



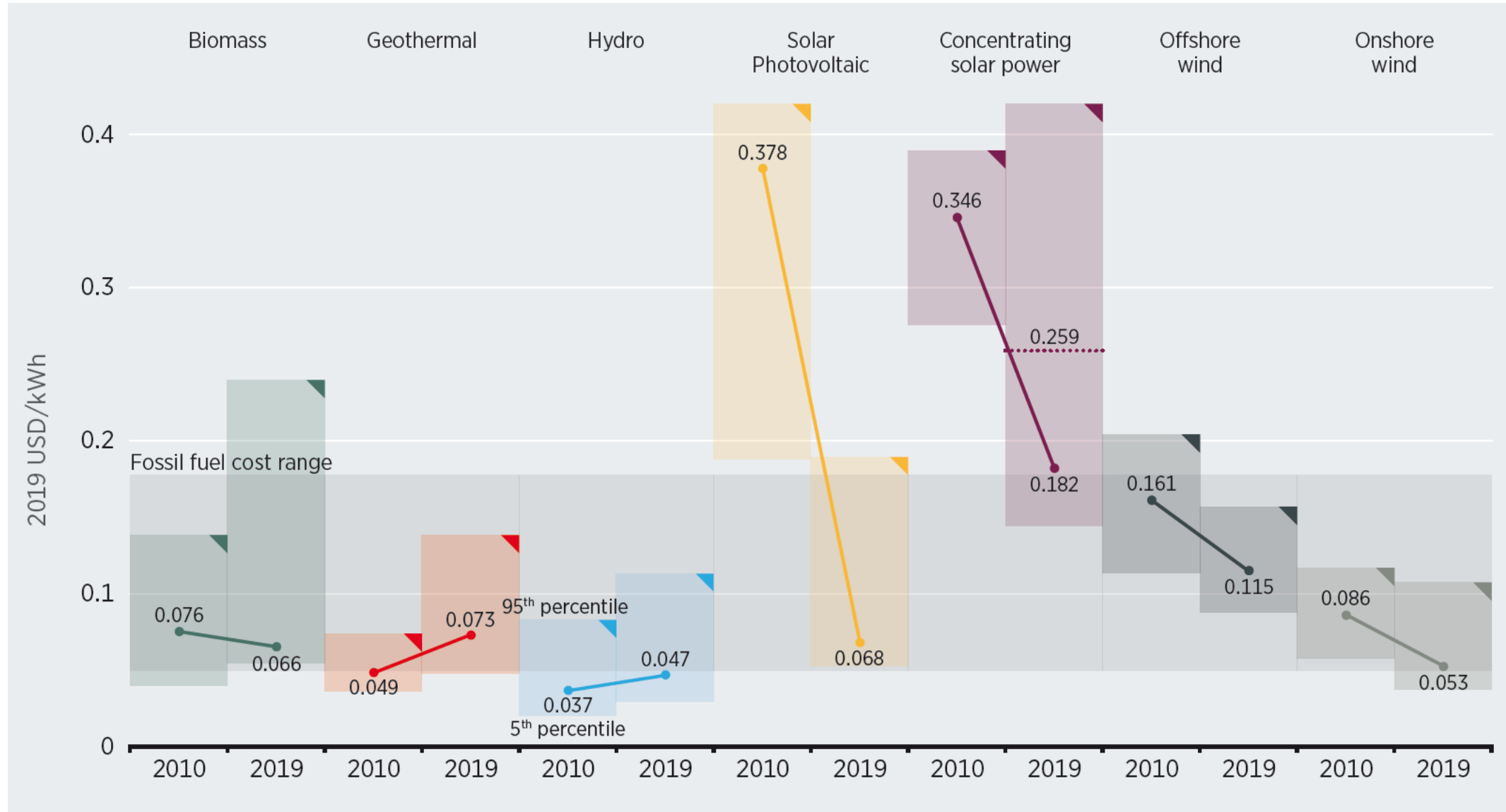
# Renewable Energy Prospects for Central and South Eastern Europe Energy Connectivity (CESEC)

