

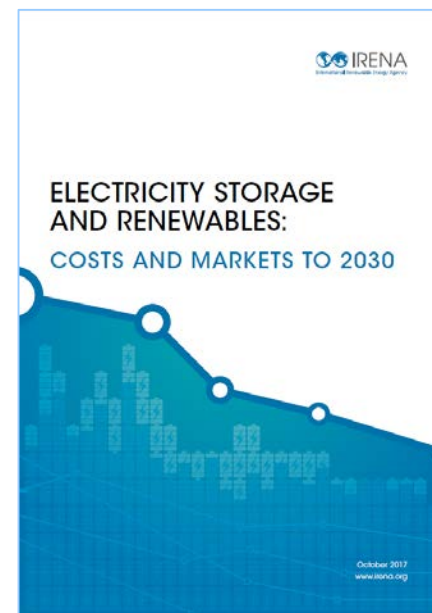
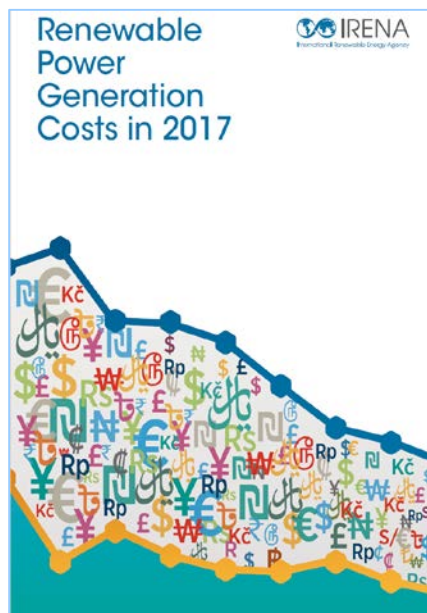
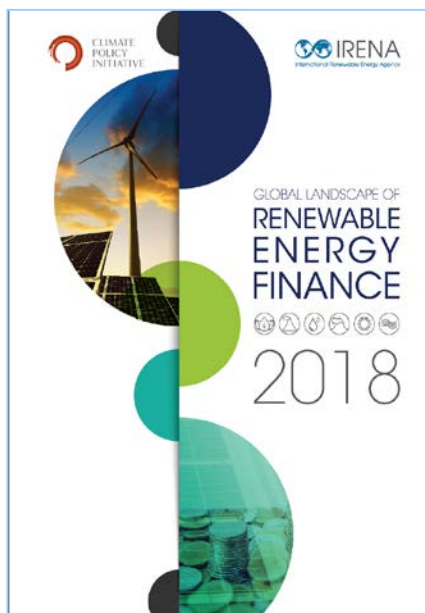


# Renewable energy global trends and implementation of the South East Europe Initiative

**Vienna - 22 March 2018**

5<sup>th</sup> Renewable Energy Coordination Group Meeting

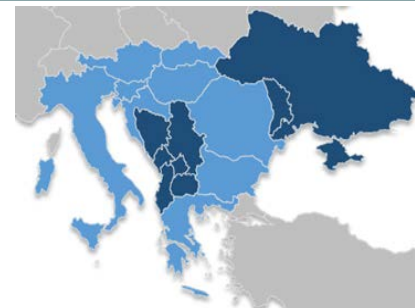
# Content of the presentation



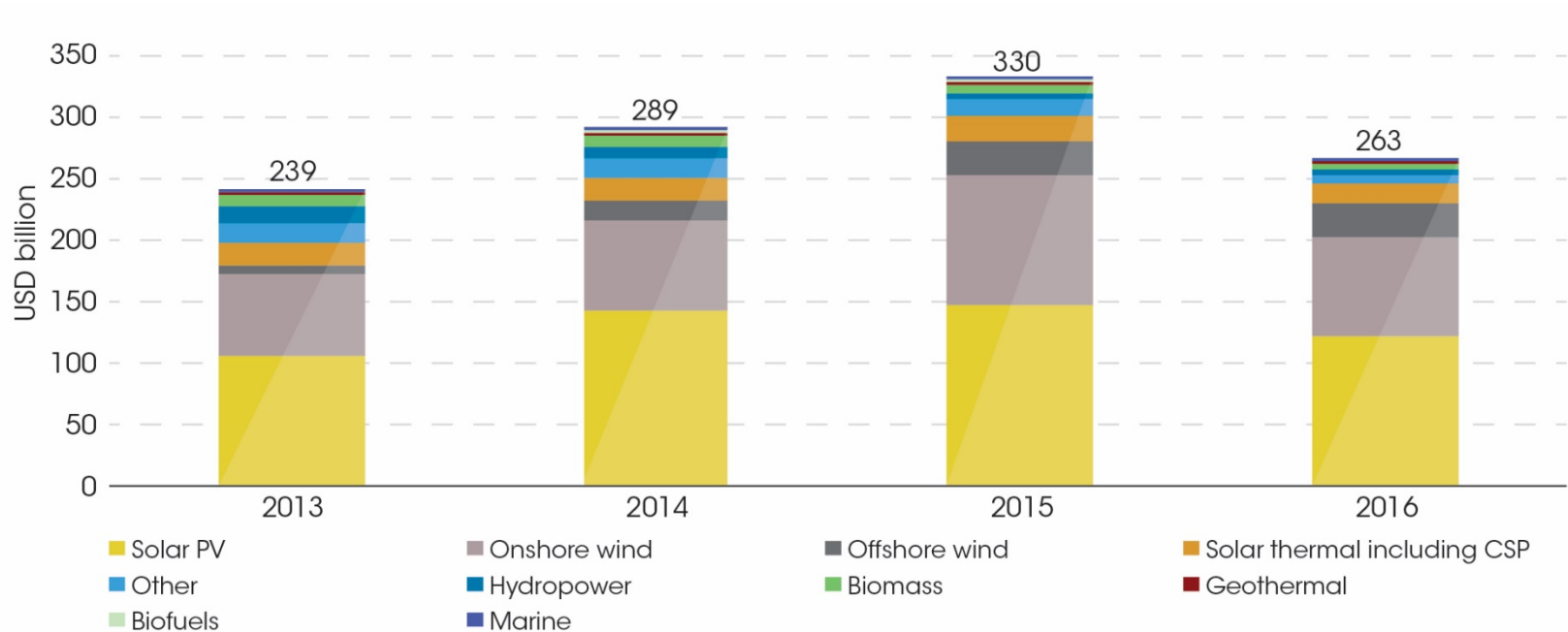
## IRENA's South East Europe Initiative Update

