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International Renewable Energy Agency

Renewable energy and climate change

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UNFCCC ADP
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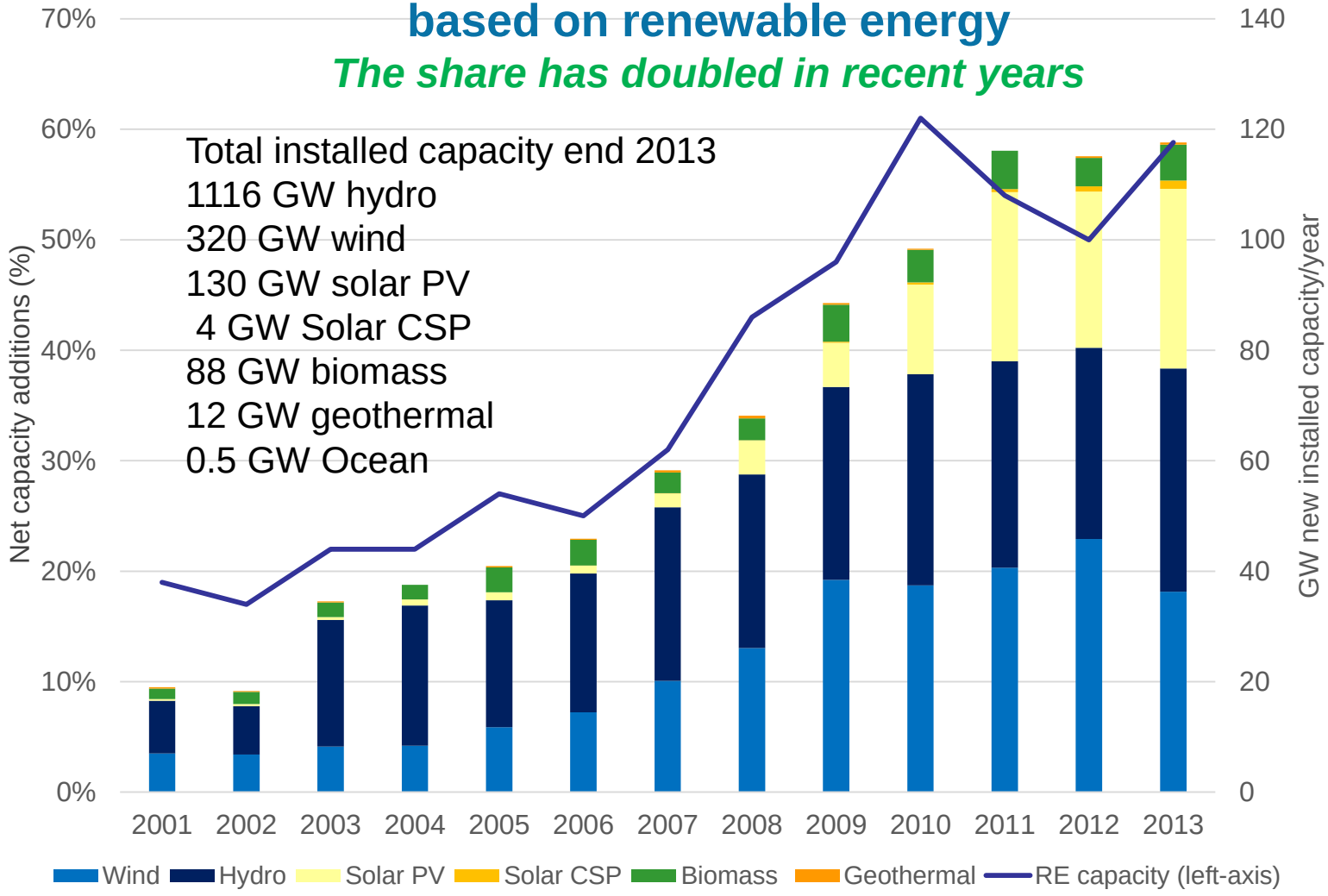
Topics

- Global status of renewable energy deployment
- Major opportunities yet to be realized
- Policy landscape and effectiveness
- Initiatives underway and their potential