November 25, 2020

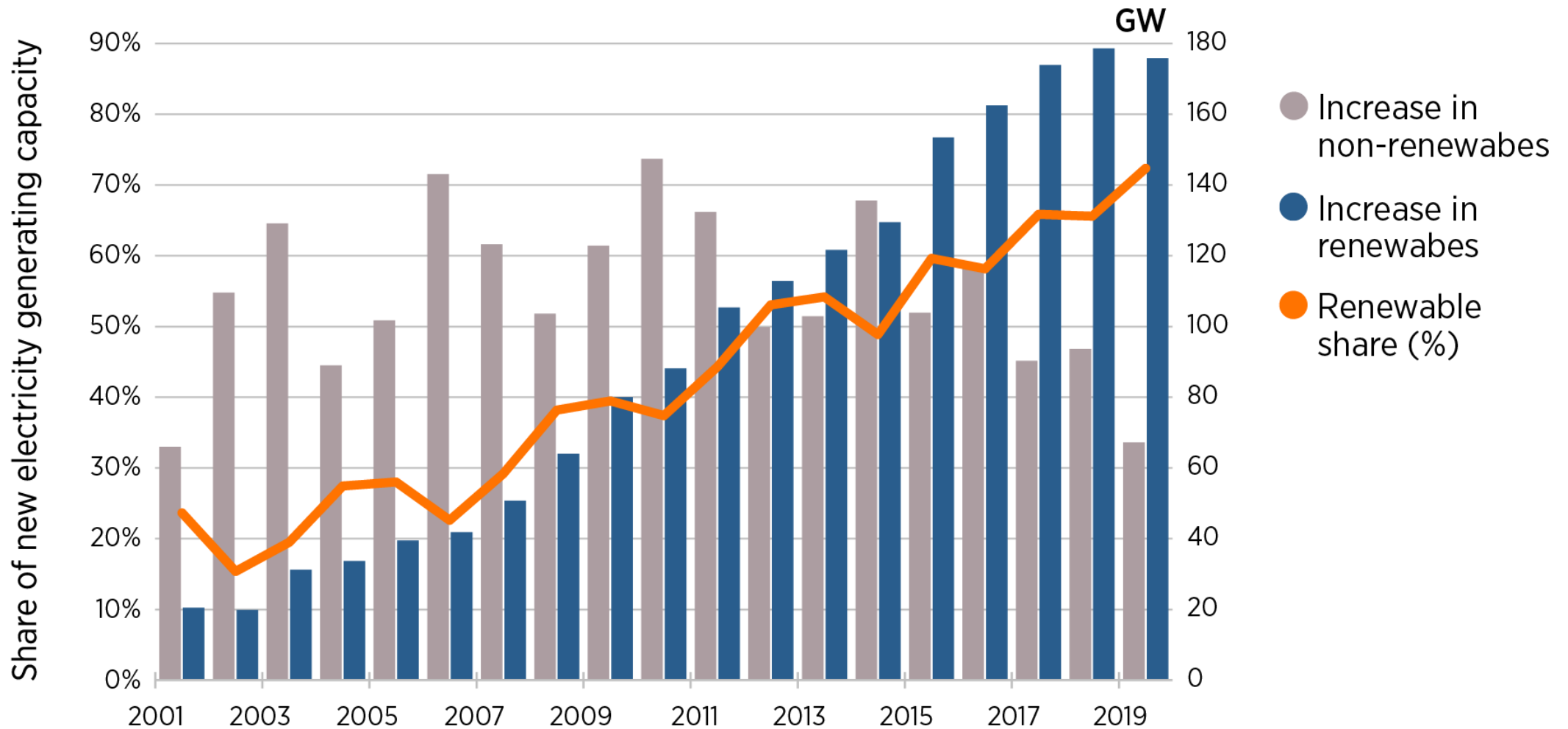


REmap, IRENA Innovation and Technology Centre

# In most of the world, renewables