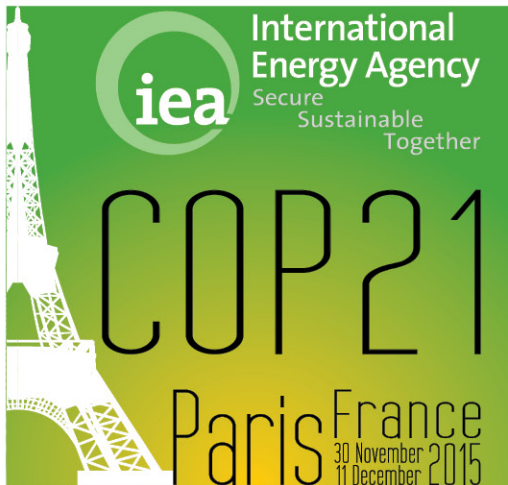


Using Data to Track the Energy Transition

December 11, 2015

- ***Kamel Ben Naceur, Director, Sustainable Energy Policy and Technology, IEA***
- ***Takashi Hattori, Head of Environment and Climate Unit and Caroline Lee, Energy Policy Analyst IEA***
- ***Duncan Millard, Chief Statistician, IEA***
- ***Thomas Spencer, Program Director, Energy and Climate, IDDRI***
- ***Casey Cronin, Associate Director, Advisory & Research, ClimateWorks***
- ***Philippe Benoit, Head of Environment and Energy Efficiency Division, IEA (moderator)***

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Energy Matters

How COP21 can shift the energy sector onto a low-carbon path that supports economic growth and energy access

Kamel Ben Naceur

Director, Sustainable Energy Policy and Technology

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- **Introduction: Energy at the heart of the climate challenge**
- **The impact of INDCs on the energy sector**
- **IEA's four key messages to COP21**
- **IEA activities at COP21**

Energy at the heart of the climate challenge

- **The energy sector accounts for at least two-thirds of global greenhouse gas emissions**
- **Momentum is building:**
 - 2014 emissions did not rise
 - Renewable capacity additions at a record high of 130GW
 - Fossil fuel subsidy reforms bearing fruit
 - Over 175 countries with INDCs for COP21
- **The energy sector must cut emissions, while powering economic growth, boosting energy security & increasing energy access**

Impact of INDCs on the energy sector



- 150 INDCs; over 175 countries; these countries represent nearly 95% of energy-related emissions
- IEA World Energy Outlook Special Report (June, updated October) found that INDCs result in:
 - Near-tripling in rate of global energy intensity improvement
 - 70% of additional power generation to be low-carbon
 - power sector emissions plateauing close to today's levels

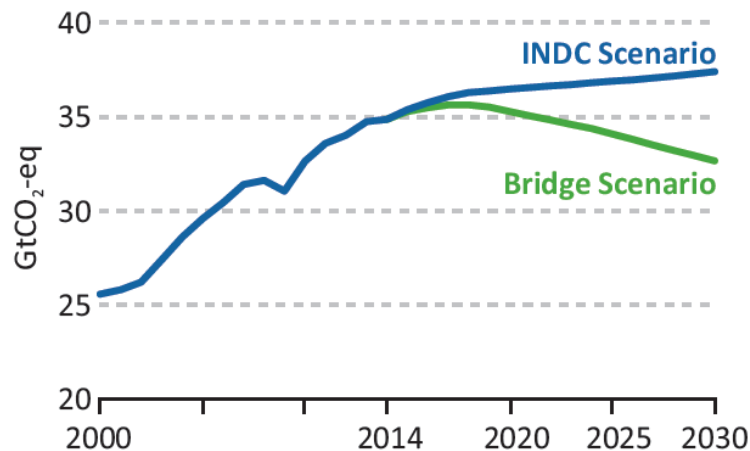
But emissions still rising in 2030: more is needed

To shift the energy sector onto a low-carbon path that supports economic growth and energy access:

- 1. Take five key actions, led by energy efficiency and renewables, to peak then reduce global energy emissions.*
- 2. Use the Paris Agreement to drive short-term actions consistent with long-term emission goals.*
- 3. Accelerate energy technology innovation to make decarbonisation easier and even more affordable.*
- 4. Enhance energy security by making the energy sector more resilient to climate change impacts.*