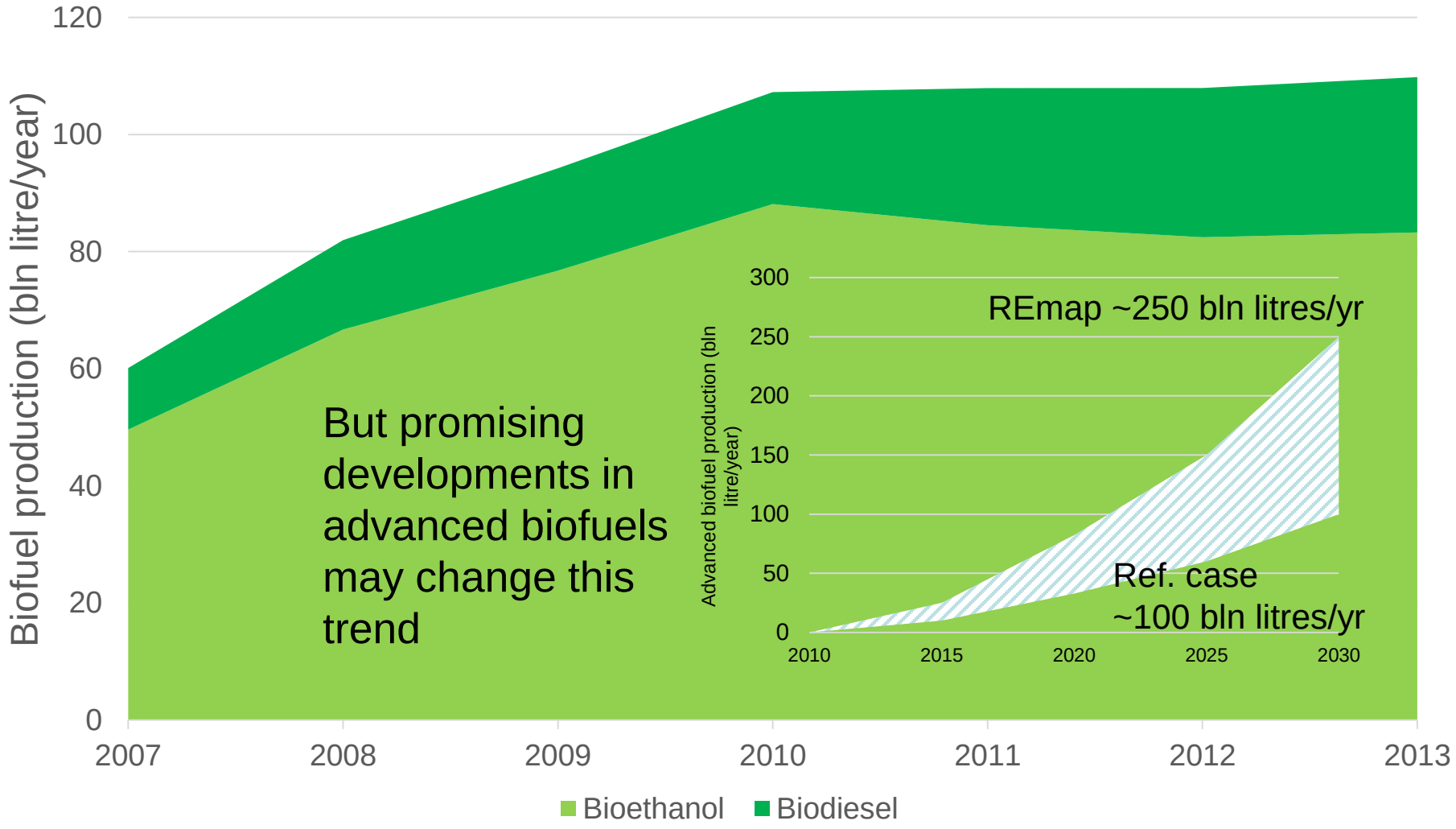
About half of the new electricity generation capacity worldwide is based on renewable energy

The share has doubled in recent years



Source: Global data

Biofuel Production is Stagnant



A diverse set of drivers for renewable energy

- Energy access
- Cost saving opportunities through increased use of RE
- Improved trade balance and enhanced supply security
- Renewables industry creates jobs: 5.7 mln (direct and indirect in 2012)
- Renewable industry is an important economic factor (USD 254 bln in 2013)
  - Important local sourcing/O&M opportunities
- Fossil fuel subsidies USD 544 bln, RE subsidies only USD 101 bln (2012)
- Fossil fuels cause USD 250-650 bln of health damage – indoor and local air pollution

