

**SUSTAINABLE ENERGY WEEK 2023**  
**BUILDING RESILIENT ENERGY SYSTEMS**

11-15 SEPTEMBER 2023 | PALAIS DES NATIONS | GENEVA



6. Cross-cutting and inter-sectoral cooperation to integrate renewable energy into energy systems

# Synergies between renewable energy and other technologies

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# Background/Context

Europe

The largest single market worldwide



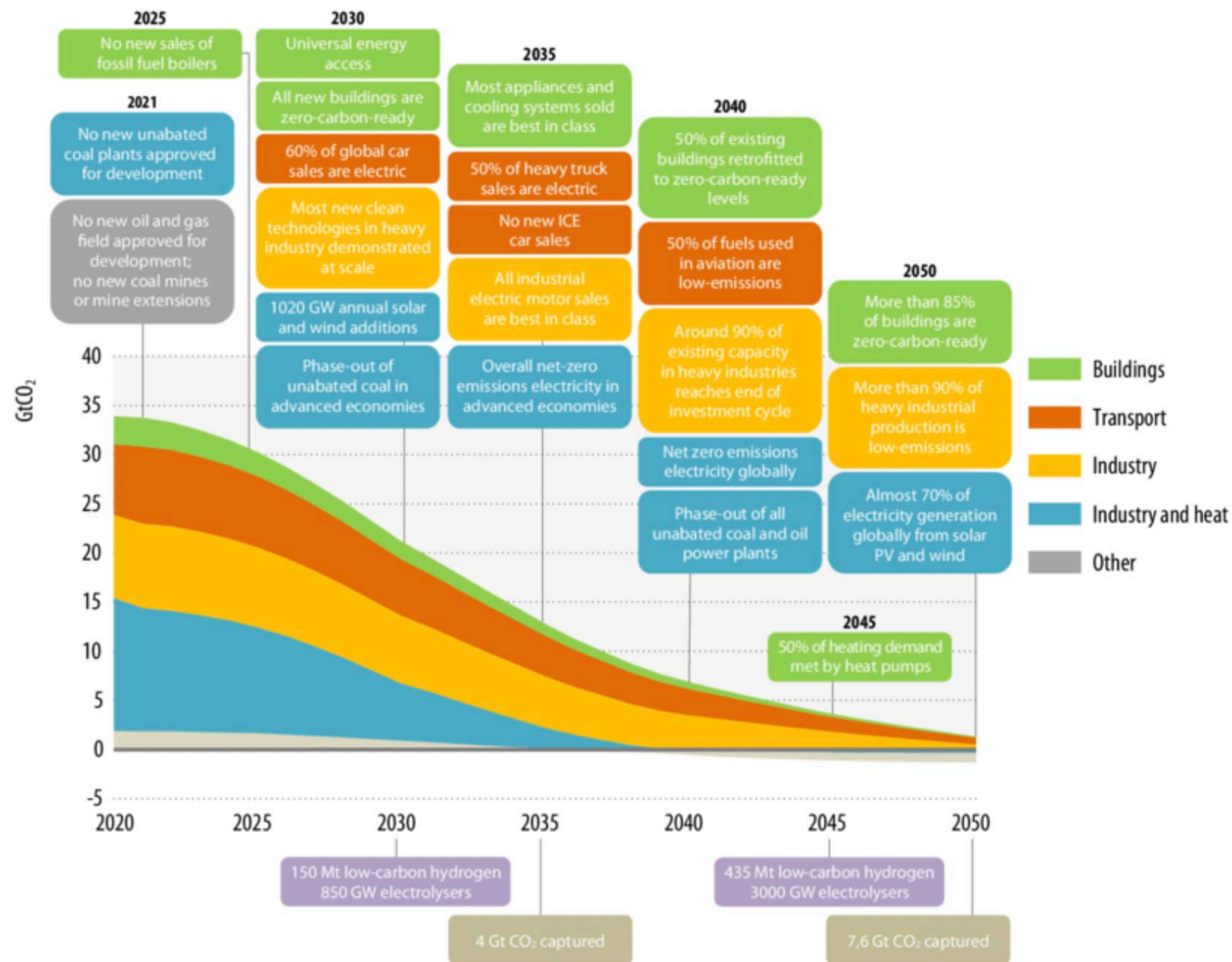
## Europe key figures

- 50 countries, 750 M people, EU27 450 M, 24 languages
- **Green Deal 1 trillion € public and private investments**
- 12600 cities signed the Net Zero (covenant of Mayors)
- **2030 target of -55% CO2 emissions (vs 1990 level),**
- **2050 Carbon neutral**
- 2030 target of 65% Electricity from Renewable
- Europe is the largest single market worldwide