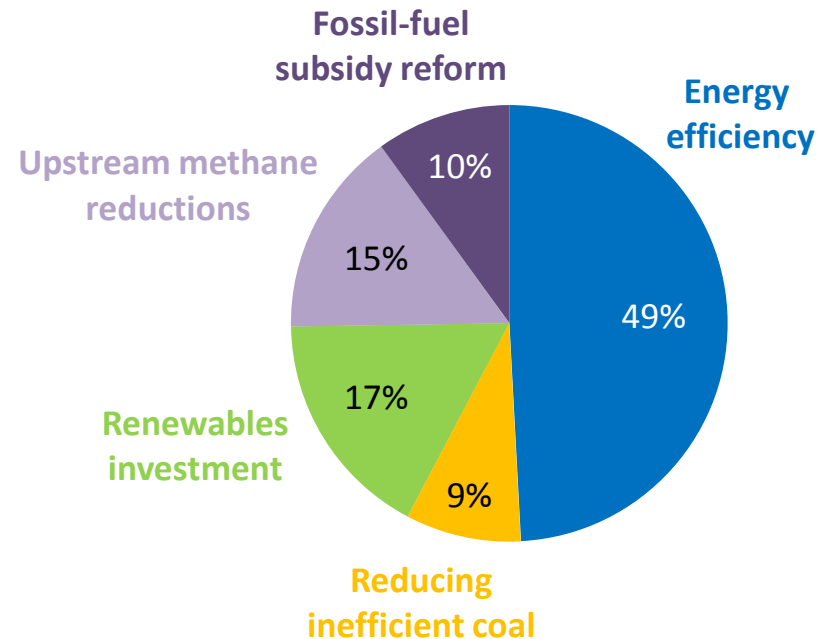
1. Take five key actions, led by energy efficiency and renewables, to peak then reduce global energy emissions.

Global energy-related GHG emissions



Source: World Energy Outlook Special Report: Energy and Climate Change (2015).

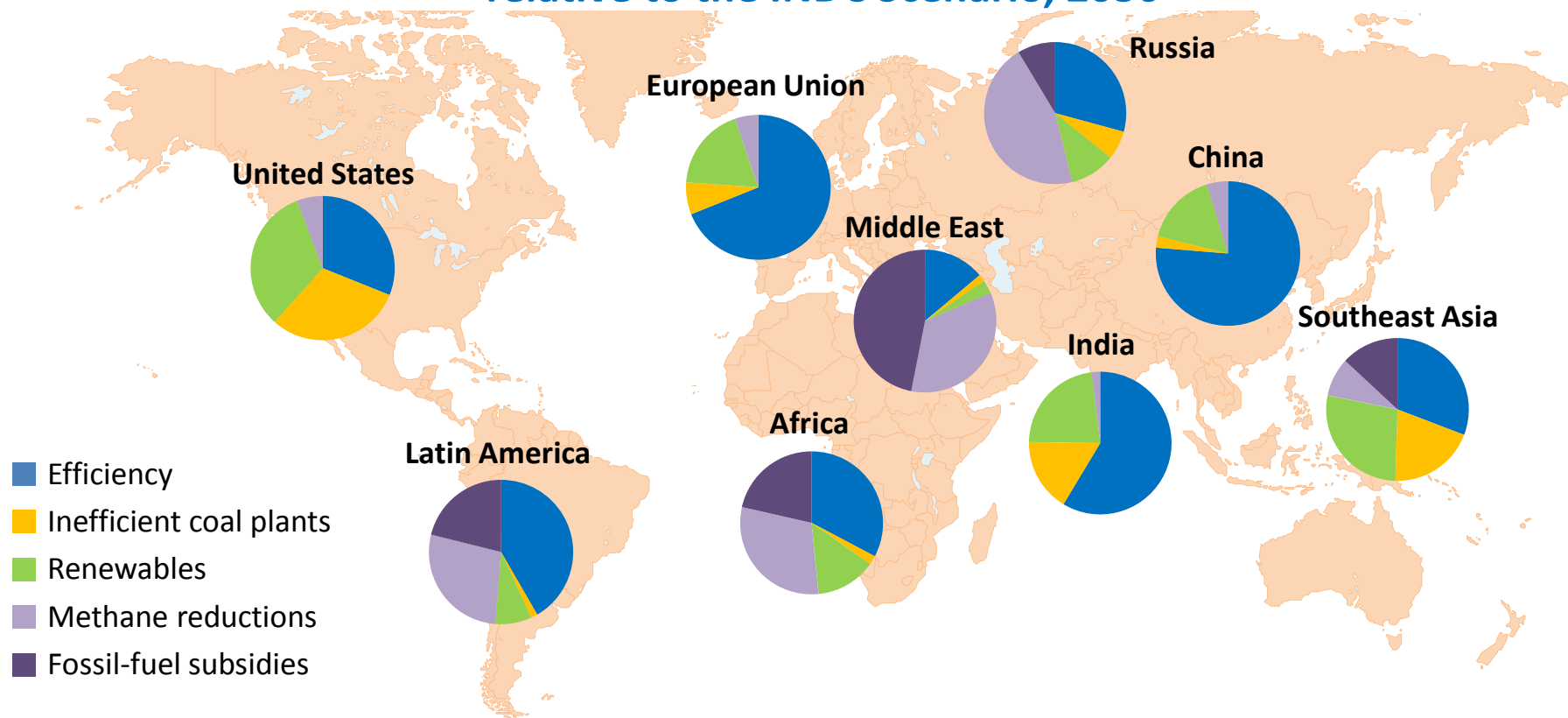
Emissions savings in the Bridge Scenario
by measure, 2030



