



Wind Energy Potential in South East Europe

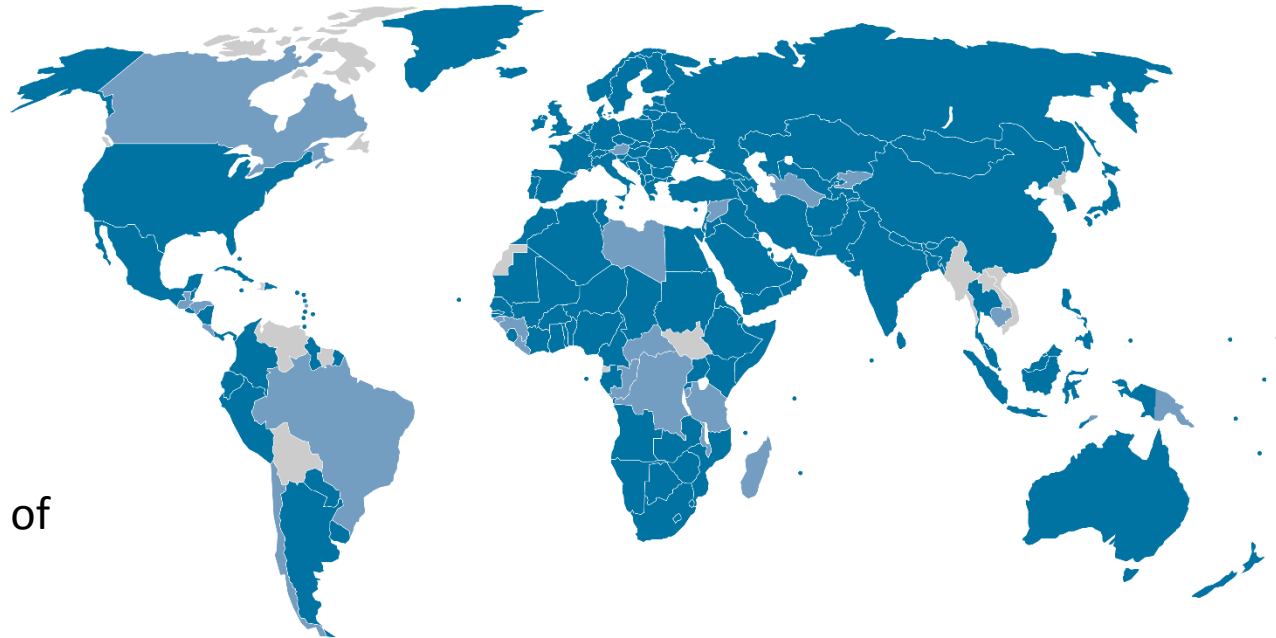
Sofia – 28 June 2018

Established in 2011.

158 Members

24 States in accession.

Mandate: to promote the widespread adoption and sustainable use of all forms of renewable energy



IRENA serves as:

- Centre of excellence for knowledge and innovation
- Global voice of renewables
- Network hub
- Source of advice and support



