

# Clean Energy Trends and Opportunities for EO Commercialisation

Living Planet Symposium 2022

## COMMERCIALISATION GATEWAY

Space for Business | Business for Space



# ESA COMMERCIALISATION GATEWAY

## Space for Business | Business for Space

### Areas where ESA can help you



AVIATION



DATA PLATFORMS  
AND IOT



EDUCATION AND  
TRAINING



ENERGY



ENVIRONMENT,  
WILDLIFE AND  
NATURAL  
RESOURCES



FINANCE,  
INVESTMENT AND  
INSURANCE



FOOD AND  
AGRICULTURE



HEALTH



INFRASTRUCTURE  
AND SMART CITIES



MARITIME AND  
AQUATIC



MATERIALS,  
MANUFACTURING  
AND MINING



MEDIA, CULTURE  
AND SPORT



SAFETY AND  
SECURITY



SPACE  
TECHNOLOGIES

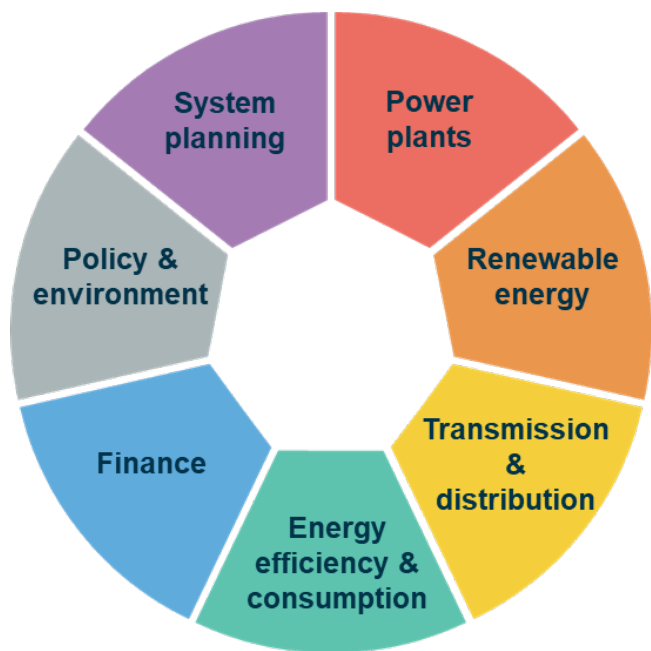


TOURISM



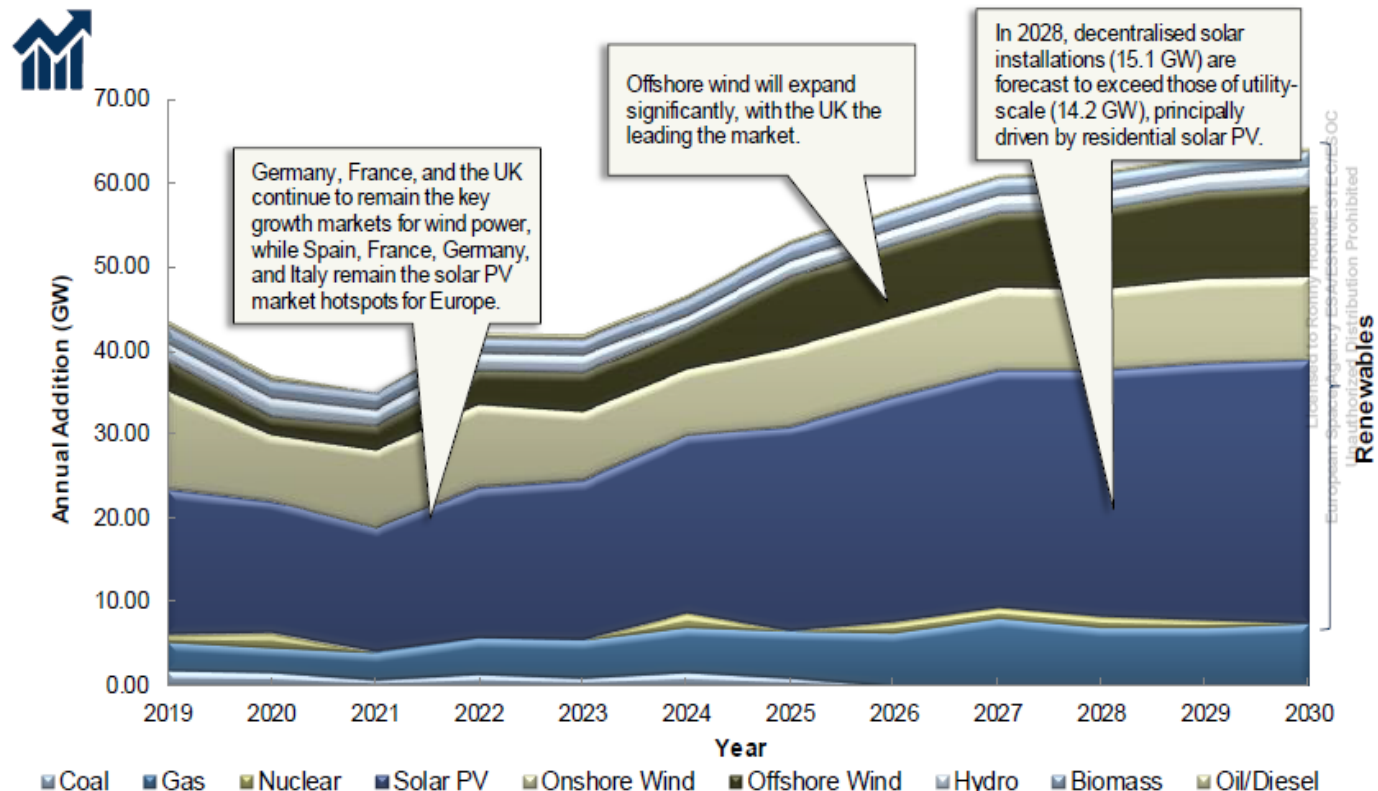
TRANSPORT AND  
LOGISTICS

# Clean Energy Trends in Europe



Policy Push

Cost Competitiveness

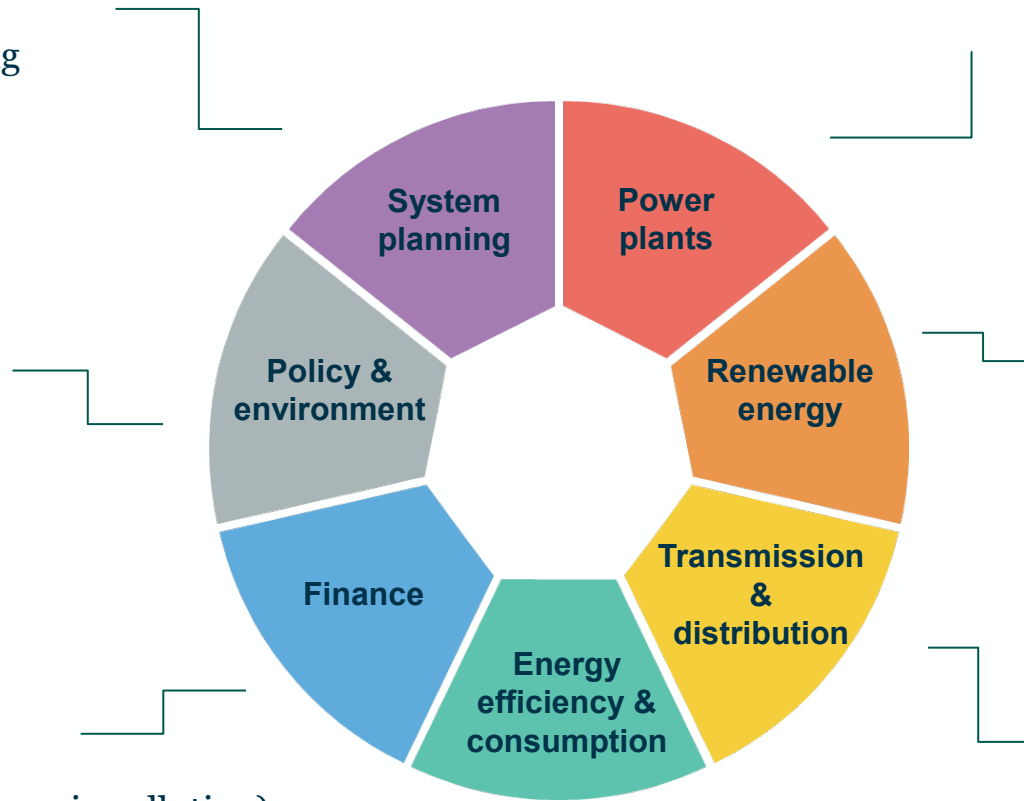


- System planning, monitoring and supervision
- Demand and supply forecasting and management
- Landscape and land use planning
- Stocktaking of DR
- Mapping of access to electricity