- *…and renewables reduce greenhouse gas emissions*

REMAP 2030 - A roadmap for doubling the RE share

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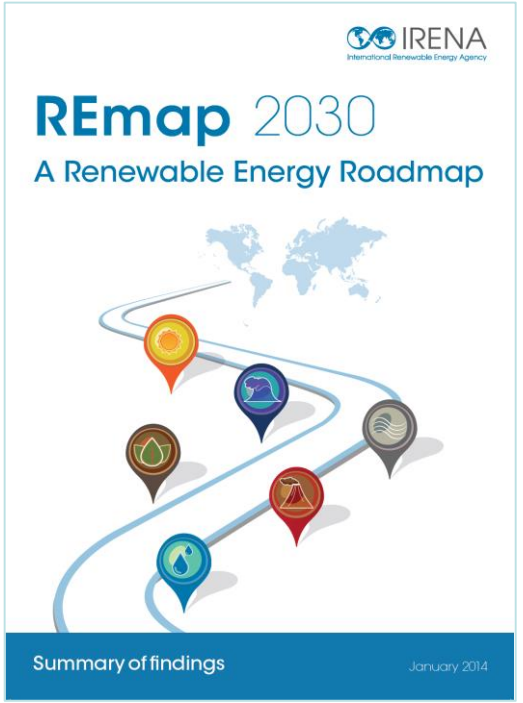
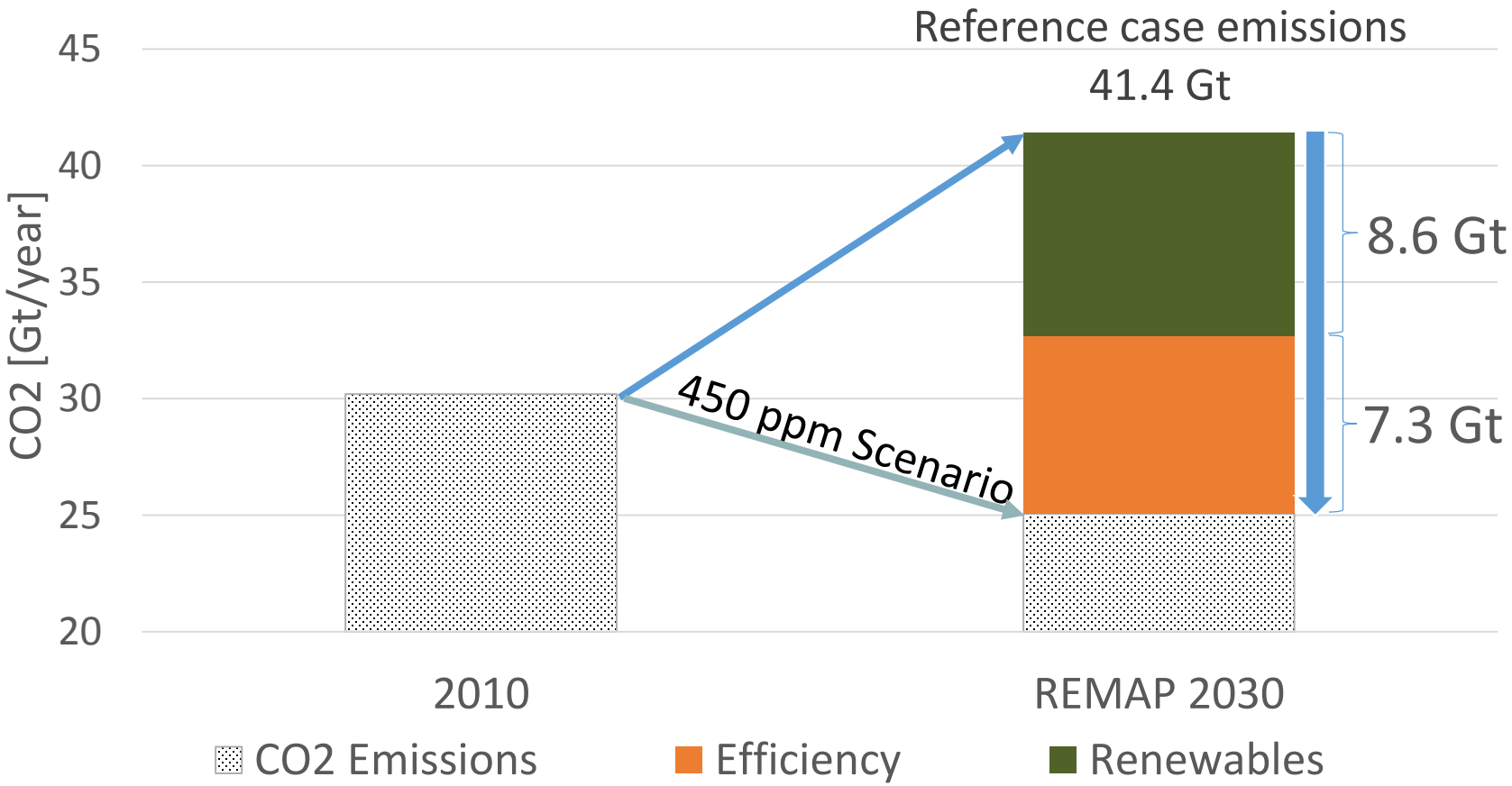