BIOENERGY



GEOTHERMAL
ENERGY



HYDROPOWER



OCEAN
ENERGY

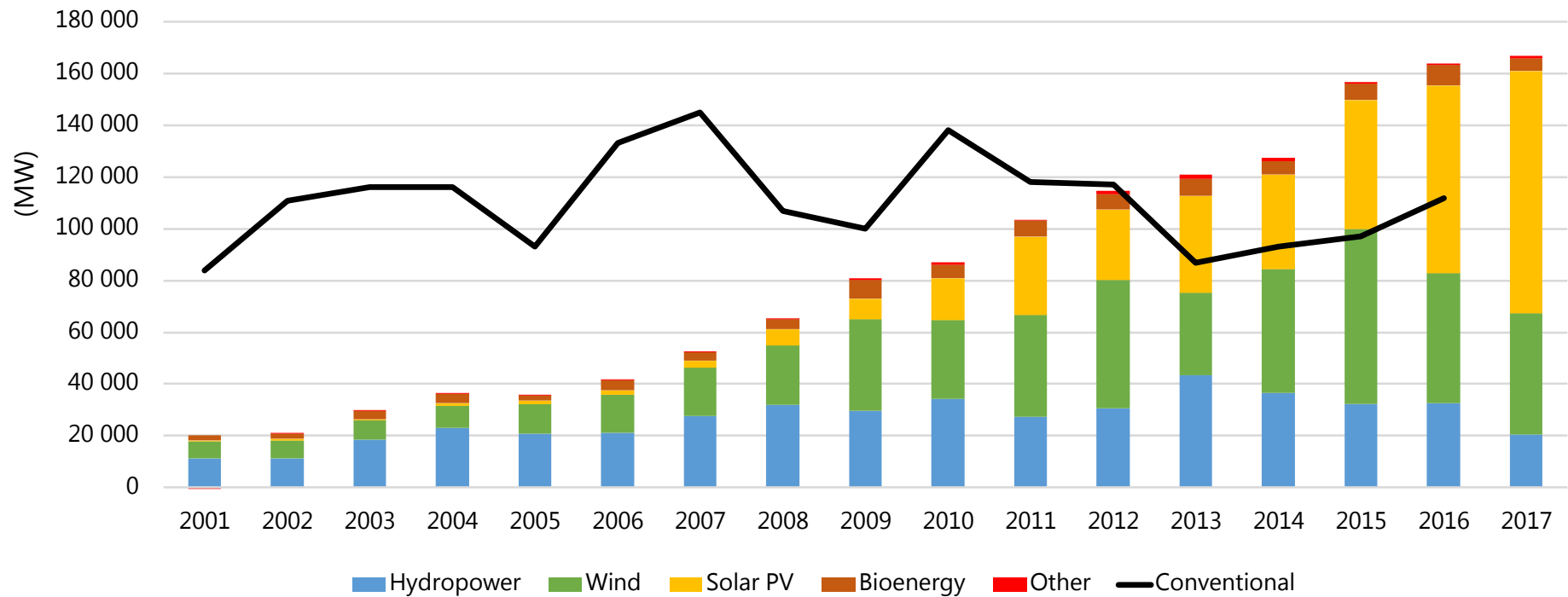


SOLAR
ENERGY



WIND
ENERGY

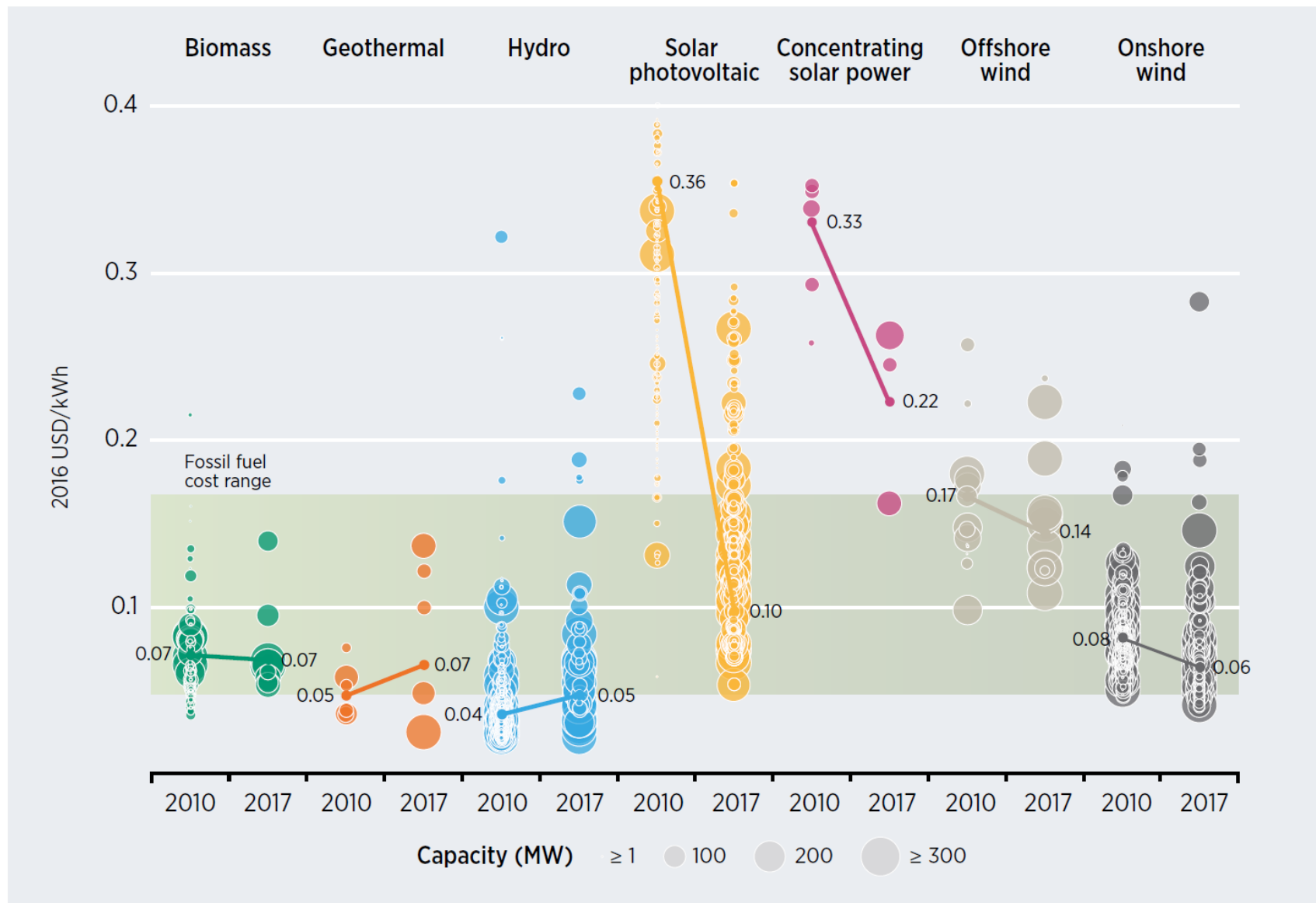
RE power capacity additions constantly exceed conventional power



➤ Wind and solar PV led the uptake of RES.

➤ Solar PV accounted for more than 56% of total RES additional installed capacity in 2017.

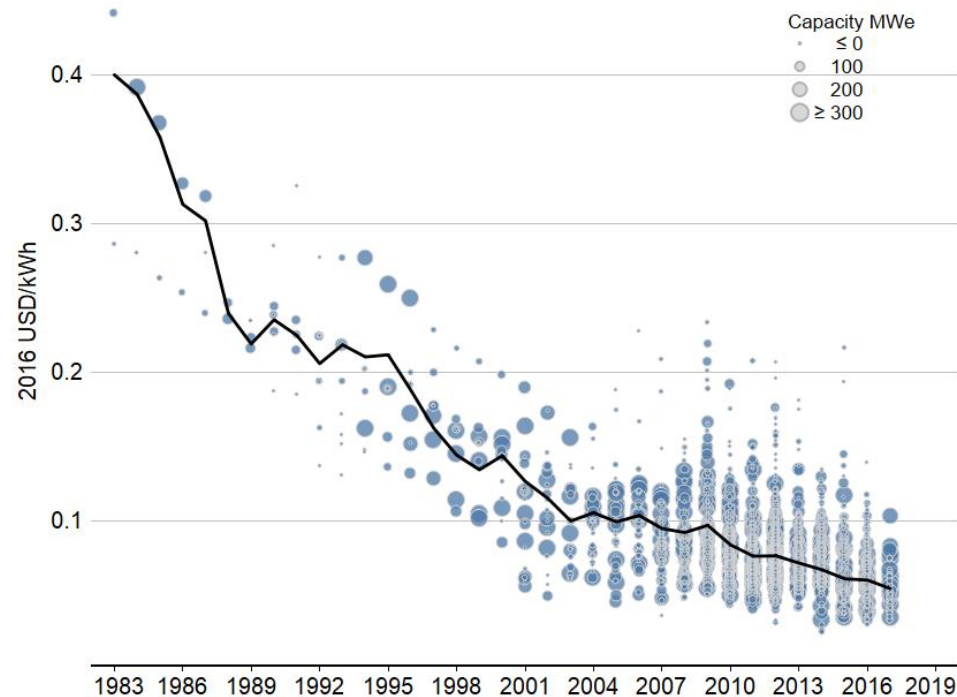
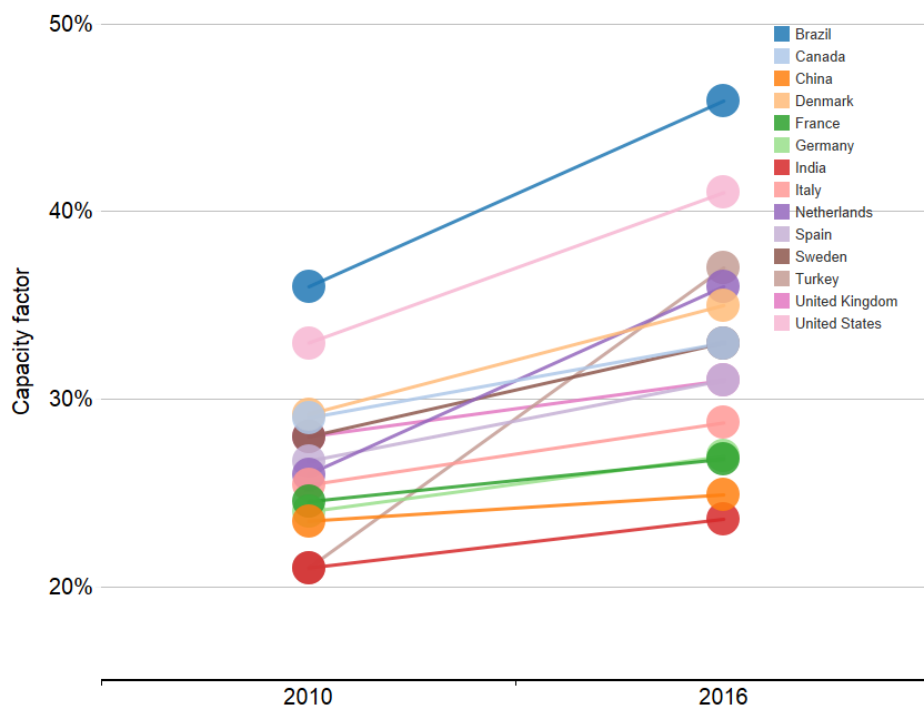
RE technology costs drastically declined



Source: IRENA Renewable Cost Database.