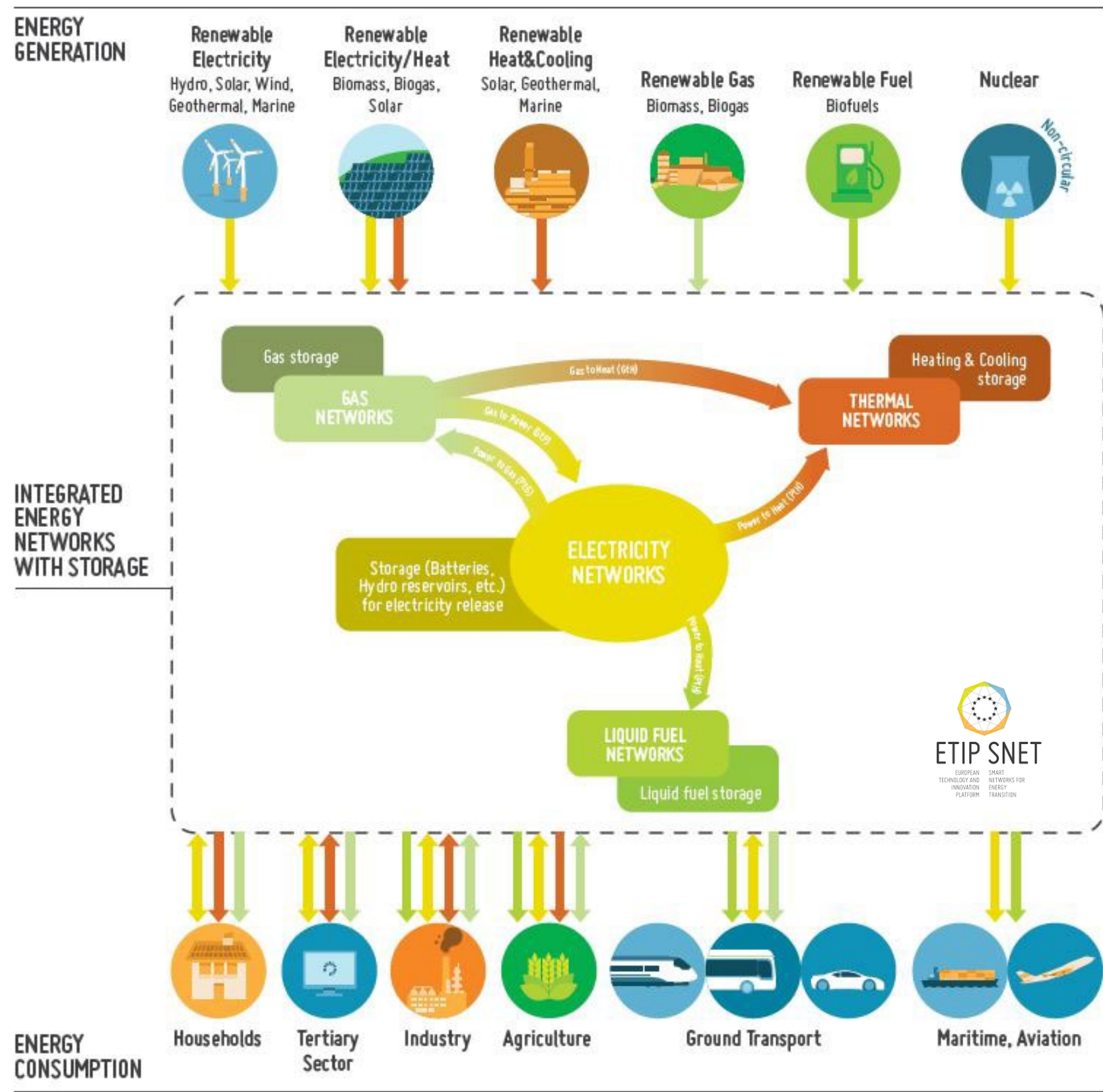
### Key milestones in the pathway to net zero