Five measures save almost 5 Gt of emissions by 2030 & achieve a global emissions peak by 2020, without harming economic growth & using only proven technologies

The Bridge Strategy is flexible across regions

GHG emissions reduction by measure in the Bridge Scenario, relative to the INDC Scenario, 2030

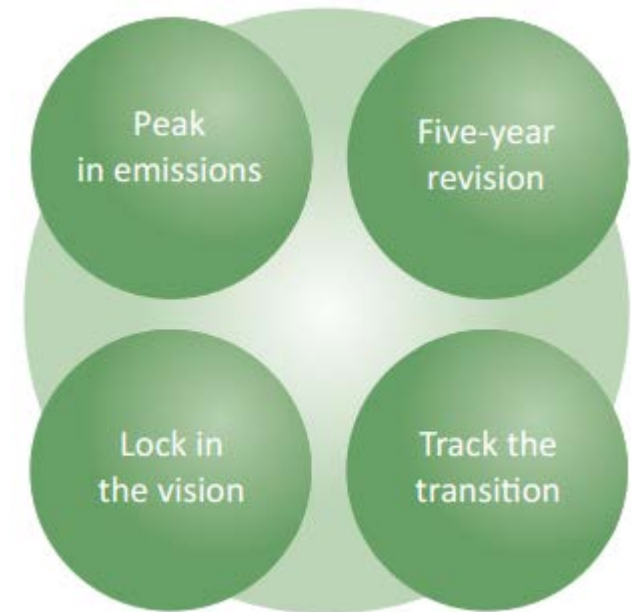


Source: World Energy Outlook Special Report: Energy and Climate Change (2015).

The measures in the Bridge Scenario apply flexibly across regions, with energy efficiency & renewables as key measures worldwide

2. Use the Paris Agreement to drive short-term actions consistent with long-term emission goals.

- **Lock in the vision** by translating the below-2°C temperature goal into a clear long-term emissions goal. Link short-term national targets to the long-term objective through national low-carbon development strategies.
- Establish a **five-year revision** cycle to strengthen action as countries experience success and technology costs decline.
- **Track the transition** of the energy sector, not just greenhouse gas levels.