Cost trends in wind power

Reduced turbine costs & higher capacity factors → lower LCOE



➤ Wind turbine costs halved by 2017 compared to 2009

➤ Capacity factors increased by 45% from 1983 to 2017 and by 10% from 2010 to 2016

➤ LCOE of onshore wind declined by 85% from 1983 to 2017 and by 25% from 2010 to 2017

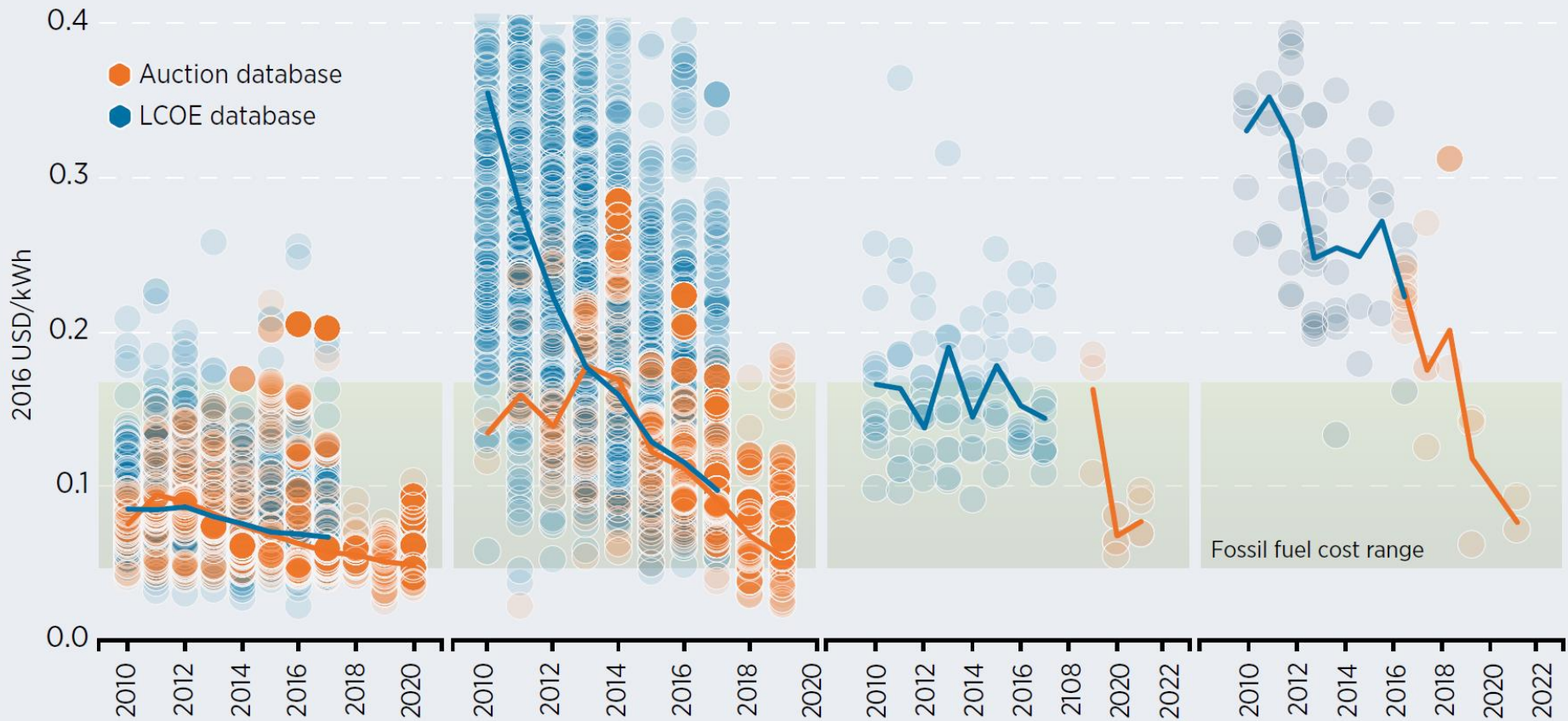
Further cost decline expected in solar and wind

Onshore wind

Solar PV

Offshore wind

Concentrating solar power



Socio-economic benefits of renewable energy



GDP

+ 1.0 %

+ 2.06

USD trillion



Jobs

+ 0.14 %

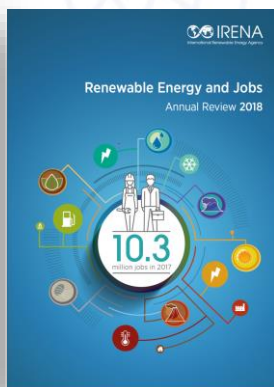
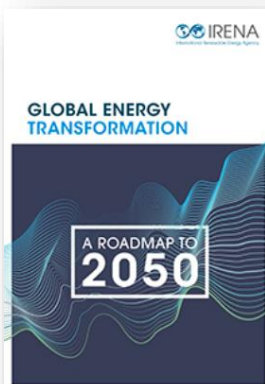
+ 11 million