 REmap 2030  
A Renewable Energy Roadmap

**CESEC**



Renewable energy annual investment by technology type, 2013-2016

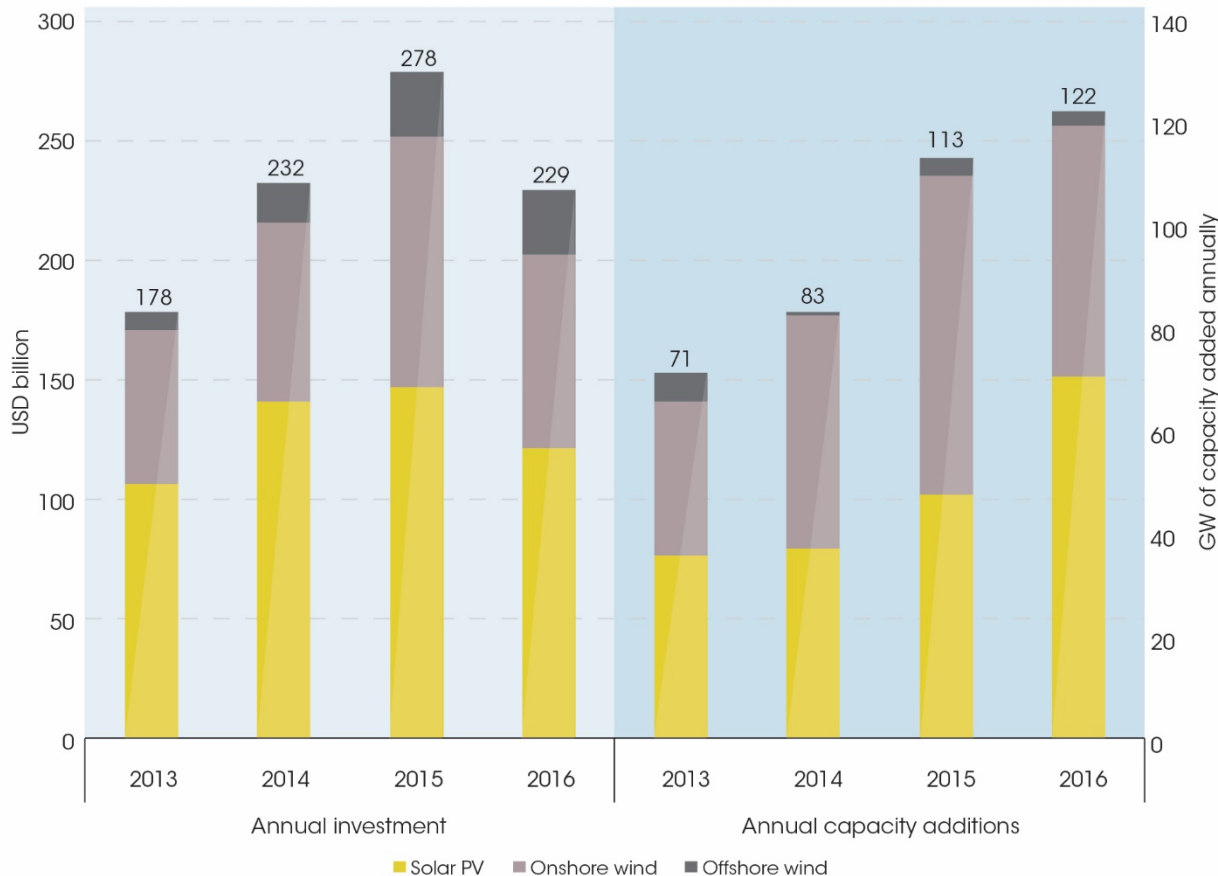


Source: IRENA and CPI (2018)

Global annual investment in renewable energy rose steadily in 2013-2015, peaking at USD 330 billion in 2015 before falling to USD 263 billion in 2016.

# Capacity vs investment trends

Public and private investment in renewable energy finance, 2013-2016



Source: IRENA and CPI (2018)

While annual investment declined in 2016, capacity additions in the same year were up from 2015, reaching record-high levels.

