the call encourages innovative solutions that integrate digital tools such as IoT, AI, blockchain, AR/VR, and digital twins.

These solutions aim to optimise electricity grid management, enable predictive maintenance, support energy storage, improve construction logistics, and streamline renewable energy management.

With support from the Energy Task Force members:

https://business.esa.int/energy-task-force

Important info:

- Funding: up to 50% (80% for SMEs) of development costs
- No IP or equity retention
- Open to Feasibility Studies and Demonstration Projects
- Opening date: 13 February 2025
- Closing date: 02 May 2025

WEBINAR 12 February 2025 - 14:00 CET REGISTER

https://business.esa.int/funding/call-for-proposals-non-competitive/integrated-digital-solutions-for-energy-sector

Green Hydrogen as a Sustainable Energy Source

Feasibility Study (FS)

This Invitation to Tender invites proposals for feasibility studies for services that explore innovative uses of space technology to advance green hydrogen as a sustainable energy source.

With a focus on evaluating practical applications of green hydrogen across multiple sectors, including:

Energy, Transportation, Maritime, Smart Cities

With support from the Energy Task Force members:

areg · dena German Energy Agency · EPRI · WWF

https://business.esa.int/energy-task-force

and **WWF Germany**

Important info:

- Funding: ESA will co-fund 80% of the acceptable cost, up to €200K, per awarded study
- No IP or equity retention
- Open to Feasibility Studies
- Opening date: 23 March 2025
- Closing date: 30 May 2025

WEBINAR 26 March 2025 - 11:00 CET **REGISTER**

https://business.esa.int/funding/open-competition/green-hydrogen-sustainable-energy-source

Commercial Applications for Space Weather Data

Enabling Study (ES)

This Invitation to Tender invites proposals for enabling studies to assess the technical and economic viability of commercial services that leverage space weather data in a subset of the following domains (and/or alternatives adequately justified by industry).

Domains include:

Electricity networks, natural resource pipelines, aviation, railway, etc.

With support from **the Energy Task Force members**

https://business.esa.int/energy-task-force

Important info:

- Funding: ESA will fund 100%, €200K per awarded study
- No IP or equity retention
- Open to Enabling Feasibility Studies
- Opening date: 19 February 2025
- Closing date: 9 May 2025 (TBC)

WEBINAR 18 February 2025 - 11:00 CET REGISTER

https://business.esa.int/funding/open-competition/commercial-applications-space-weather-data

Thank you!

asimina.syriou@esa.int

ESA BASS Energy Lead

https://business.esa.int/energy