in the energy sector



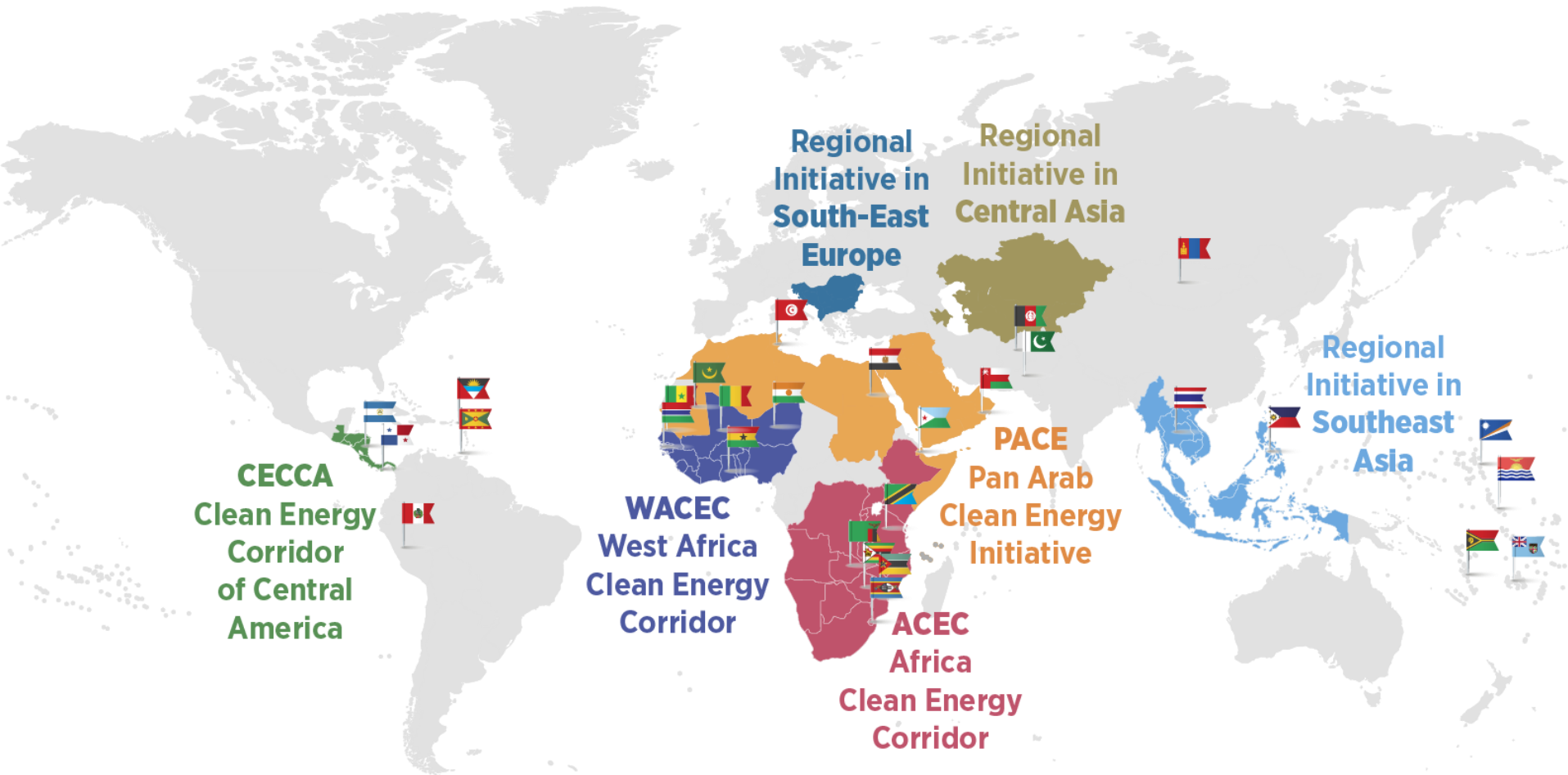
Welfare

+ 15 %



28 million
jobs in 2050

IRENA's Regional Engagement



Abu Dhabi **Communiqué** on Accelerating the Uptake of Renewables in South East Europe

Abu Dhabi, 13 January 2017

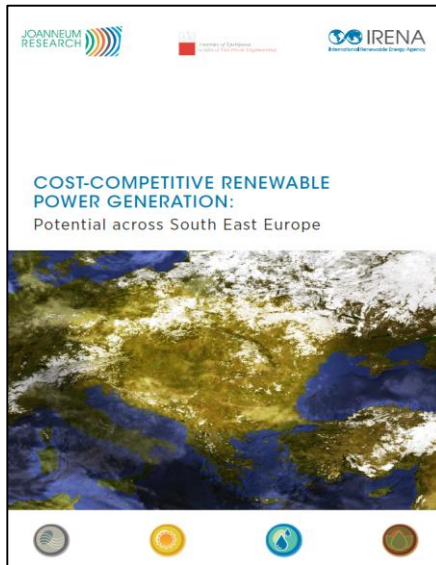
Action Areas

- Resource assessment
- Long-term planning for RE deployment
- Enabling frameworks: technical, policy, regulatory, institutional
- Market based RE support schemes
- Socio-economic benefits vs. affordability
- Access to financing for RE projects



Cost-Competitive Renewable Power Generation

Potential across South East Europe



Assessment of the overall renewable electricity potential

Identification of cost-competitive RE potential – focus on wind & solar PV

Inform policy makers in the process of undertaking new commitments and developing long-term strategies for RE

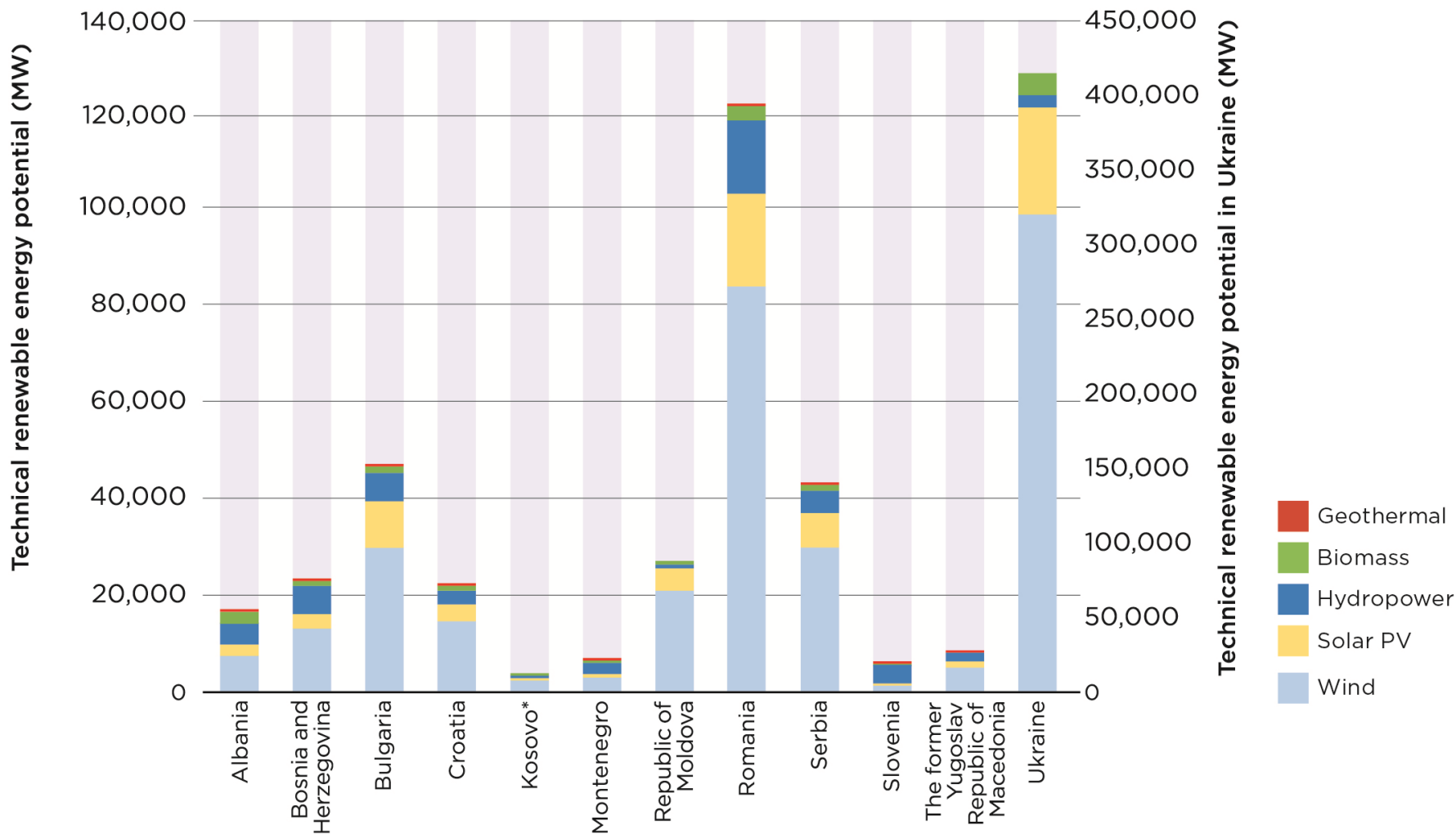
 giz
Deutsche Gesellschaft
für Internationale
Zusammenarbeit (GIZ) GmbH