are now the lowest cost option for new power generation

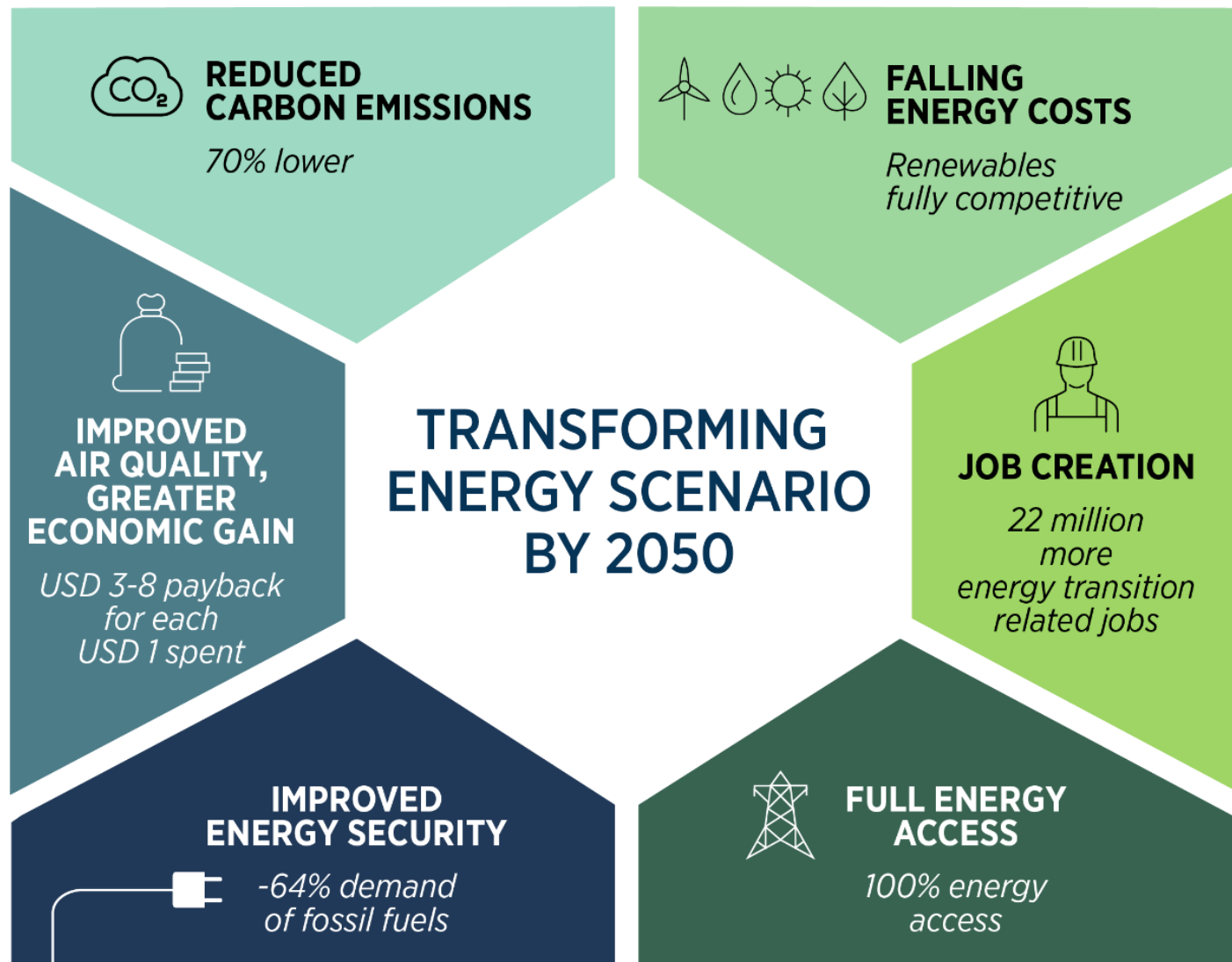
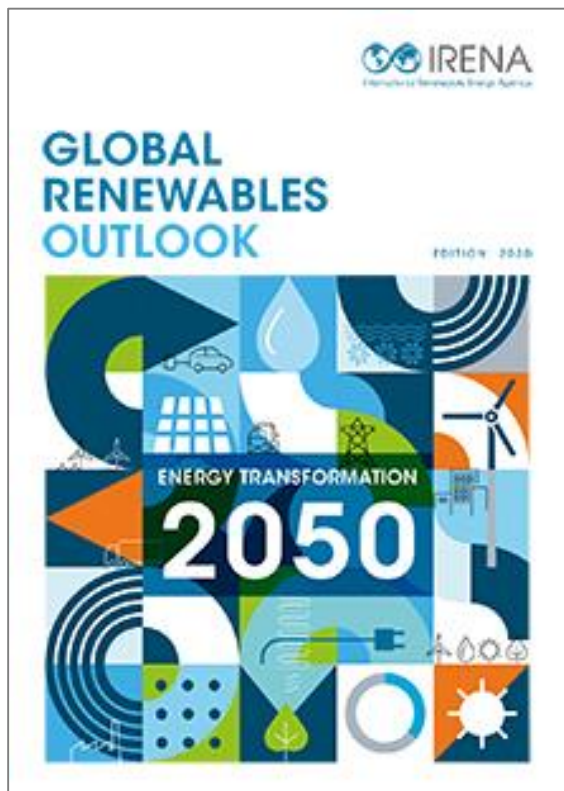