## Key milestones in the pathway to Europe Net Zero in 2050

- 2025 : No new sales of fossil fuel & boilers
- 2030 : all new buildings are Zero Carbon ready
- **2030 : 1020 GW annual solar and wind additions**
- **2035 : No fossil fuel cars sold**
- 2040 : 50% of fuels used in aviation are low emissions
- 2040 : 90% of existing heavy industries capacity ends invest. lifeC
- **2050 : > 85% of buildings are zero carbon ready**
- 2050 : > 90% of heavy industrial production is low emissions
- **2050 : 70% of electricity generation globally from Solar PV & Wind**
- **2060 : Carbon <0**

# Goals and Future inter-linked Energy System



A low-carbon, secure, reliable, resilient, accessible, cost-efficient, and market-based **pan-European integrated energy system**

supplying the whole economy and paving the way for a **fully CO2-neutral and circular economy by the year 2050**,

while **maintaining and extending global European industrial leadership** in energy systems during the energy transition.

# Goals 2050, transition and innovation needs



## Goal 2050

Energy systems for European society

- Three pillars: environment, markets, security of supply
- The Vision statement

## The transition

Towards integrated energy systems

- Today ... Tomorrow
- Challenges and opportunities
- Storage and conversion transition

## Innovation Needs

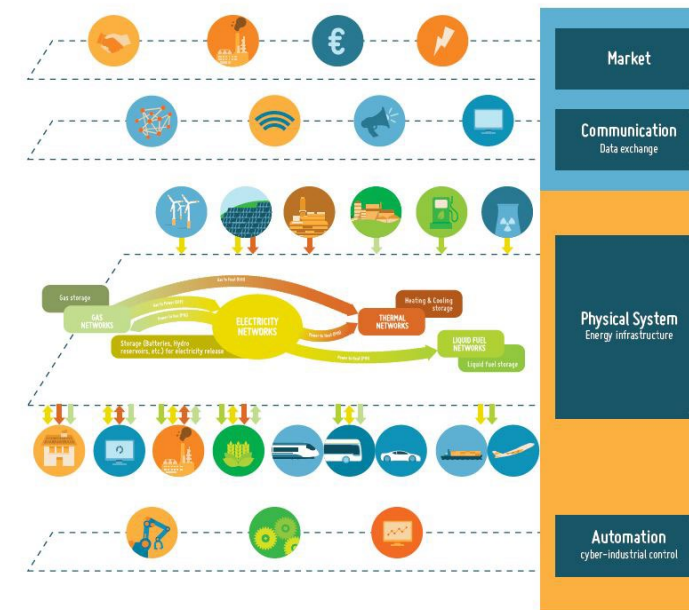
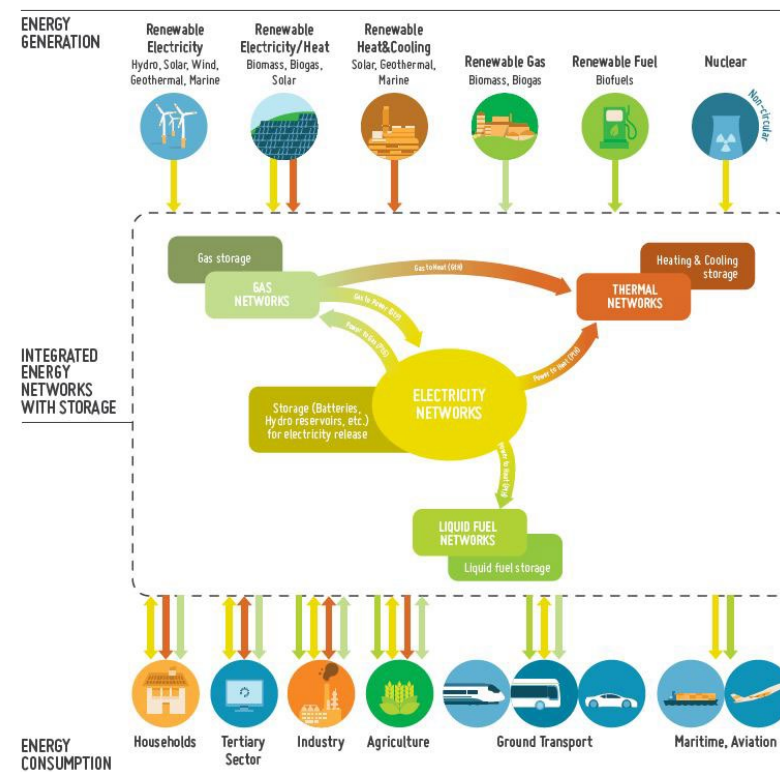
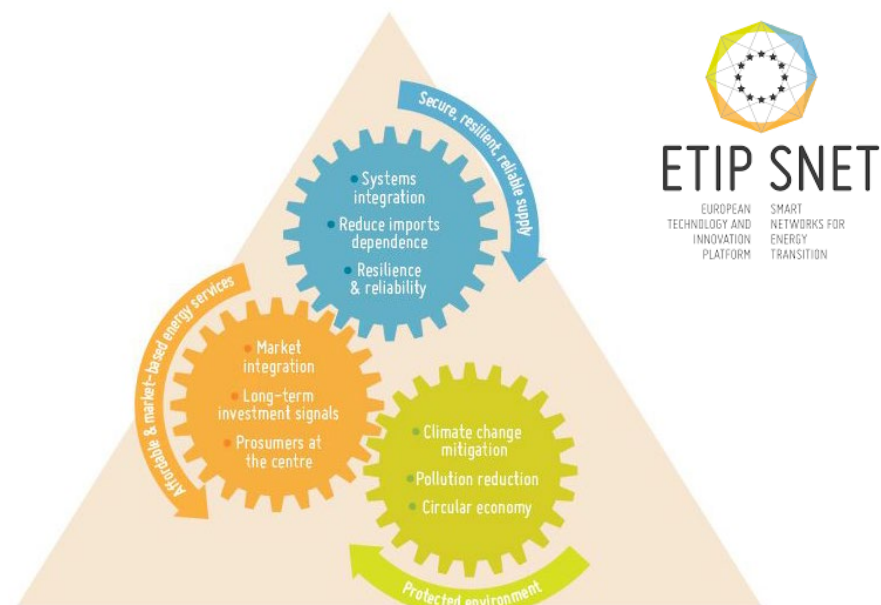
Building Blocks