Capacity additions  
in **2017**

**Solar PV**

**98.9 GW**

Source: SolarPower Europe

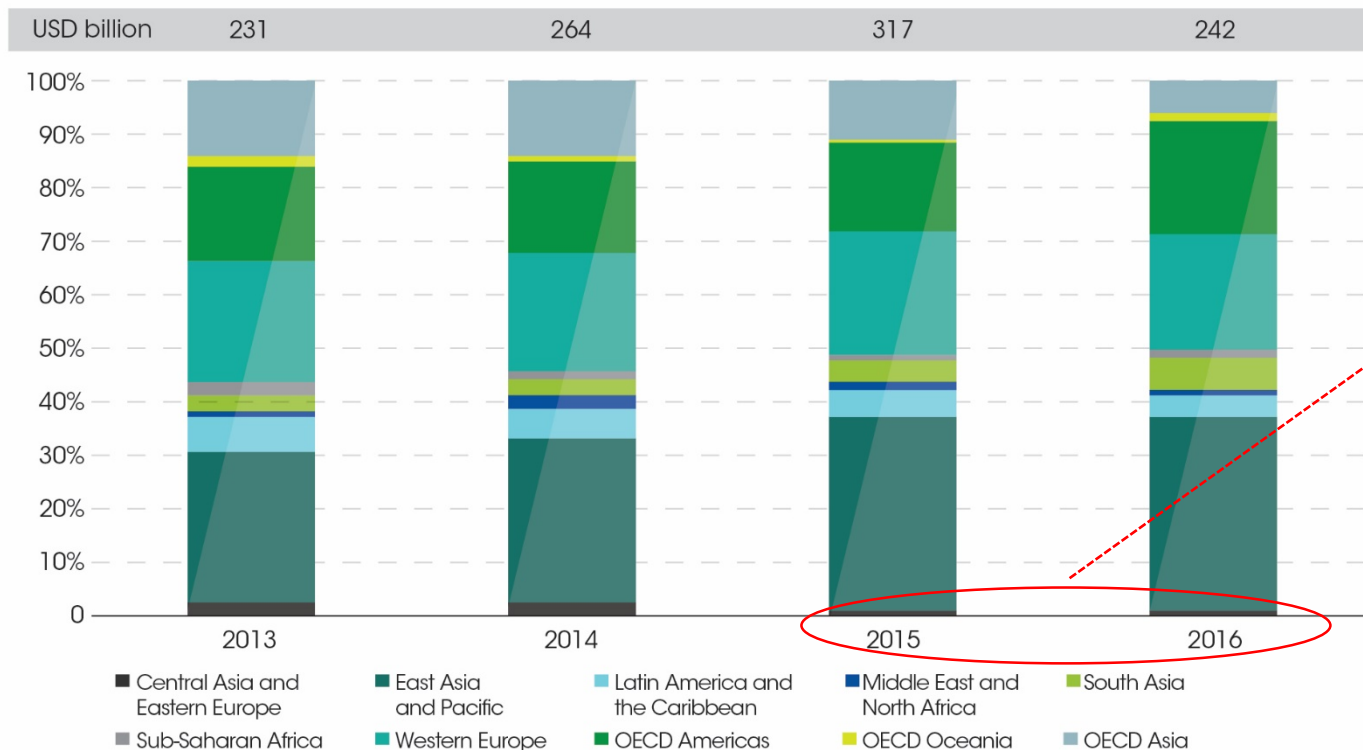
**Wind**

**52.6 GW**

Source: Global Wind Energy Council

# Renewable energy investment by region

Annual renewable energy investment by region of destination, 2013-2016



**Central Asia and Eastern Europe**

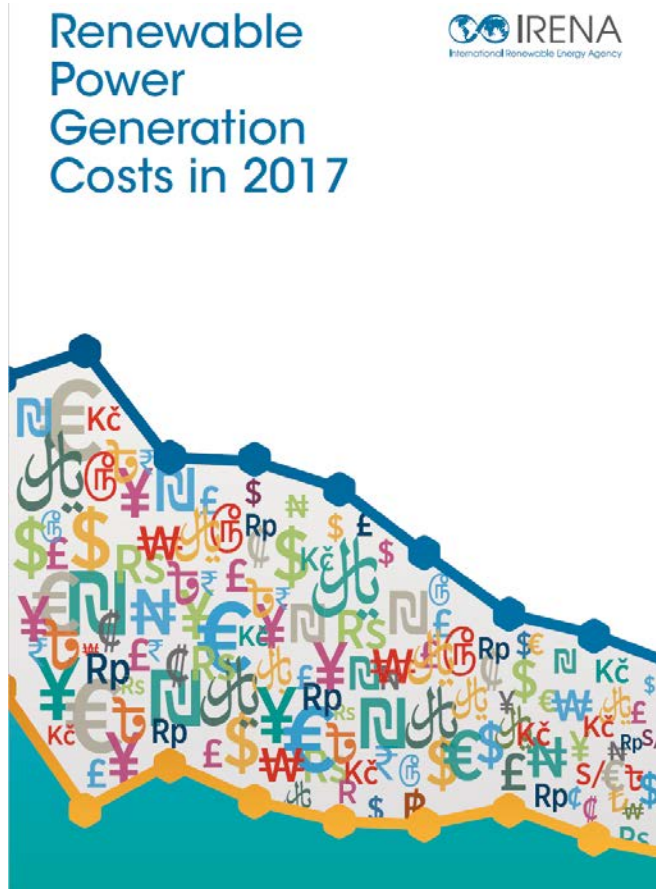
Average annual investment **2015/2016**

**3.2 USD billion**

Source: IRENA and CPI (2018)

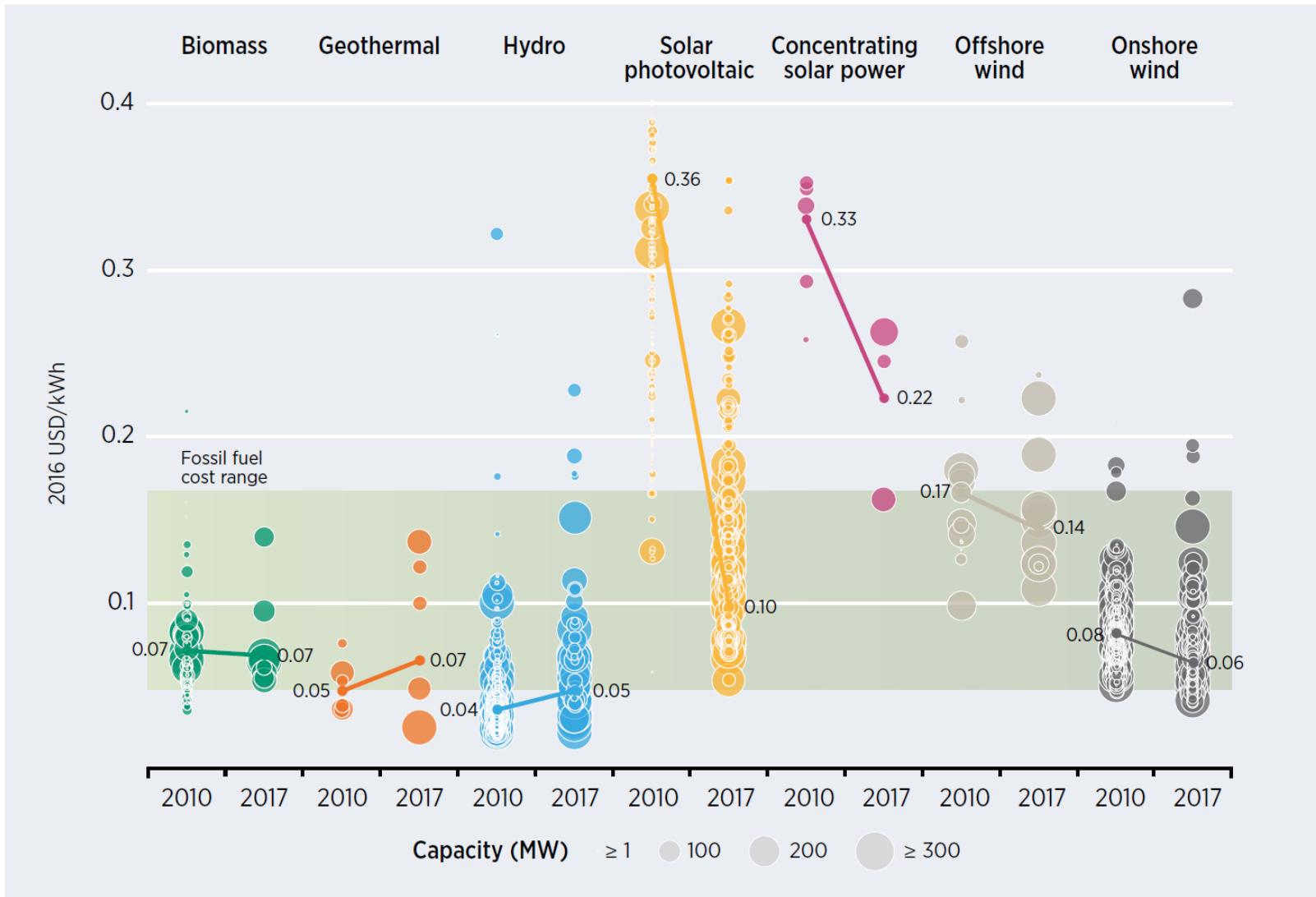
The East Asia-Pacific region was the dominant destination for renewable energy investment during 2013-2016, followed by the OECD Americas and Western Europe.