# Renewables continue to dominate new capacity expansion



Renewables now account for one third of global power capacity today

# CESEC members will benefit from embracing the Global Energy Transformation



This roadmap can support discussions regarding:

- The implementation of **European Green New Deal** and **post-COVID recovery**.
- **National Energy and Climate strategies** moving forward.
- **Nationally Determined Contributions** to align with goals of the Paris Agreement.
- **Energy planning discussions** such as those regarding natural gas infrastructure.



- Analyses cost-effective potential for renewables in the region by 2030.
- Impact on energy costs, investments, security of supply, GHG emissions, environmental and health externalities.
- Full energy system perspective.

# Geographical coverage



**1. What is the outlook of renewables with current / planned policies by 2030?  
(Reference Case)**

**2. What is the additional potential of renewables beyond the Reference Case? (REmap Options)**

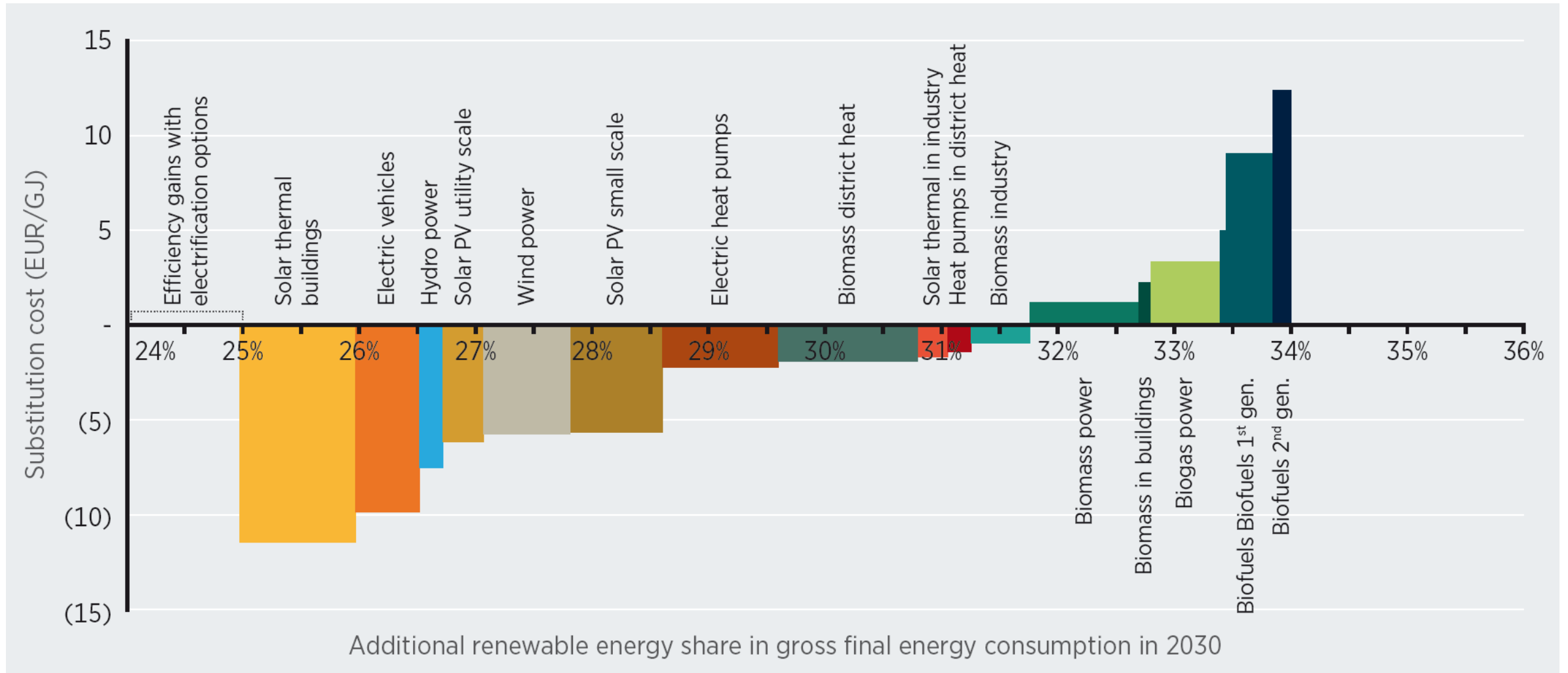
**3. Reference Case + REmap Options = REmap Case**