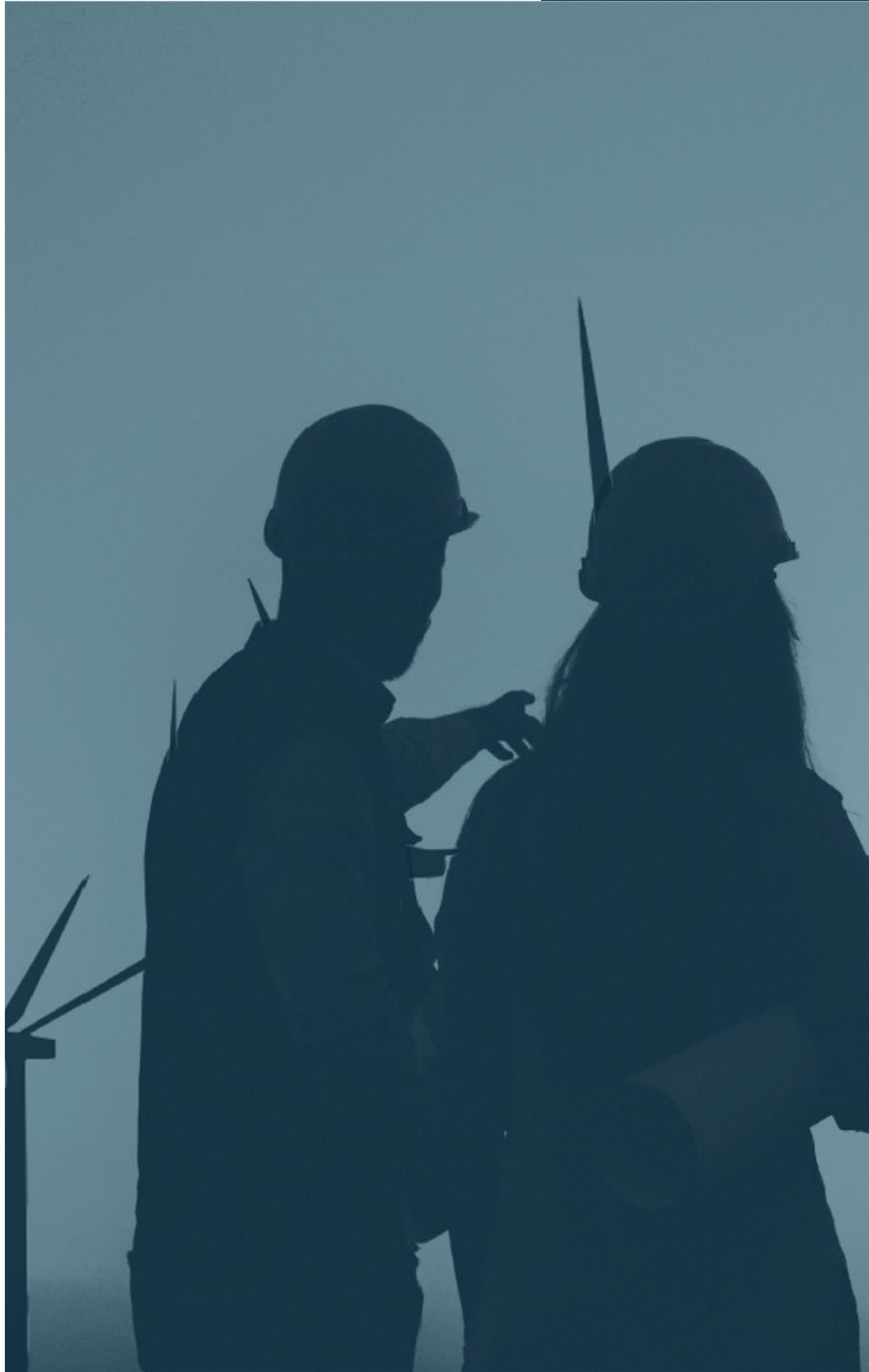
- Efficient organization
- Enabling energy markets
- Digitalization
- Infrastructure for integration