# Recent cost evolution (1)



- ✓ Latest trends in the cost and performance of renewable power generation technologies
- ✓ Global results to 2017, country/regional results to 2016
- ✓ Detailed analysis of equipment costs and LCOE drivers
- ✓ Integration of project LCOE and Auction results to look at trends to 2020

# Recent cost evolution (2)



Source: IRENA Renewable Cost Database.

# Costs continuing to fall for solar and wind



All technologies falling into competitive range

Remarkable rate of cost deflation for solar & wind

All commercial RE power to be competitive by 2020/22

## Drivers:

- Technology
- Competitive Procurement
- Experienced Developers

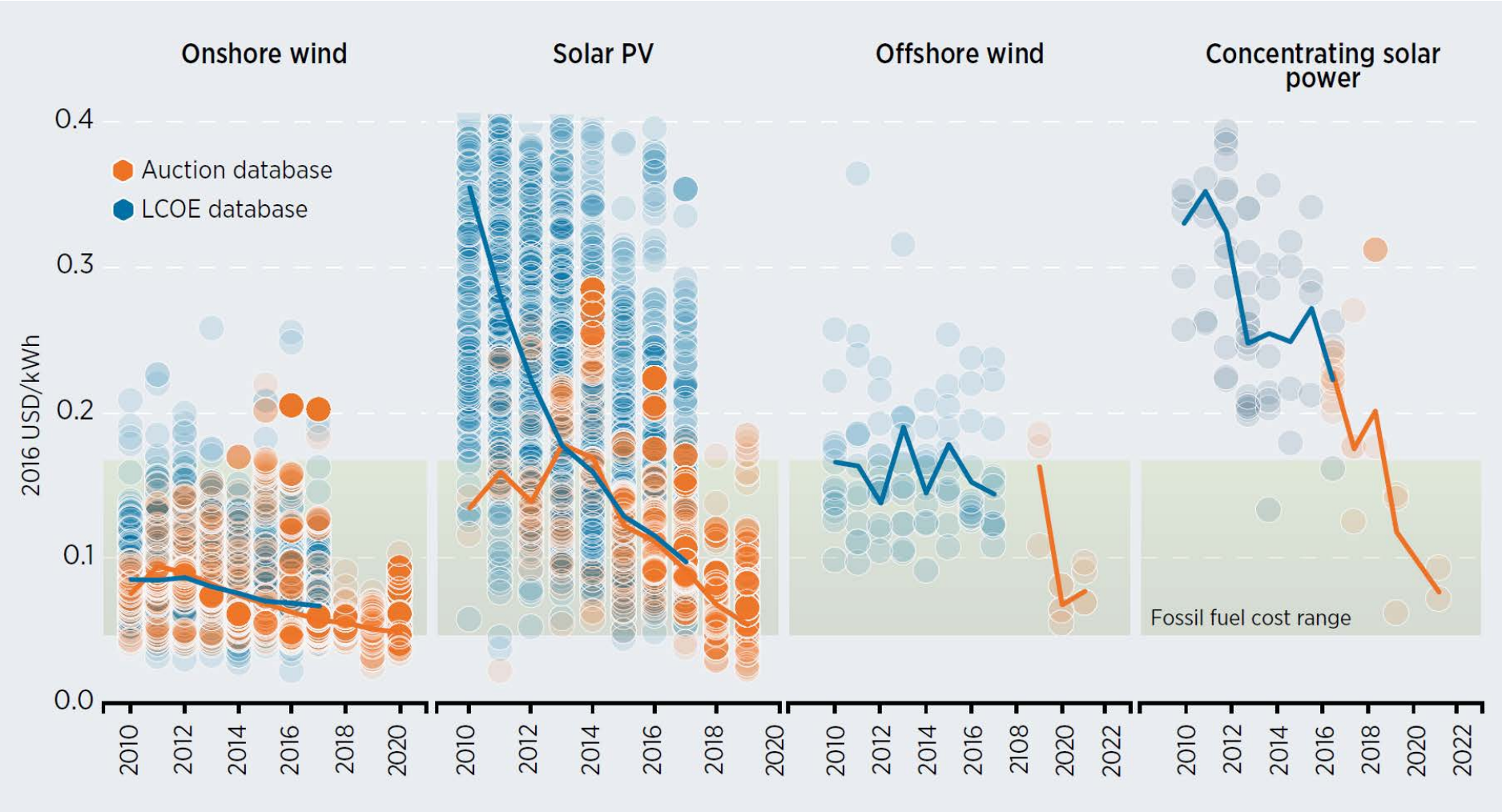


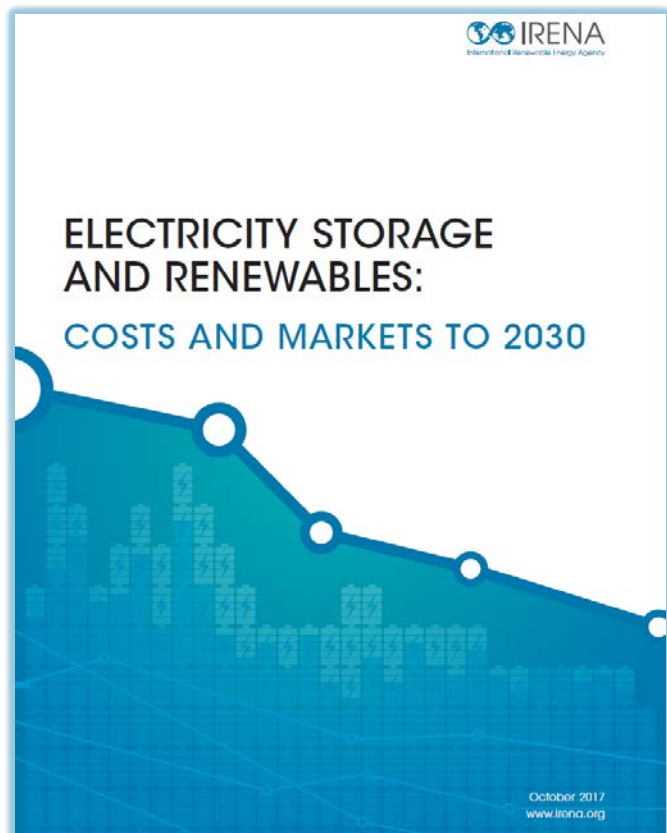
## Potential for further reduction by 2025:

- Solar PV - 59%
- Onshore wind - 26%
- Offshore wind - 35%



# Solar & Wind: LCOE/Auction Price Evolution





Installed energy costs of battery storage systems to fall **50-66% by 2030**

Performance improvements

Market to support range of technologies

Overall market for electricity storage to grow 2-3X by 2030  
Battery storage to grow 17-38X by 2030

## Update on implementation

### 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

Full alignment with the objectives of  
**CESEC RE Action Plan**



Objective: to support **initiation, development** and **financing** of sustainable energy projects by:

- » Improving the transparency of the market
- » Offering IRENA's tools and databases for market players
- » Supporting projects at the development stage



## New geographical coverage:

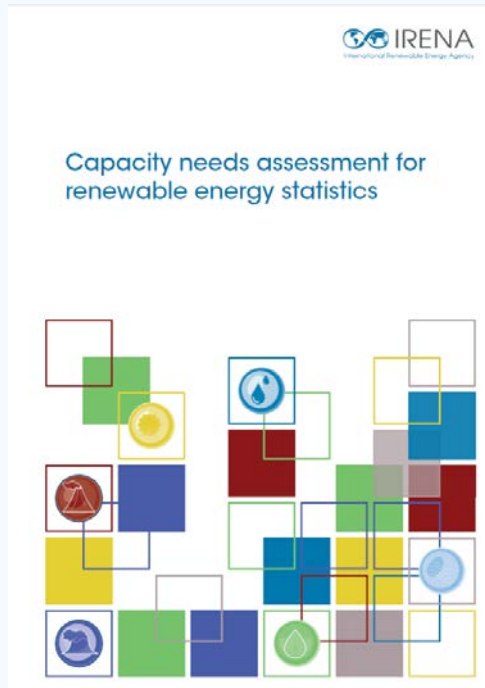
- » Sub-Saharan Africa
- » Latin America
- » Asia
- » MENA
- » Eastern and Southern Europe
- » SIDS



### About the Marketplace

The Sustainable Energy Marketplace is a virtual platform that gathers all renewable energy actors and IRENA's expertise and work together the deployment of renewable energies in developing countries. The marketplace aims to scale up the existing global investment and support the channelling of public and private finance to meet the demand in the market. Project developers, financiers, service and technology suppliers can register and work together to realize projects and bring energy where it is still needed.

In order to support project development and financing IRENA will assess projects in more detail and cooperate closely with international financing institutions, donors, private sector advisors and service providers to actively facilitate the market. Market players can communicate with IRENA through the platform to indicate their specific needs and interests.



Training to enhance capacities to improve the collection of reliable data on renewables, in particular bioenergy

**5 – 7 December 2017, Tirana, Albania**

Co-hosted by the Ministry of Infrastructure and Energy

## RE project development training:

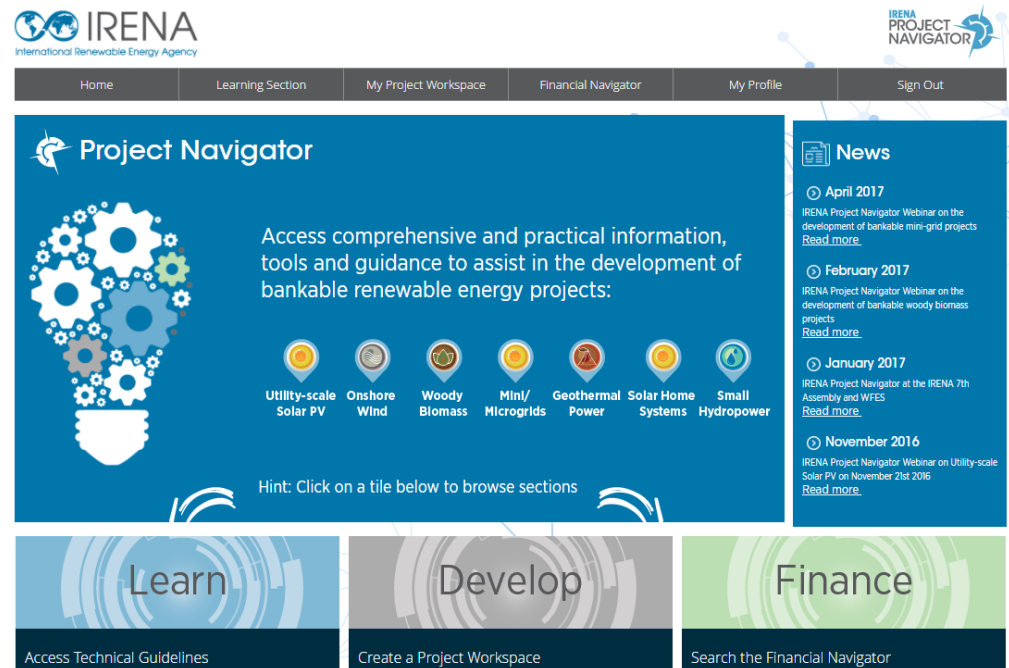
- ✓ Governments
- ✓ Project developers
- ✓ Financial institutions
- ✓ Academia

**12 – 13 June 2018**  
**Belgrade, Serbia**

Co-hosted by the Ministry of  
Mining and Energy

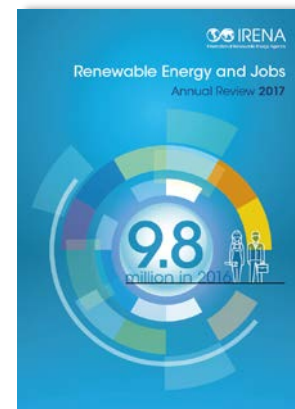


A comprehensive platform giving project developers the tools – **at no cost** – to create robust, bankable renewable energy project proposals.