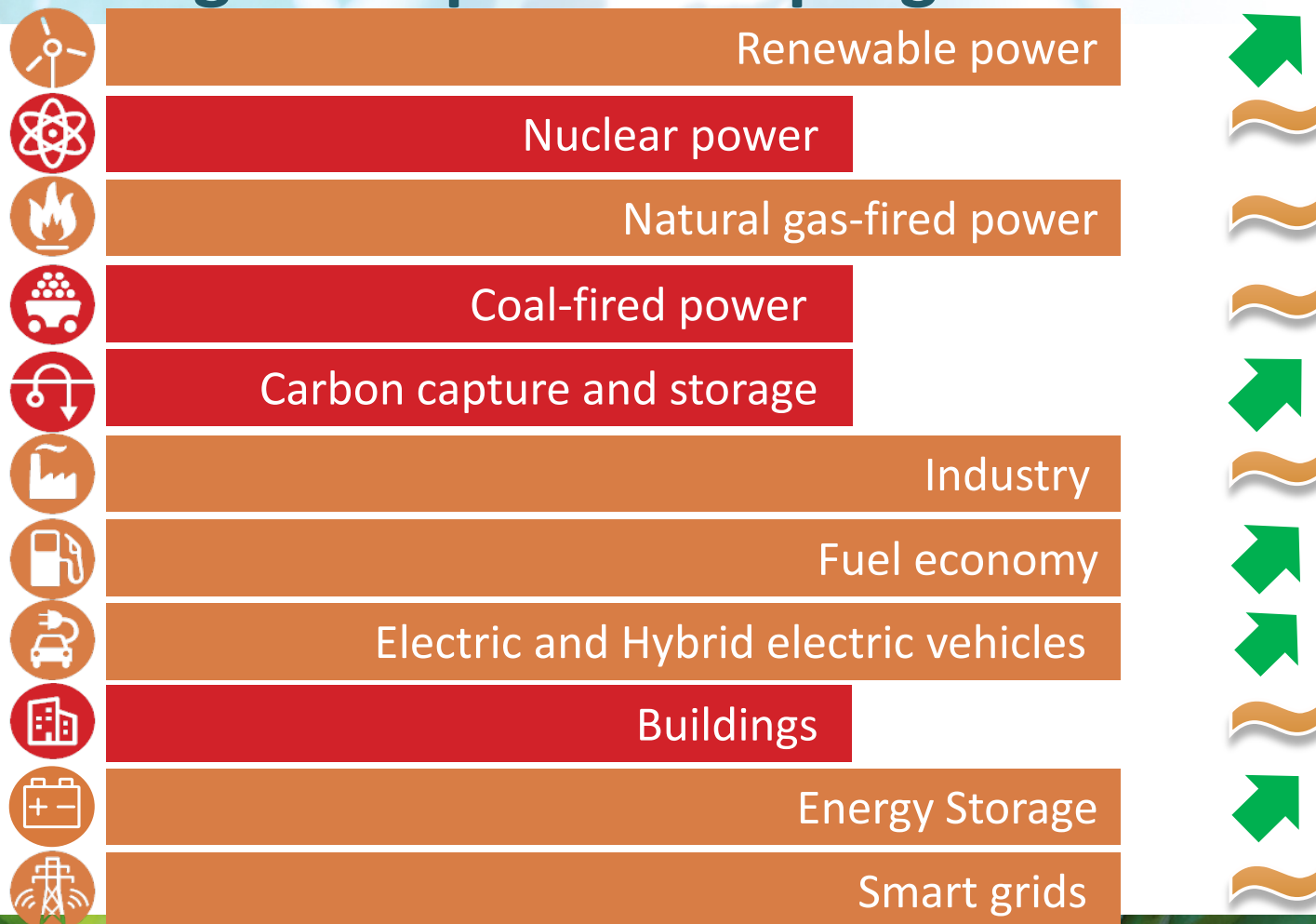
Source: *World Energy Outlook
Special Report: Energy and Climate
Change (2015)*.