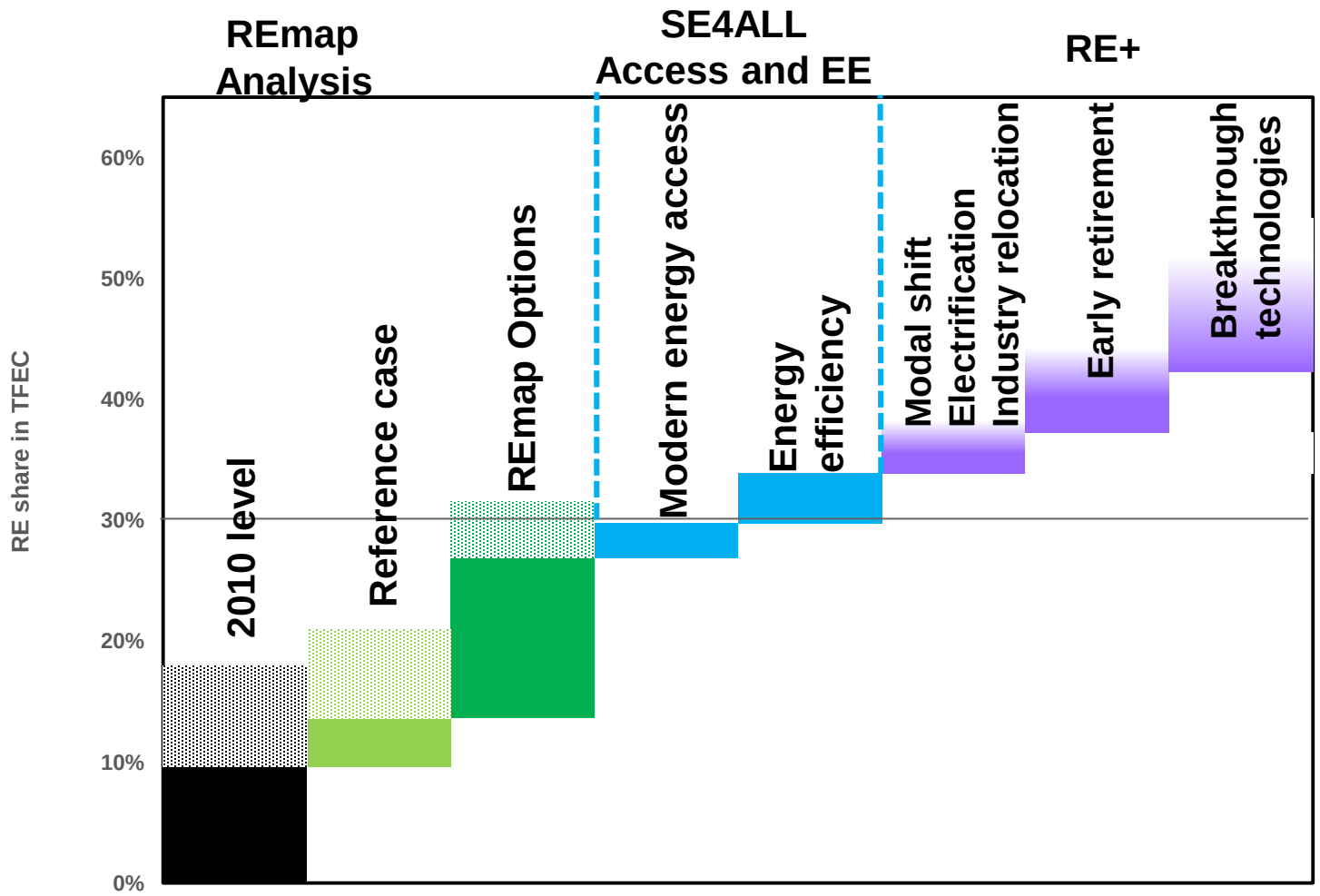
- REmap is an exploratory study, *not* a target setting exercise
- Technology options instead of scenarios
  - Based on national plans and scientific literature
  - Characterized by their cost and potentials
- 26 countries analysed covering 75% of global energy use
- **Countries are encouraged to consider options** –
  - REmap analysis is a starting point and it will continue to evolve