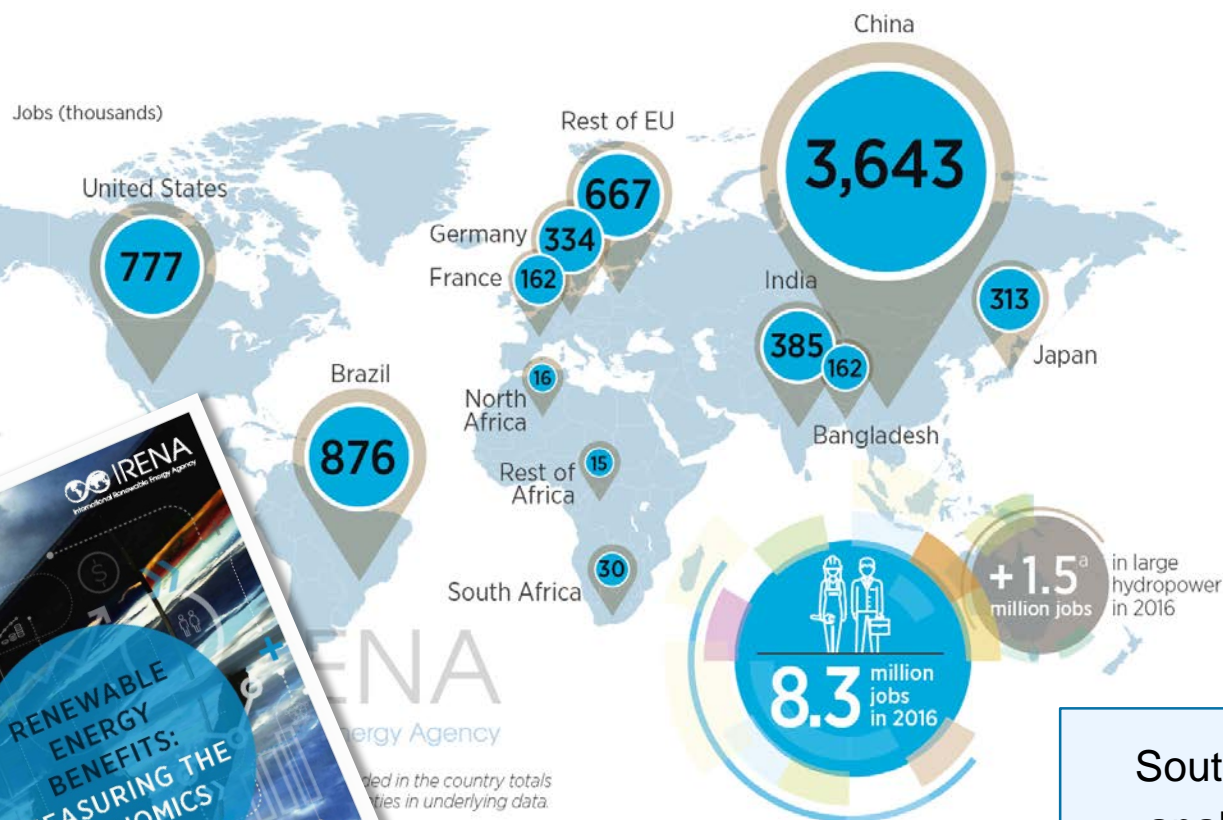


The screenshot shows the IRENA Project Navigator website. At the top, there is a navigation bar with links for Home, Learning Section, My Project Workspace, Financial Navigator, My Profile, and Sign Out. The main content area features a large blue header with the 'Project Navigator' title and a lightbulb icon filled with gears. Below this, a text block states: 'Access comprehensive and practical information, tools and guidance to assist in the development of bankable renewable energy projects:'. Underneath are seven icons representing different energy sources: Utility-scale Solar PV, Onshore Wind, Woody Biomass, Mini/Microgrids, Geothermal Power, Solar Home Systems, and Small Hydropower. A hint at the bottom of this section says: 'Hint: Click on a tile below to browse sections'. To the right of the main content is a 'News' section with three entries: April 2017 (IRENA Project Navigator Webinar on the development of bankable mini-grid projects), February 2017 (IRENA Project Navigator Webinar on the development of bankable woody biomass projects), and January 2017 (IRENA Project Navigator at the IRENA 7th Assembly and WFES). Below the main content area are three large tiles: 'Learn' (Access Technical Guidelines), 'Develop' (Create a Project Workspace), and 'Finance' (Search the Financial Navigator).

## Renewable Energy Jobs



Source: IRENA (2017),  
Renewable Energy and Jobs –  
Annual Review 2017



South East Europe market analysis with **focus on socio-economic benefits**

**In 2019**

# Planned activities for 2018 and 2019

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- ✓ Renewable Energy Prospects for the CESEC region
- ✓ South East Europe market analysis with focus on socio-economic benefits
- ✓ Workshop on grid integration of intermittent renewables
- ✓ Additional capacity building activities on regulatory and policy aspects
- ✓ Renewable Readiness Assessment for the Republic of Moldova