On behalf of:
 Federal Ministry for the
Environment, Nature Conservation,
Building and Nuclear Safety
of the Federal Republic of Germany

Cost-Competitive Potential

- ✓ LCOE within the ranges of the fossil-fuel supply options
- ✓ Level of cost-competitive potential today, 2030 and 2050
- ✓ Sensitivity analysis for cost of capital

740 GW Technical renewable energy potential in South East Europe

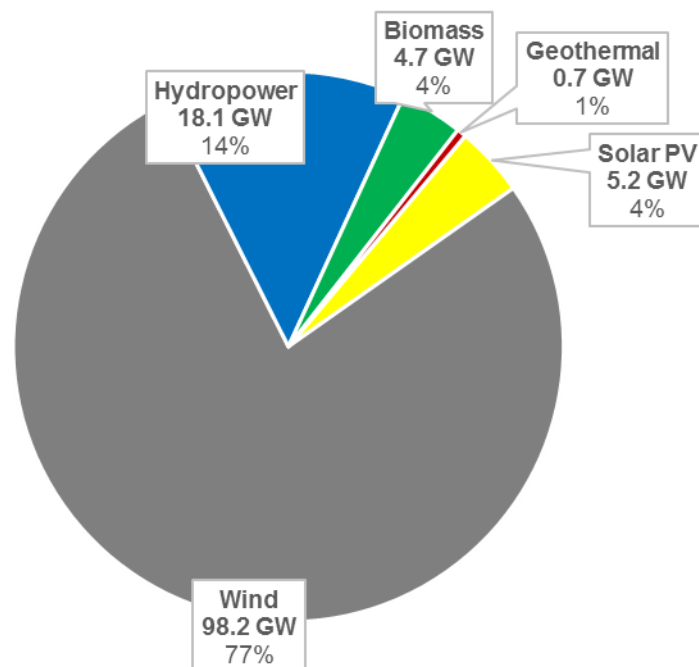


NREAP targets vs. Cost-competitive additional potential

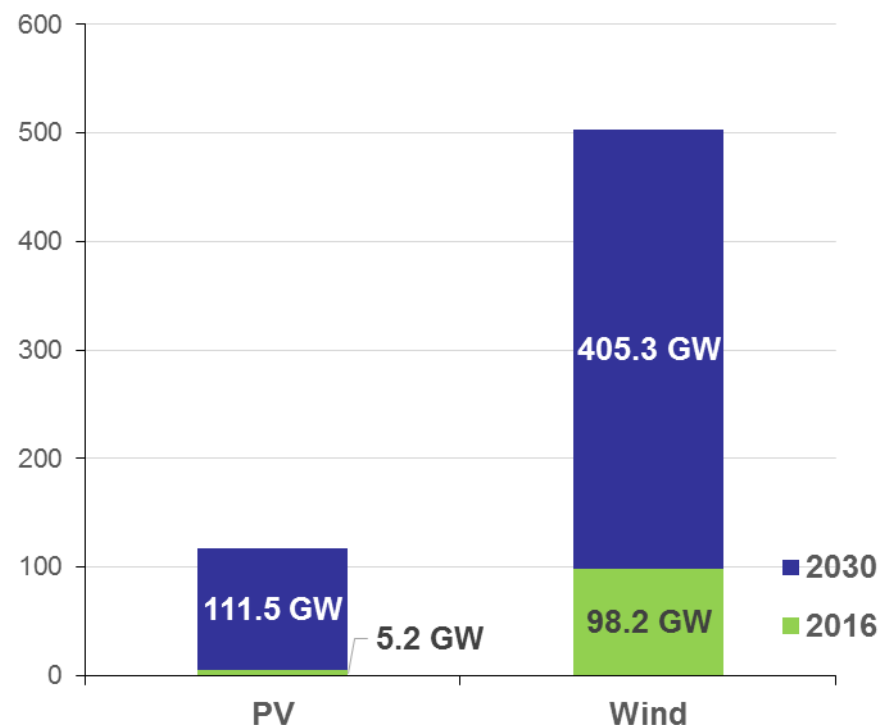
8.2 GW

Gap to achieve cumulative RE deployment target for 2020 (based on NREAPs)