## Innovation Environment

Framework

- European Industry
- Managing Economic Disruption
- Strategic Approach to Innovations





# Energy Technologies

Demand, Storage, Generation

Moving to a more complex but smarter management of Energy

# Need for a fully integrated & flexible energy & carbon management to be monitored using AIoT



CARBON LIFECYCLE MANAGEMENT & Net ZERO (e.g. NET ZERO INDUSTRIAL PARKS)  
FLEXIBILITY, MICRO-GRID, STORAGE, ONE-STOP-SHOP LOW CARBON INTEGRATED ENERGY SYSTEMS

## SMART RENEWABLES & ENERGY

SOLAR, WIND, HYDRO, H2, BESS,  
VPP Power Generation



Monitoring & Control



Advanced Analytics



Energy Management



Solar



Wind



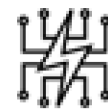
Battery



Green Hydrogen

## SMART INFRASTRUCTURE

BUILDINGS, SMART CITIES,  
B2C, B2B, NZIP, BESS



Renewable monitoring



Energy & Carbon Mgt.



Building optimization by AI



Factories



Shops



Offices



Residential

## E-MOBILITY

EV Charging Value Chain, BESS



Charging Stations



Smart Charging



EV Services



Factories



Shops



Offices



Residential

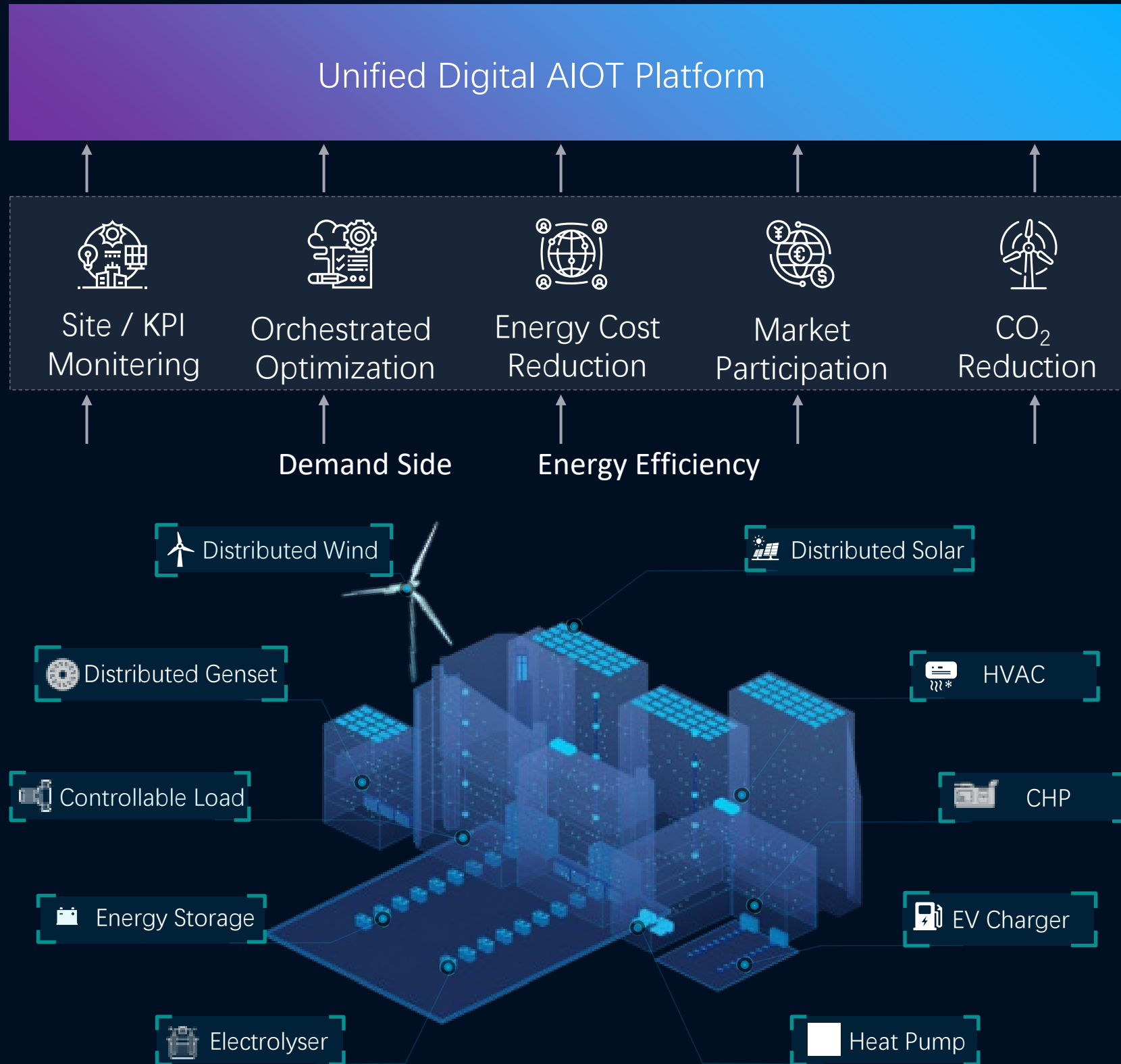


AIoT Platform

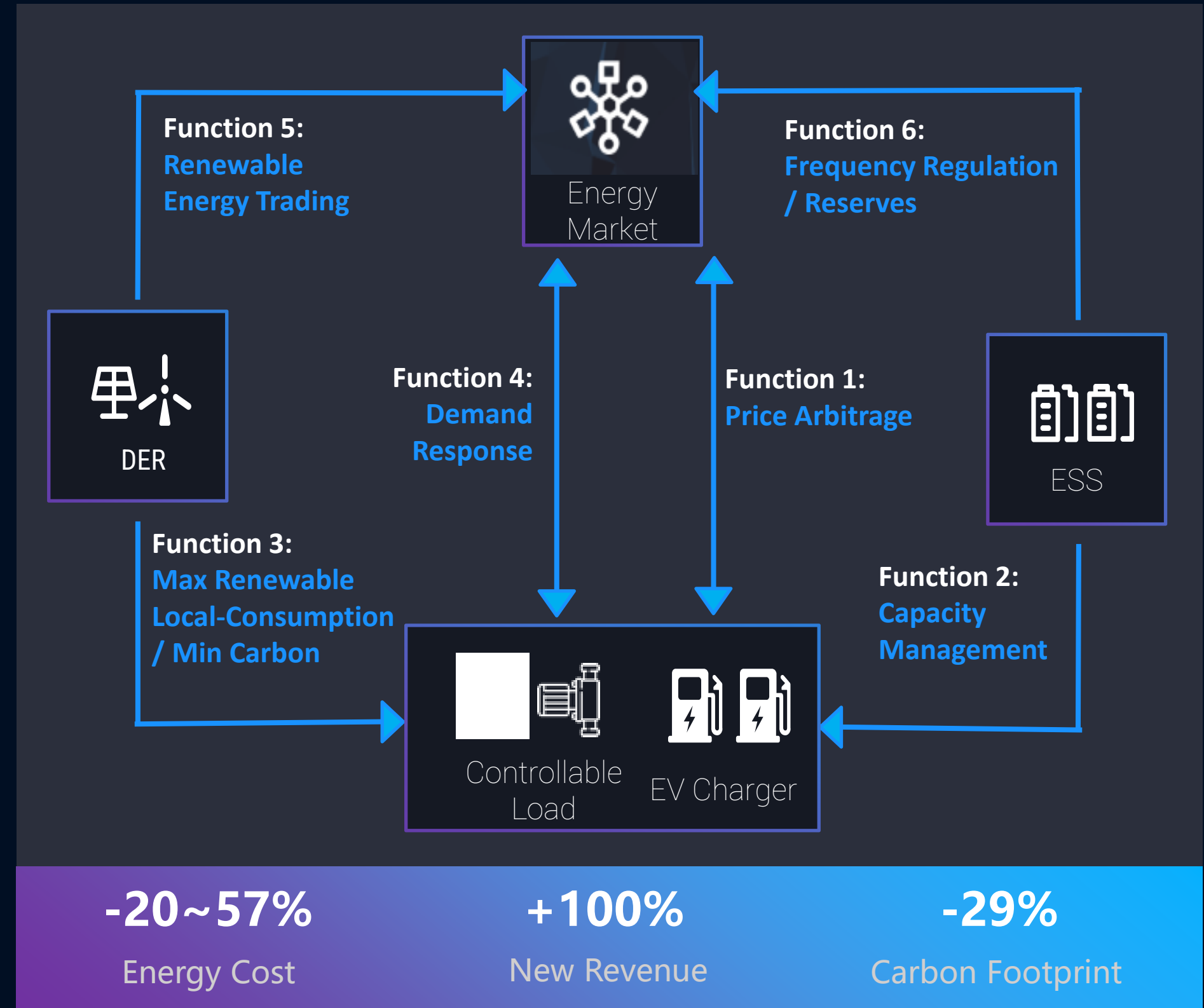