# Renewable Energy Prospects for South East Europe

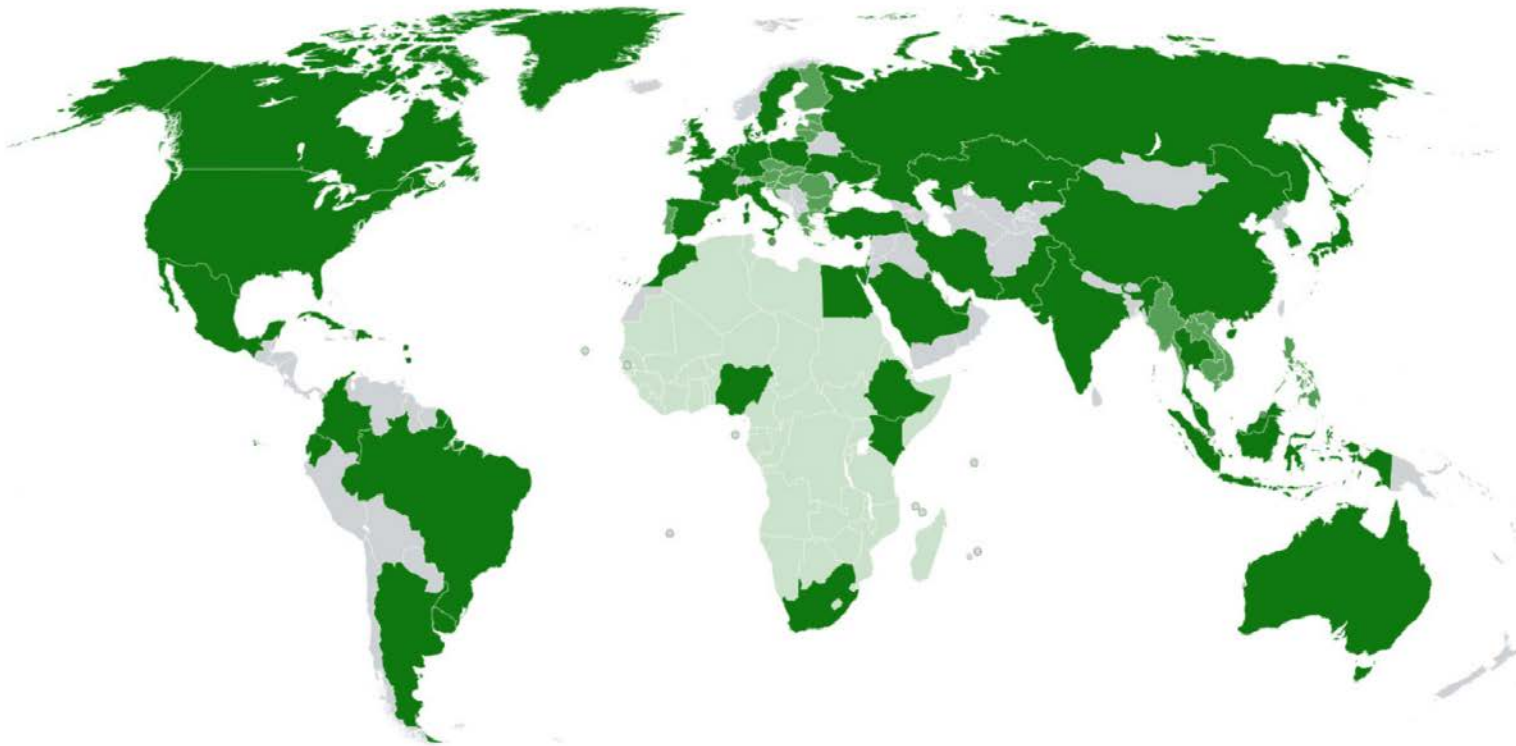


## What is REmap?

- **REmap explores:**
  - Renewable energy deployment potential by 2030 and 2050.
  - Costs/benefits of accelerated renewables deployment.
- **Bottom-up process:**
  - Developed in close consultation with country experts.

# IRENA's REmap analysis coverage

- 70 country analyses, more than 90% of global final energy demand



**Dark green:** REmap countries

**Middle green:** Countries covered under the REmap regional analyses for the EU and ASEAN

**Light green:** Countries covered under the REmap regional analysis and IRENA power pools projects for Africa

# REmap explores technology options to accelerate renewables deployment cost-effectively

**1. What is the RE outlook by 2030 in government plans?**  
(Reference Case)

**2. What are the additional RE deployment options?**  
(REmap Options)

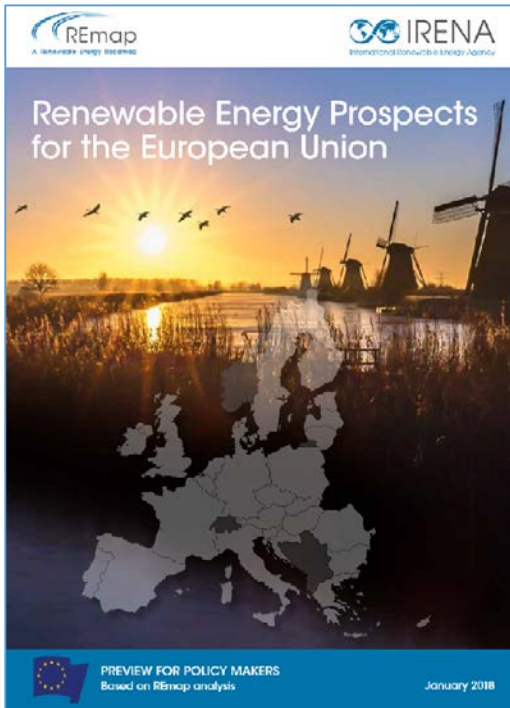
**3. What are the costs and benefits of the RE options?**  
(Impact analysis)

# IRENA's experience with regional renewable roadmaps

- A regional approach to renewable energy can be more efficient by:
  - Tapping into the best resources available within the region
  - Identifying synergies in e.g. infrastructure development
  - Creating economies of scale for market players
  - Sharing best-practices
- A way of maximizing IRENA's impact