**4. What are the costs and benefits (i.e. investments, energy costs, avoided externalities) and policy implications of the REmap Case?**

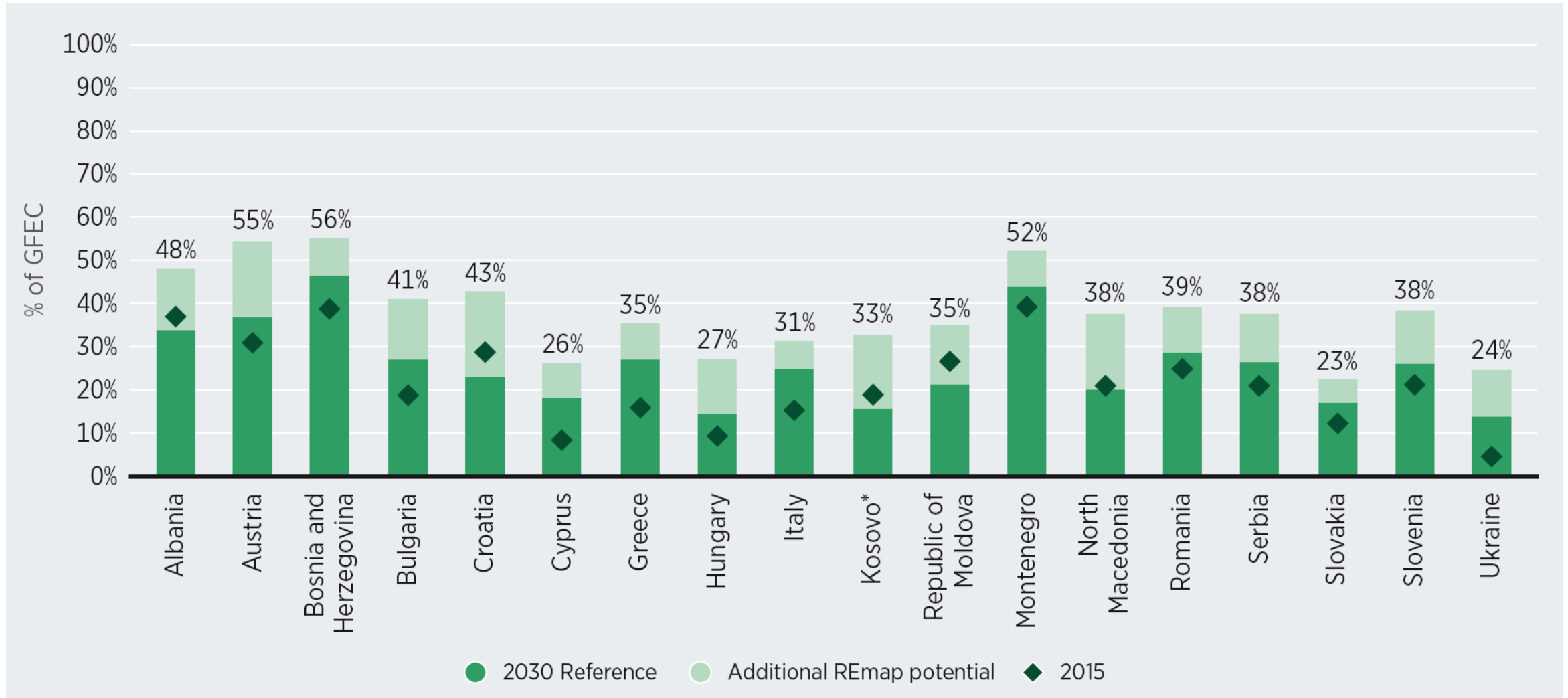


- Demand to remain almost flat at CESEC level (+5% from 2015), with stronger increase in Energy Community parties (+26% from 2015).
- Slight reductions in fossil fuel consumption (-10%) and emissions (-14%) from 2015.
- Overall renewable share to show slow growth, from 16% in 2015 to 24% in 2030.

# By 2030, renewables can deliver more than one third of CESEC's energy demand cost-effectively



# All CESEC members have additional cost-effective potential beyond existing plans / projections.

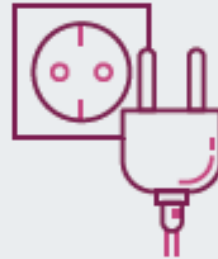


# Key renewable energy options for CESEC members until 2030



## Deployment of renewable power generation

- Large potential of > 1300 GW combining wind, solar, bio and hydro.
- Cost reductions of 82% and 39% for solar PV and wind since 2010.
- Cheaper than fossil and nuclear generation in most markets worldwide.
- Cost reductions expected to continue.



## Electrification of heat and transport services

- Large associated efficiency gains (3-4 times less energy use).
- Power, easier to decarbonize than fuels.
- Elimination of local air pollution.
- Asset for integration of more renewables in the power sector.



## Scale - up sustainable bioenergy use

- Complementary source for applications hard to electrify.
- Available 'pockets' of sustainable potential:
  - Higher yields on cropland, crop residues.
  - Residues and sustainable extraction of forest wood.
  - Municipal solid waste and animal manure.
- Potential to roughly double sustainable supply by 2030.

# Renewables improve energy security while aligning the region with the goals of the Paris Agreement



**18%**

## Natural Gas Demand Reduction

Compared to the Reference scenario to 2030.

Comparable to today's total primary demand for natural gas in Ukraine.



**14%**

## Oil Demand Reduction

Compared to the Reference scenario to 2030.

Comparable to today's total oil consumption of Croatia and Greece combined.