RE AND EE CAN JOINTLY YIELD MUCH NEEDED GHG MITIGATION



Additionally 1 Gt CO_2 eq methane emissions reduction

The global RE share can reach and exceed 30% by 2030



There is a need to unleash innovation (RE+), notably for end-use sectors

COUNTRY RE POTENTIALS OPPORTUNITIES VARY

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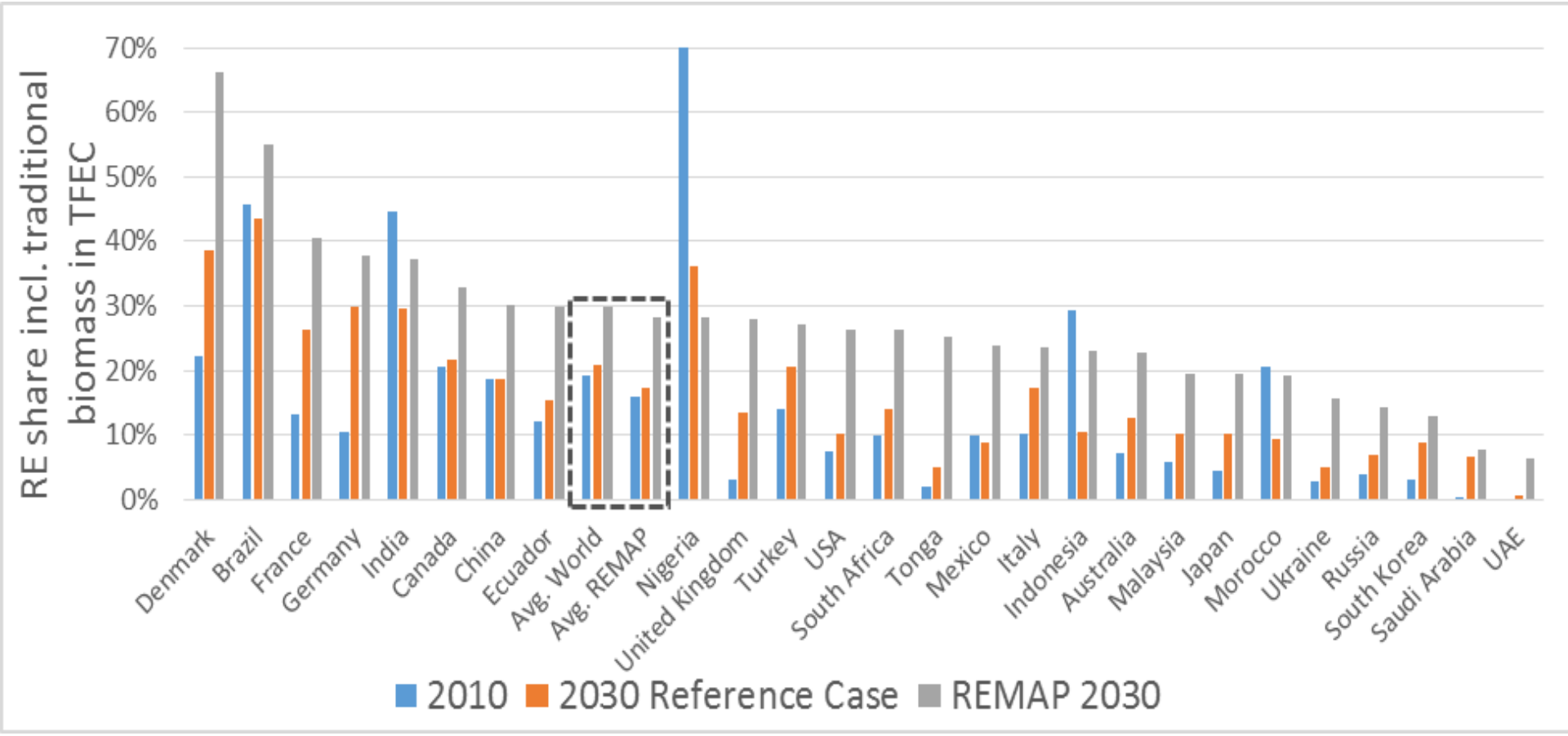
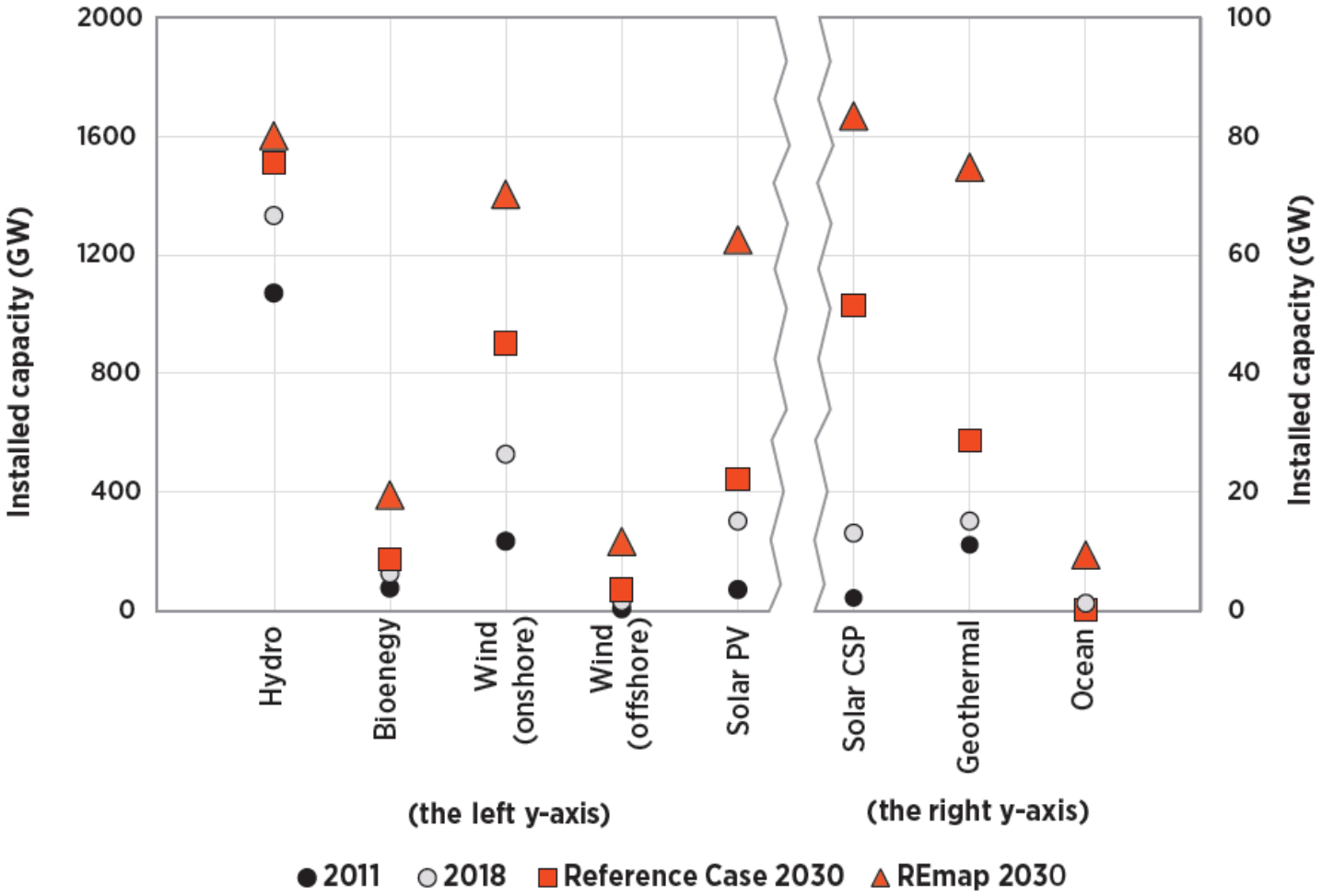