# REmap analysis for the European Union

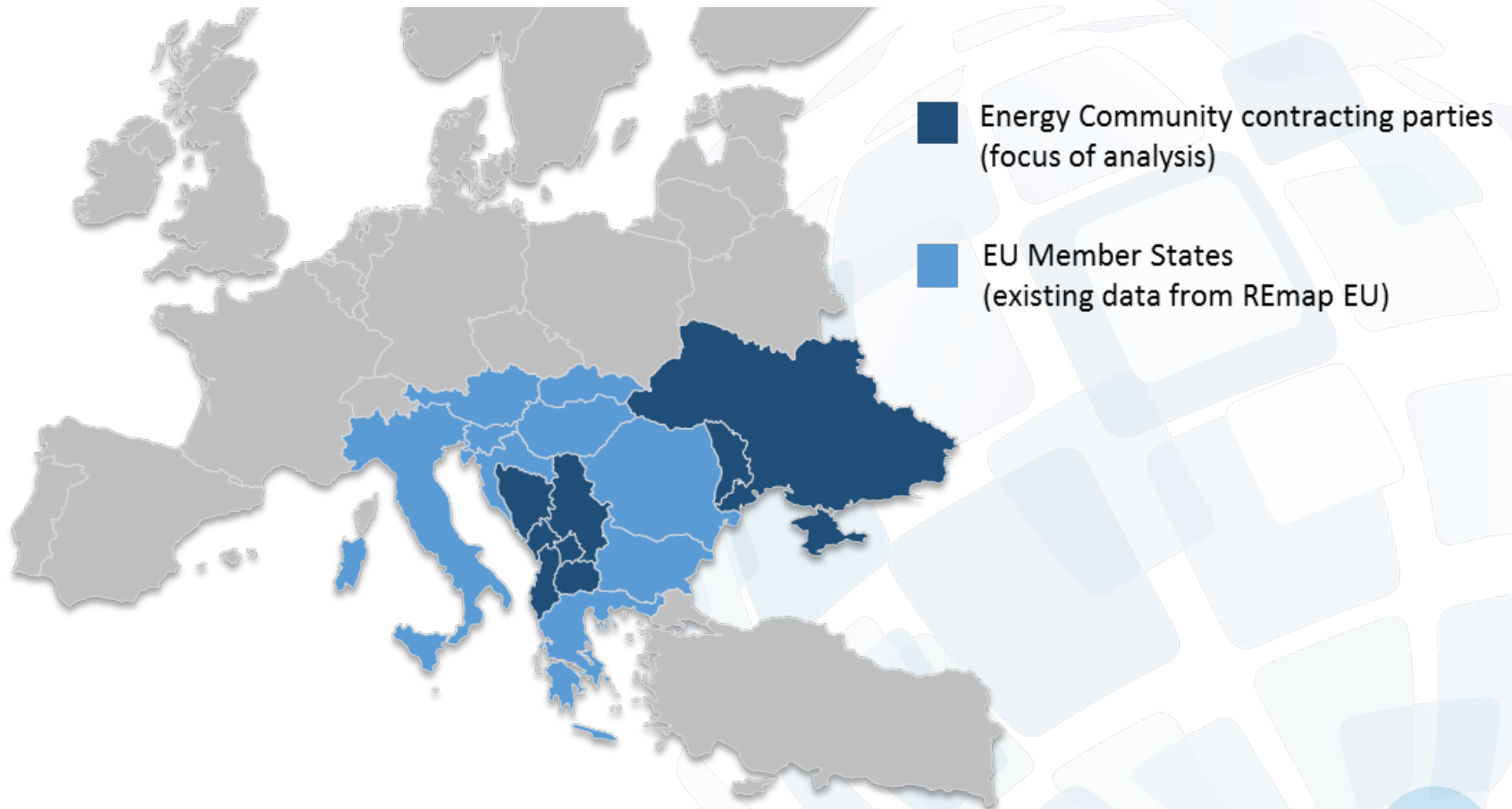


- Background:
  - In 2014, the European Council agreed on 2030 climate and energy targets, including a minimum of 27% renewables
  - Discussions on the “Clean Energy for All Europeans” legislative package.
- Aim:
  - Identify options to meet and potentially exceed the proposed 27% renewables target for 2030
  - Assess the aggregated impact of national renewable energy plans
  - Assess the role of renewables in long-term decarbonisation

## REmap analysis for the EU – overall results

- The EU can double its **renewable share to reach 34% by 2030**, cost-effectively
- **All EU Member States have cost-effective potential** beyond reference case
- Additional **GHG reduction of 15% by 2030** compared to reference case
- REmap case results in **savings of EUR 21 billion/year in 2030 on LCOE basis**
- Total estimated **savings range from EUR 44 billion and EUR 113 billion** per year by 2030, when including health and environmental externalities
- Additional **investments of EUR 368 billion until 2030** (estimated average investment in renewable energy of around EUR 62 billion/year)
- Direct impact on **GDP: +0.3%**

# REmap CESEC study: planned geographical scope





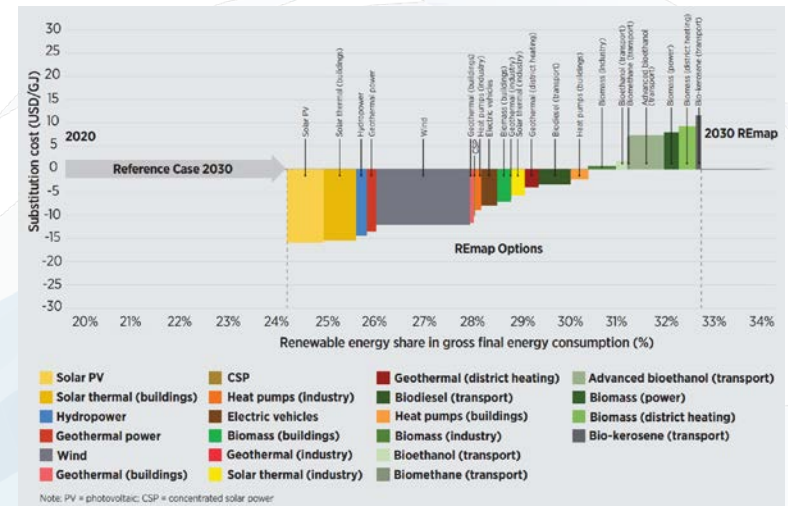
# REmap CESEC: planned outputs (I)

## Portfolio of technology options to accelerate renewables by 2030

- Across all sectors
- Country-specific
- Technology-specific

## Benefits/costs and economic impact of accelerated renewables

- Energy system costs compared to reference case
- Investment needs and direct impact on GDP



Sample cost-supply curve from IRENA's REmap analysis for the European Union

## REmap CESEC: planned outputs (II)

- **Other impacts**
  - Impact on fossil fuel imports / energy security
  - Operation of power sector – integration of renewables
  - GHG emission reductions
  - Avoided health damages
- **Opportunities for energy sector integration**
  - Across sectors → sector coupling
  - Across countries → power interconnections, biomass trade
- **Policy recommendations to unleash the potential**

## REmap CESEC: key data needs

- Existing energy sector plans, targets, projections
- Sectoral indicators e.g.:
  - Age profile of generation plants, building renovation rates, market share of heat pumps, industrial output, biofuel production capacity, etc.
- Power sector data e.g.:
  - Historic demand/generation profiles, hydro storage and pumping capacities, interconnection capacities, etc.
- Energy commodity prices and applicable taxes
- Other socio-economic indicators

# REmap CESEC: timeline and engagement process

- **Tentative timeline:** April 2018 – October 2019
- **Multiple opportunities for stakeholder engagement:**
  - Initial workshop (present approach and initiate data-gathering)
  - Sectoral webinars (power and end-use sectors)
  - Second workshop (preliminary findings)
  - Final workshop (final results)



**Thank you**

**Luis Janeiro, Programme Officer**  
**Marcin Scigan, Associate Programme Officer**