127 GW
Renewable Energy today

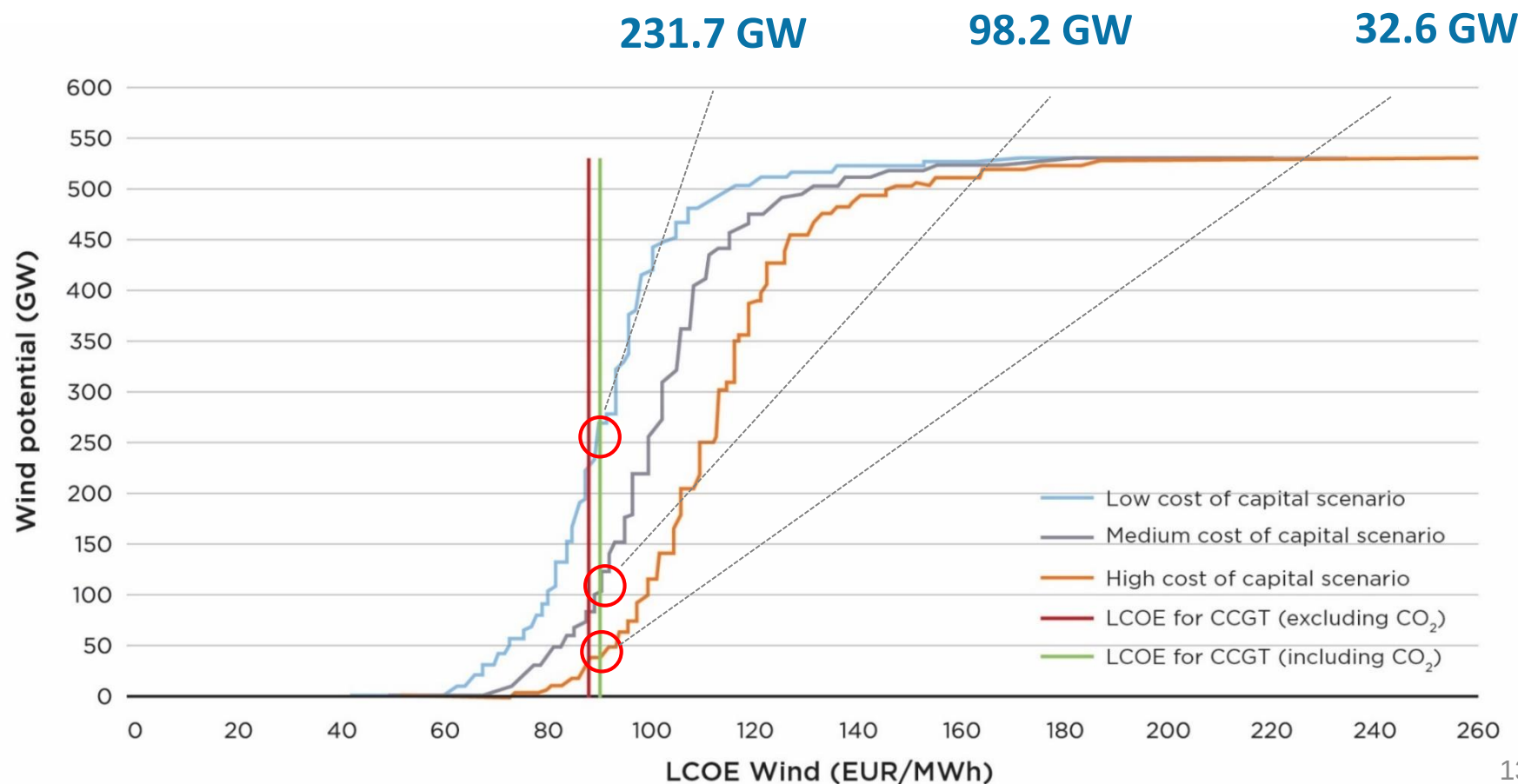


620 GW
Wind and Solar PV by 2030

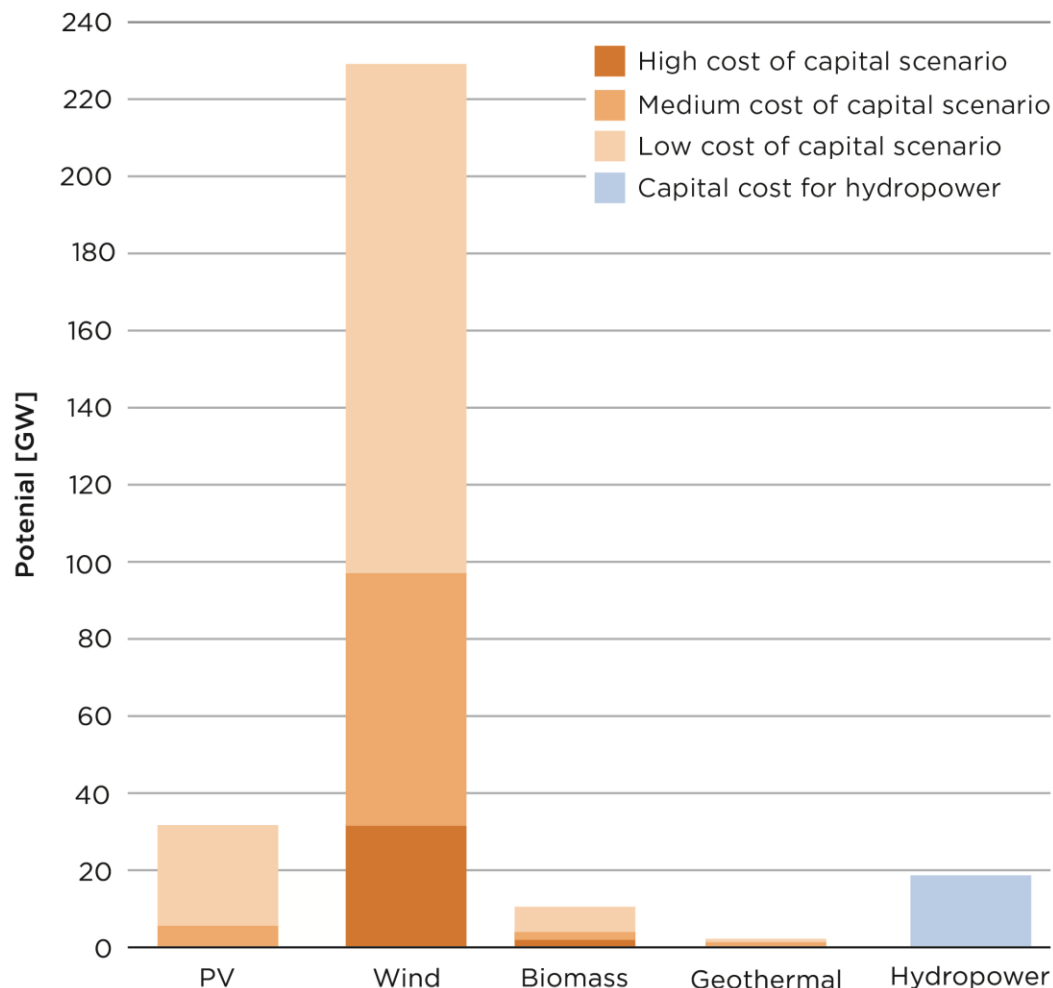


Additional cost-competitive Wind potential (2016)

Cost of capital scenarios WACC (%)	Low	Medium	High
EU SEE	6	8	10
Non-EU SEE	8	10	12
Ukraine	14	16	18



Additional cost-competitive renewable energy potential in 2016



How to improve the risk perception of the region?