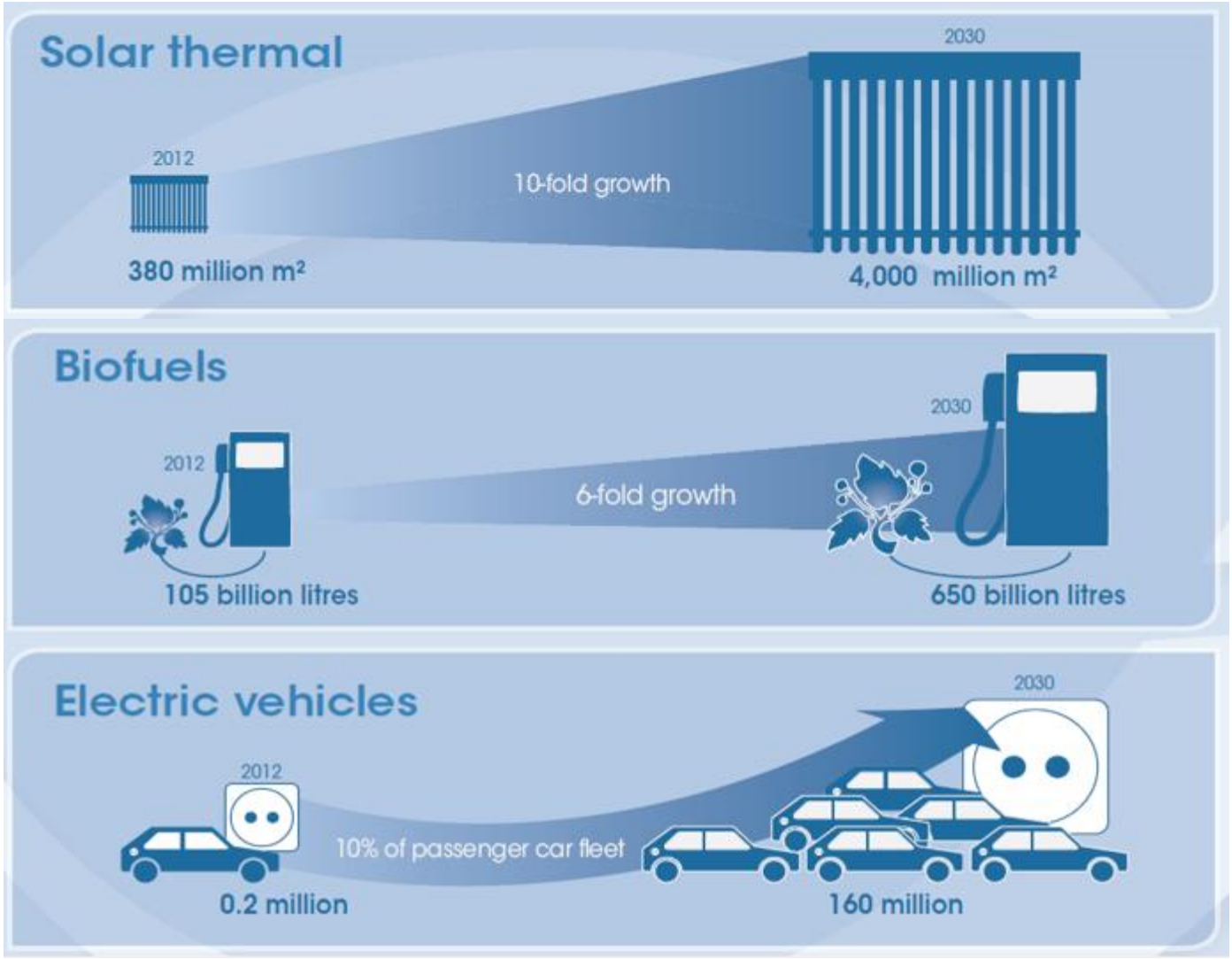
OPPORTUNITIES IN POWER GENERATION

GROWTH POTENTIAL IS UNDERESTIMATED



- Manage knowledge of technology options and their deployment
- Ensure smooth integration into existing infrastructure