**21%**

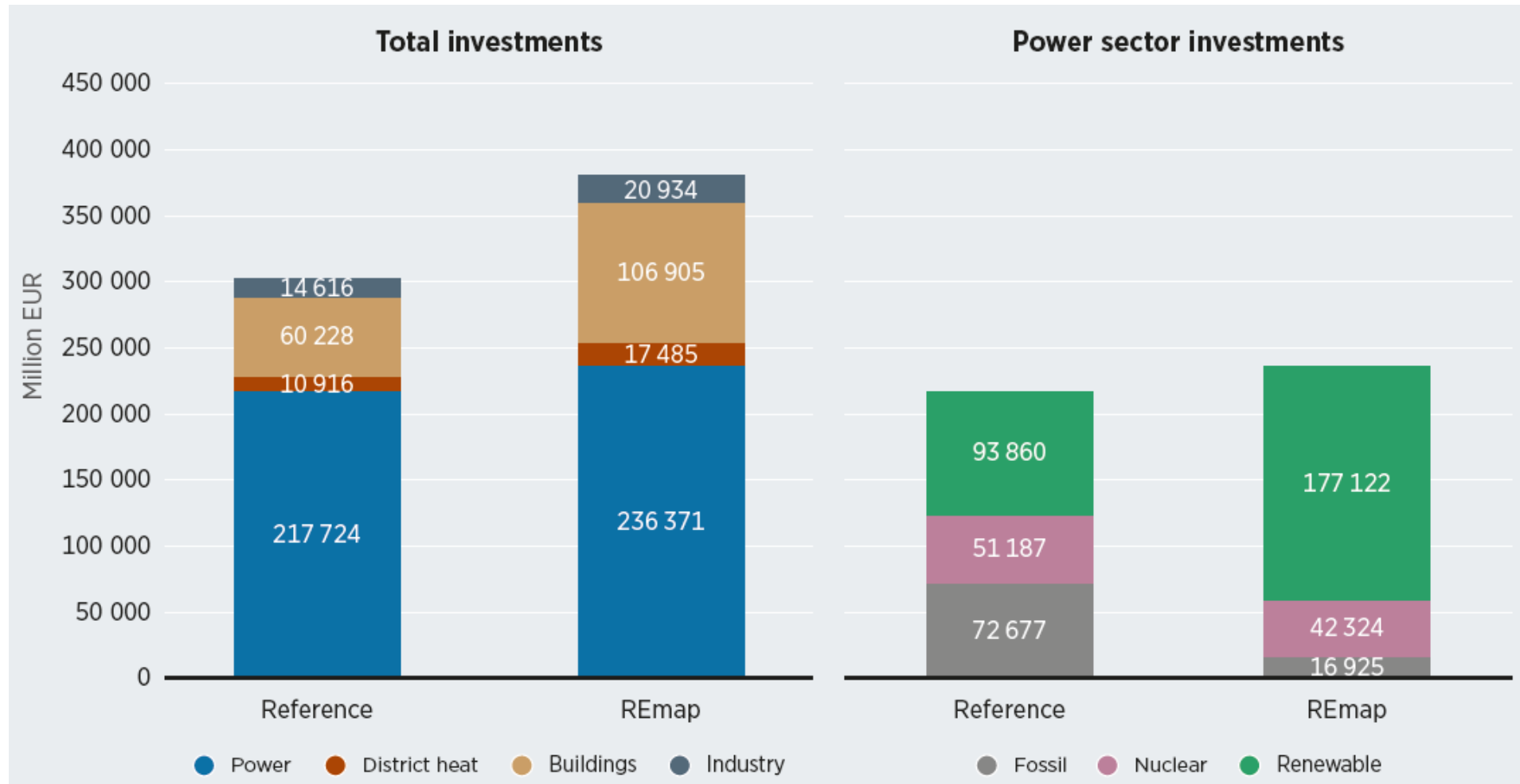
## CO<sub>2</sub> Emissions Reduction

Compared to the Reference scenario to 2030.

Comparable to today's total emissions of Romania and Bulgaria combined.

# A clean, modern energy system in CESEC is possible by redirecting investments towards renewables

- Additional investments of **78 EUR billion until 2030**.
- In annual terms, estimated at **0.16-0.21% of the GDP** of the region.



# Investing in renewables brings multiple benefits for CESEC members

- Competitive energy costs: savings in LCOE estimated at **3.4 EUR billion/year** in 2030\*.
- Much larger benefits if externalities are considered: **11 to 35 EUR billion/year**.
- Significantly **improved security of supply**.
- A **more modern, resilient energy system**.
- Closer **alignment with the objectives of the Paris Agreement**.

\* Central scenario considering a social discount rate of 4% and flat fossil fuel prices in real terms as per 2018 levels.

# Decisive action is needed to unlock the potential of renewables in CESEC

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- **National policies** focused on improving **conditions for investment**:
  - Level playing field for renewables, stable, transparent regulatory frameworks.
  - De-risked procedures, risk-mitigating financing mechanisms.
  - Sub-national coordination.
- **Cooperation at regional level will be key**:
  - Further regional integration of national markets.
  - Coordinated investment plans for key infrastructure.
- **Support and solidarity** with CESEC members with challenging socio-economic conditions.