- ✓ Eliminate administrative barriers and improve market access
- ✓ Create attractive and consistent RE support schemes
- ✓ Improve PPA structure
- ✓ Address grid integration challenges
- ✓ Enhance skills and capacities
- ✓ Facilitate access to finance



Gurbuz Gonul

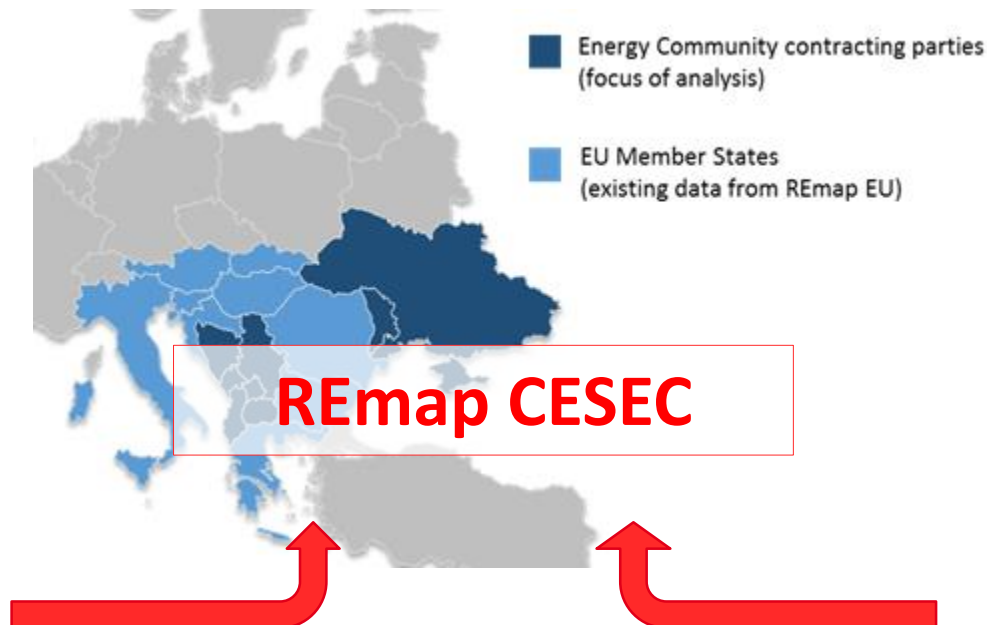
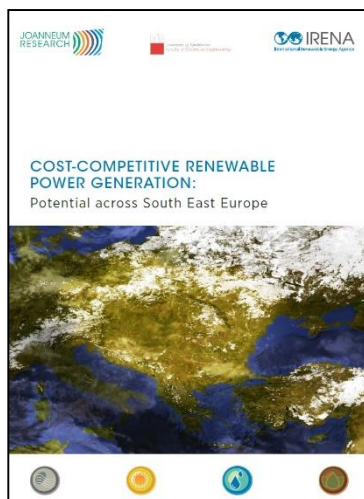
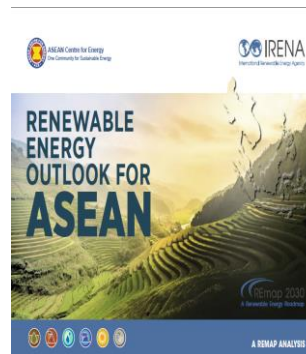
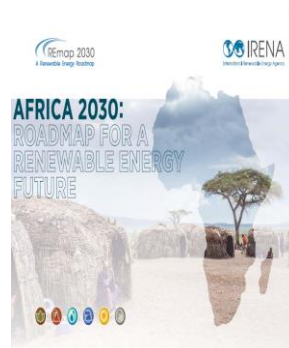
Acting Director
Country Support and Partnerships

REmap 2030 for the CESEC Region

Supporting the process to establish post-2020 RE targets

Identification of **feasible options for scaling up RE deployment** in power generation and end-use sectors

REmap 2030 A Renewable Energy Roadmap



SEE has vast **renewable power** potential largely untapped.

The EU can double its **renewable share to reach 34% by 2030**, cost-effectively

Regional Workshop on RE Auctions

March 2017

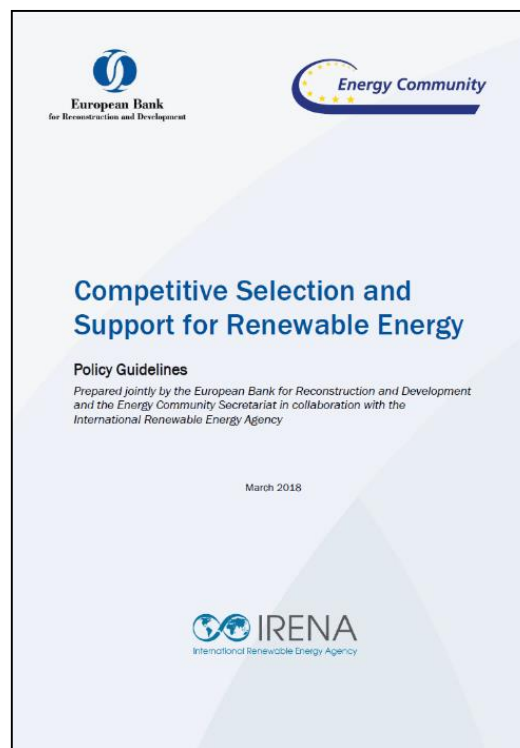
- RE support instruments
- Best practices on auction-based support schemes
- Implications of different auction approaches



RE Auctions Guidelines

March 2018

- ✓ Developed by EBRD and the Energy Community in collaboration with IRENA
- ✓ Targeting Energy Community countries

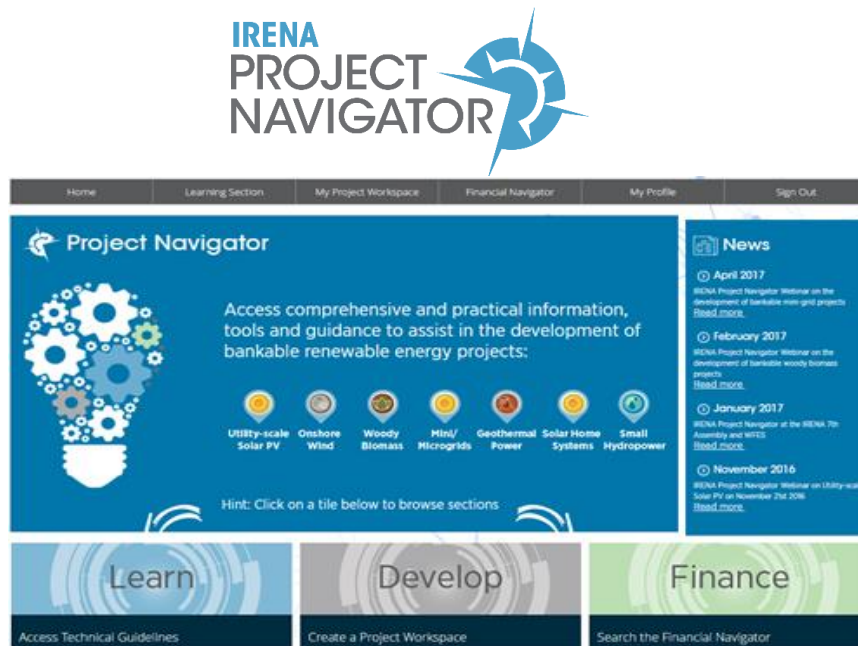


- ✓ Key principles of implementing auctions that are:
 - bankable
 - in line with the EU law
 - consistent with the international best practice on auctions