# Smarter & Flexible Energy Management required



Hydro, Biomass, Nuclear, Green Gases fueled generation, Pumped Storage



Regulation to structure and design the market participation and stakeholders roles



**CEET Iterative  
recommendations and  
proposals for Europe**

# CEET recommendations for Europe

*Supporting coordinated efforts of dev. agencies*

Towards energy transition in Europe

*Providing EU Stakeholders with practices, tools, models, technical assistance & capacity building*

- **Technologies needed for a different energy mix still with baseload !**
- € required for transiting polluting plants to Renewable
- **Hype -free predictions about H2, Batteries, Next Gaz, ...€/CO2/usage**
- € required for the deployment of **large & small scale Renewables** (GW)
- € required for **Renewables** versus **Nuclear**
- € required in **Infra & SmartGrids** connecting the Value Chain Actors
- **European Energy Cockpit (Digital) for Smart EU Member States' decisions**
- **European Regional/Single Market Exchange with a common Retail Market**
- **Pan-European Digital Platform, leveraging AI & IOT for Customers**

# Key messages Europe



**Key message 1:** Develop a **European Energy Cockpit** for a Smarter European Energy navigation (As a pilot navigates an Airbus cockpit) across a Single Retail market.

**Key message 2:** Investments required in **Smart AI-based Infrastructure** where physical and digital assets converge. Investments in Energy & GHG standard data monitoring & control & ROI tools to attract investors to invest in impact-based financed projects

**Key message 3:** Investments required in **multiple sources** of renewable energies & storage, in infrastructure readiness, in regulation frameworks and in the transition while keeping the lights on.

**Key message 4:** Pragmatic transition to 2050 targeting full renewables but it requires to be secured with an anticipated baseload to **keep European economy's lights on.**

# Best Practices Europe

## PIONEERS

**PIONEERS – PORTable Innovation Open Network for Efficiency and Emissions Reduction Solutions (H2020)** coordinated by **Port of Antwerp**



- Coordinated by the **Port of Antwerp-Bruges**
- **€25 million grant from the Horizon 2020, Green Deal**
- **Consortium representing major ports**, terminal and transport operators, transporters, knowledge institutes, technology developers, innovators and public authorities
- **Reduce GHG emissions** in ports while **safeguarding their competitiveness.**
- **5 years** from the end of 2021