Opportunities in End-Use



3% share
of energy demand
in 2030

4% share
of energy demand
in 2030

0.4% share
of energy demand
in 2030
but 1% of
useful demand

Doubling Renewables - Policy Cost and Benefits

- Nearly 10 Gt of GHG mitigation in 2030 compared to reference case
- Significant cost savings – no need for negotiations
- Net incremental systems cost rising from zero to USD 93 billion in 2030
- Avoided health impact USD 80-185 bln
- Net incremental investment needs rising to USD 200 billion in 2030
- REmap Options result in: 60 million cumulative RE job-years – 3.5 million annual average RE jobs – 0.9 million annual average additional energy jobs (*direct jobs only, more if indirect is included*)
- Subsidies per unit of RE can halve or fall even steeper depending on the future CO_2 price

Policy action areas and proposals

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1) Planning transition pathways
   - Base-year assessment / Reference Case 2030; national roadmap ; human and institutional capacity

2) Creating an enabling business environment
   - Technology cost reduction ; fossil fuel subsidies ; fair market access ; externalities ; standards/regulation/innovation ; long-term credible policy frameworks

3) Ensuring smooth integration into the existing infrastructure
   - Infrastructure ; sustainable biomass supply ; renewables/efficiency/resource nexus ; affordable and reliable markets ; streamline planning

4) Creating and managing knowledge
   - Accessible cost/potential/options information ; bankable project proposals ; best practice policies ; awareness ; sustainable renewable energy

5) Unleashing innovation
   - Technology life-cycle approach ; consider RE applications in buildings, industry, transport

2012 INTERNATIONAL YEAR OF SUSTAINABLE ENERGY FOR ALL

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Sustainable Energy for All Initiative

2014-2024 UN decade of SE4ALL

Three objectives:

- Universal access to modern energy by 2030
- Doubling of rate of energy efficiency gains
- Doubling the renewable energy share

IRENA is the hub for renewable energy: translate REmap into action

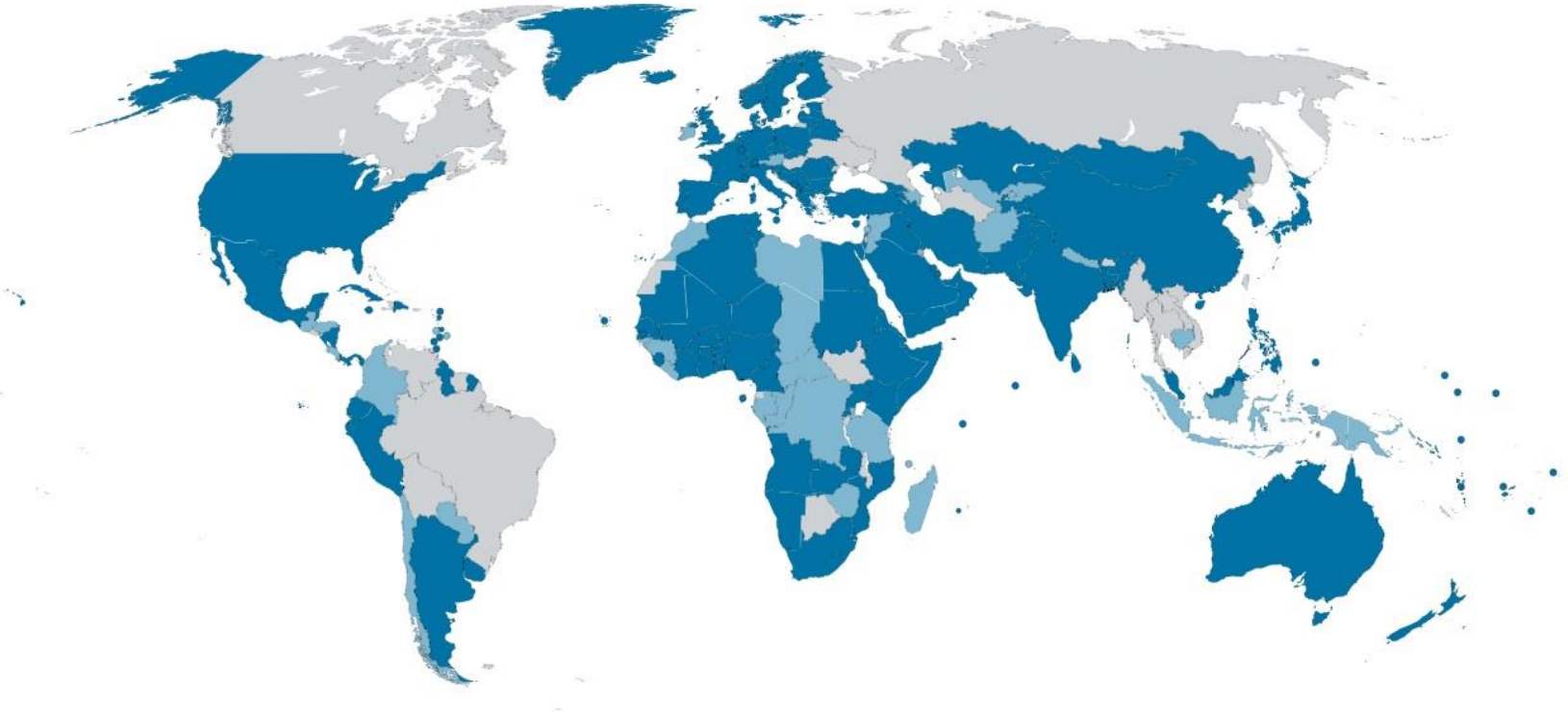
Chaired by UN SG and President of World Bank