RE project facilitation support

Improve bankability and facilitate access to finance in the region

- Regional workshop to share best practices and global experience on **financing and risk mitigation** for renewable energy projects – Serbia, June 2018
- Increased utilization of the RE project facilitation tools in the region



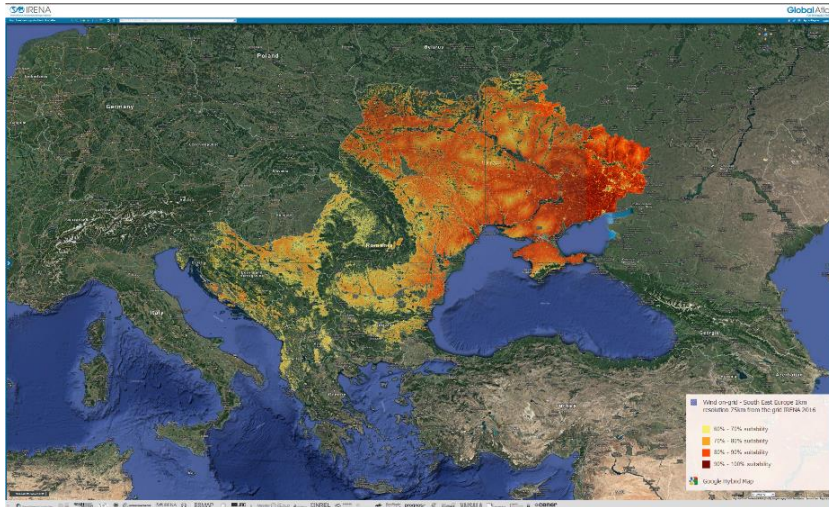
- ✓ A comprehensive platform giving project developers the tools – **at no cost** – to create robust, **bankable RE project proposals**
- ✓ Regional training on solar PV module

SUSTAINABLE ENERGY MARKETPLACE



- ✓ Online platform to support project initiation, development and **access to financing**
- ✓ Operational in the non-EU countries of Southern and Eastern Europe

Suitable locations for **Wind** investments in SEE



Global Atlas
FOR RENEWABLE ENERGY

What is a good site?

- Renewable energy resource intensity
- Topography
- Population density
- Distance to the grid
- Land cover
- Protected areas


Renewable Energy Costs, Technologies and Markets

Renewable
Power
Generation
Costs in 2017

 **IRENA**
International Renewable Energy Agency



IRENA Renewable Costing Alliance
IRENA Renewable Cost Database
based on data from
15,000+ utility-scale RE projects

Strengthening of Enabling Frameworks

Policy, regulatory and technical

Capacity building

RE Support Schemes

Capacity building

RE Socio-Economic Benefits

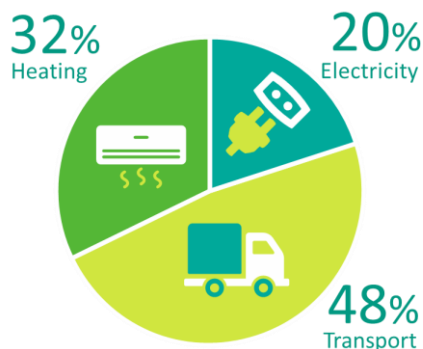
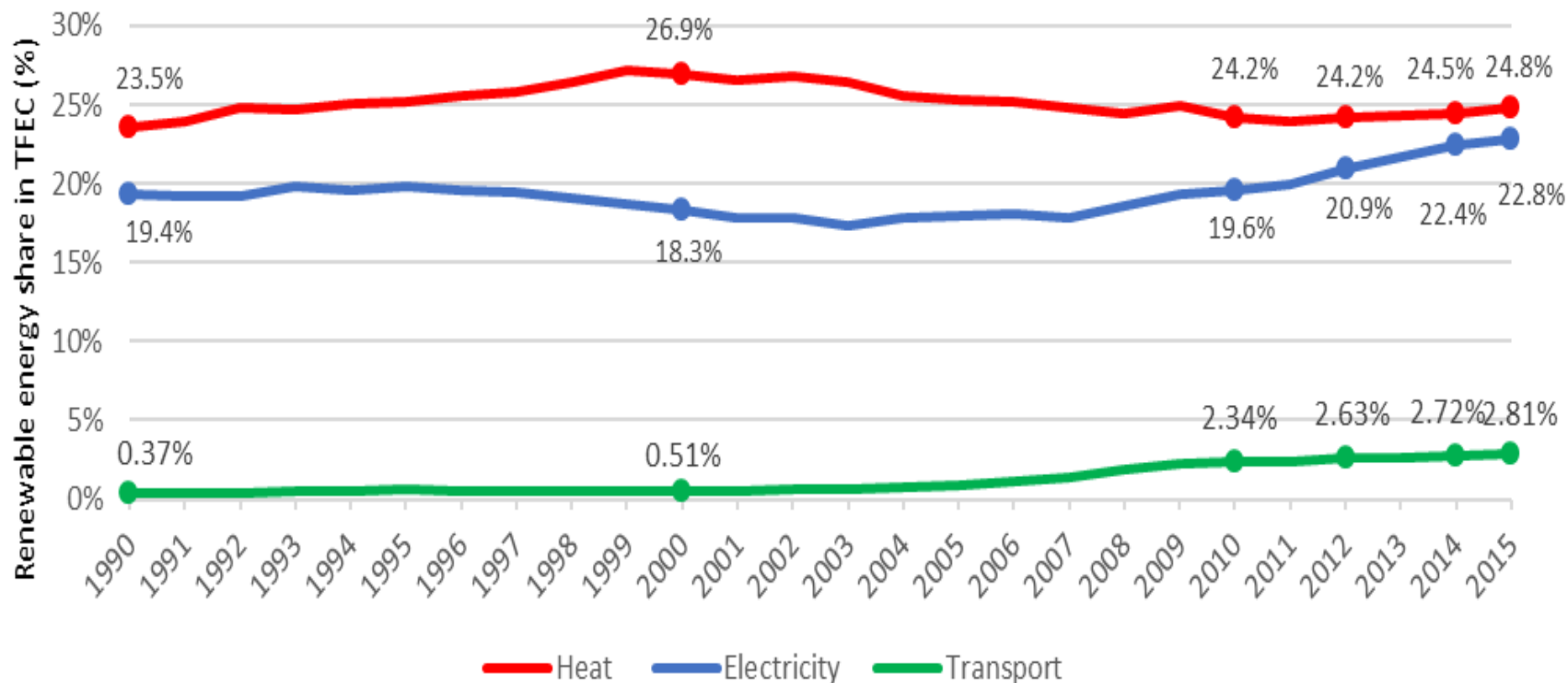
Capacity building and
advisory

Streamlining Administrative Procedures

Capacity building and
advisory

RE Grid Integration

RE penetration in heating and transport requires boosted efforts.



- Progress in the power sector is not being matched in transport and heating – which together account for 80% of global energy consumption.