- GHG pollution policy evaluation and monitoring (e.g. methane, CO2)
- National and regional statistics
- ODA and climate funds

- Raw data for ESG monitoring (e.g. air pollution)
- Asset level data
- Support mapping, identification, characterisation and monitoring of energy assets and transition paths
- Closing of attribution gap

- Anthropogenic emissions of CH4 and CO2 for industrial emission monitoring and regulator compliance and reporting
- Physical asset management and monitoring



- Location identification and spatial planning (e.g. off-shore, urban roofs)
- Efficiency increase (changing fed-in tariffs)
- Bankability estimations & trading forecasts
- Environmental impact monitoring (offshore and on-shore)
- Estimate yield forecast production

- Grid vegetation and weather events monitoring for risk reduction (snow, ice load, and wind)
- Thermal analysis of power lines
- Pipeline planning and monitoring (e.g. methane leakages)
- Ground movements

- Thermal imaging: identification of heat losses from buildings



THANK YOU  
FOR YOUR ATTENTION

# Emerging Needs for Earth Observation

Financing

Market Design  
& System  
Planning

Energy  
Generation

Transmission  
and  
Distribution



New green investments, but also financing of climate adaption and mitigation of brown energy



Monitoring of Environmental, Social and Governance (ESG) standards, especially GHG emissions



EU Taxonomy, Sustainable Finance Disclosure Regulation (SFDR), Non-Financial Reporting Directive (NFRD) -> increasing transparency



Emergence of green bonds and KPI based loans and bonds (also for climate adaption & mitigation)

- Lack of comprehensive data set and need for objective data

- Building on environmental monitoring experience



- Translate images/results into finance language (KPIs, benchmarking, time series data, ... )

- Support mapping, identification, characterisation and monitoring of energy assets (e.g. geolocation through AI (type of plant) or cross-references with existing data sets) and closing of attribution gap

# Emerging Needs for Earth Observation



Increasing number of small power producers, growing grid complexity and need for flexibility



System planning, monitoring and supervision for landscape and land use



Energy system modelling including forecasting along mid- and long-term horizons (10-15 years)



ODA priority list: solar energy, electric power transmission, renewable energy -> growing climate funds



- Build on climate and metrological data and integrate into related software
- Understand stock of DER and combine with demand side indicators
- Expand data sets to other regions and support for capacity development (e.g. developing areas, islands, ... )
- Alternative for energy related bottom-up data collection



# Emerging Needs for Earth Observation

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**Solar** most competitive + new trends (Building-integrated PV, floating PV, road-integrated PV, utility-scale)



Europe hosts 1/5 of total **hydropower**: focus on retrofitting for flexibility and environment, but also small, local generation



**Offshore wind** on the rise in Europe and worldwide: Deep water, floating, hybrid, urban



**Wave energy**: huge potential with a unique positioning of European industry, but relatively low TRLs and high costs



**Biomass**: power generation capacity grew by 4% in 2019, growing use in transport and heating



- Location identification and spatial planning (e.g. off-shore, urban roofs)
- Bankability and output estimations (for trading but also as per changing fed-in tariffs)
- Environmental impact monitoring (offshore and on-shore)
- Estimate yield forecast production



# Emerging Needs for Earth Observation



Smart grids: next-generation electrical power grids for real-time grid management



Infrastructure resilience: Planning, construction, and monitoring of grids and pipelines



New local sensors, platforms and “prosumers”, participating in energy generation



Increasing electrification, active energy management and smart homes



- Risk reduction (weather, vegetation, ... ) and thermal analysis of power lines

- Grid vegetation and weather events monitoring for risk reduction (snow, ice load, and wind)

- Automatic pipeline monitoring (e.g. methane leakages)

- Thermal imaging: identification of heat losses from buildings

# The ESA Commercialisation Gateway

Market access  
intelligence for ESA programmes,  
Investors and ESA  
Commercialisation Network

A 'one-stop shop' service for commercial  
opportunities, creating links between new  
and emerging business sectors and ESA  
capabilities



Raise awareness and enable  
the use of space infrastructure  
and data for applications and  
services in Space and on Earth

Help newcomers find the path to  
ESA programmatic  
opportunities

Provide an easy access to **ESA Commercialisation network** of resources:  
ESA BICs,  $\Phi$ \_LabNET, Accelerators, Investors, Patents, Transfer of technology,  
SME initiatives, Business and technical expertise, End-users