Global Facilitation Team

IRENA DG Adnan Amin co-chair of RE Committee

A public-private partnership (governments, finance institutions, equipment manufacturers, utilities, international organizations, NGOs, foundations)

IRENA country membership is rapidly growing: 129 Members, 38 States in Accession



Established international cooperation framework
for acceleration of RE deployment

IRENA Programme of Work 2014-2015: Accelerate RE Deployment

- Transition planning (incl. REmap 2030, Renewables Readiness Assessments, Technology & Innovation)
- Knowledge gateway (incl. Resource Atlas, Cost of RE)
- Enabling investment and growth (incl. Project Navigator, Standards)
- Access (incl Off-Grid, Mini-grids)
- Islands (incl. Global Renewable Energy Islands Network)
- Regional action agenda (incl. Corridors)
- Abu Dhabi Fund for Development - USD 350 M for innovative project financing

IRENA PUBLICATIONS

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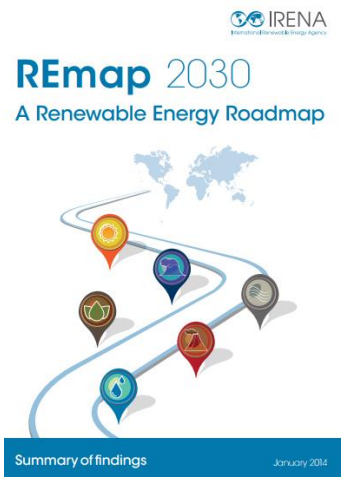

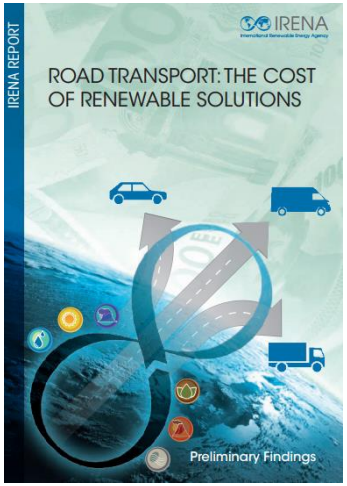

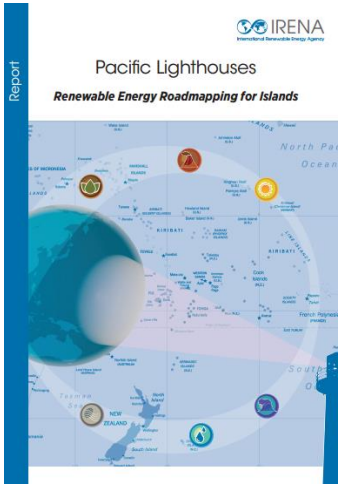

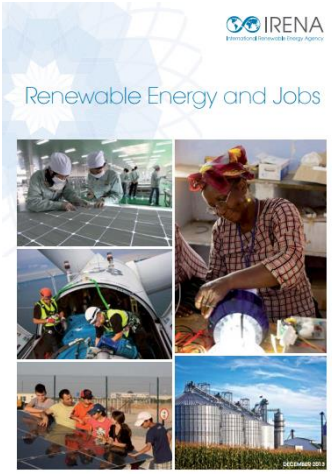

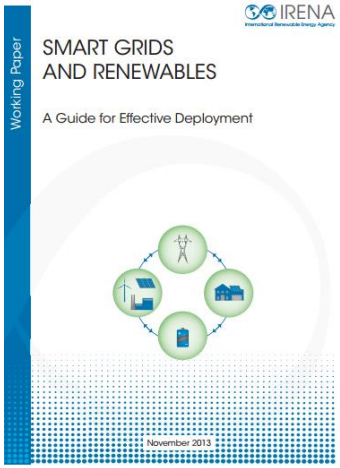

THANK YOU!

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