3. Accelerate energy technology innovation to make decarbonisation easier and even more affordable.

Clean energy is not ramping up fast enough- Despite some progress



International
Energy Agency
Secure
Sustainable
Together

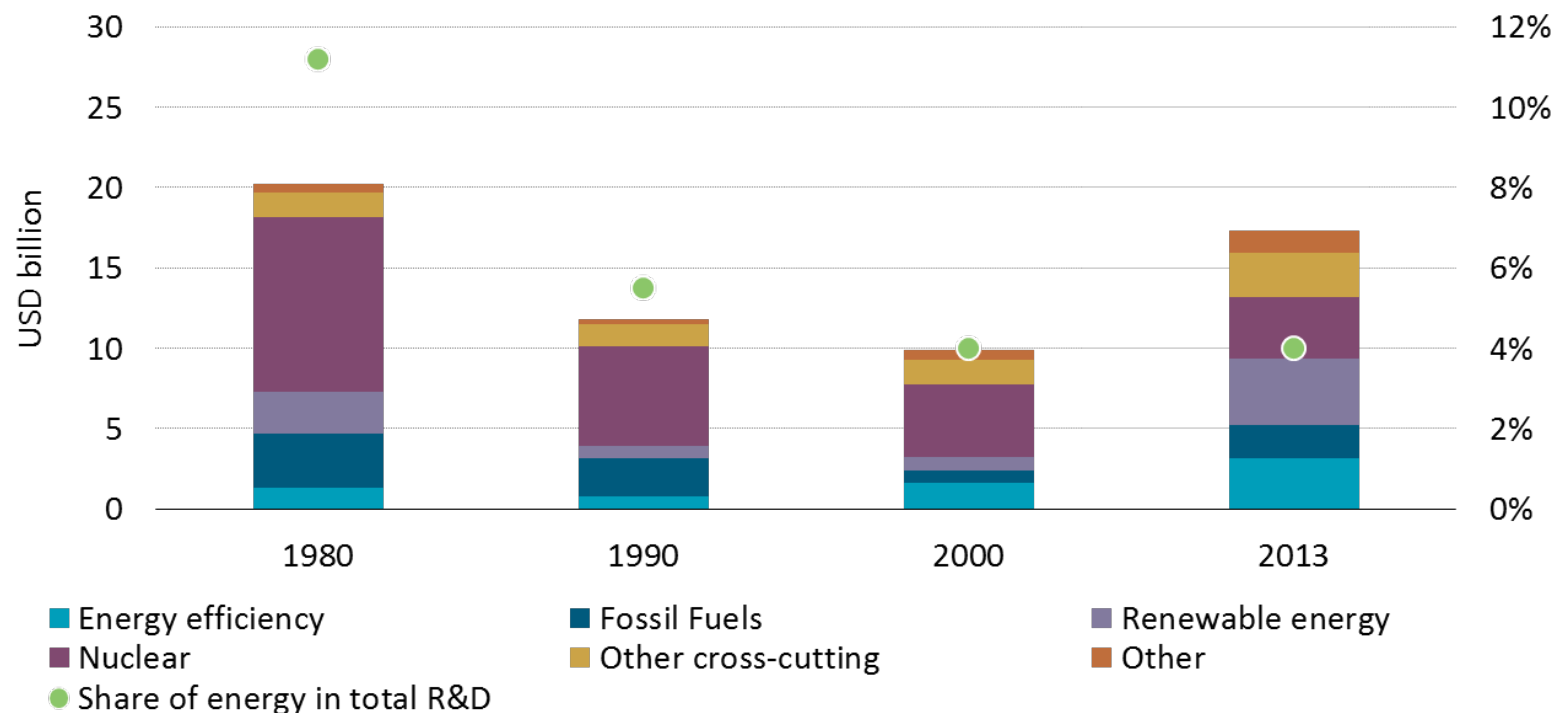


Evidence shows that despite continued progress in many areas, for the first time none of the technologies are in line with 2DS goals

ETP
2015

Energy RD&D funding now targets the right issues, but is not enough

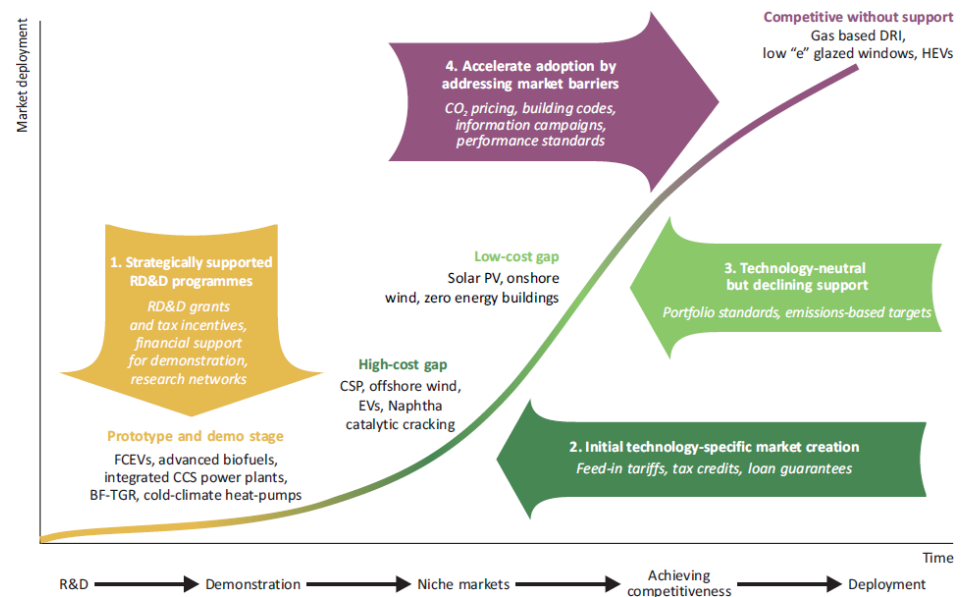
IEA government Energy RD&D expenditure



Energy RD&D spending should reflect the importance of energy technology in meeting climate objectives **ETP 2015**

3. Accelerate energy technology innovation to make decarbonisation easier and even more affordable.

- Triple public investment in RD&D
- Scale up collaboration between public and private entities in developed and developing countries
- IEA roadmaps for clean energy technologies
- IEA is supporting 39 Technology Collaboration Programmes, and is ready to support new initiatives



Source: *Energy Technology Perspectives (2015)*.



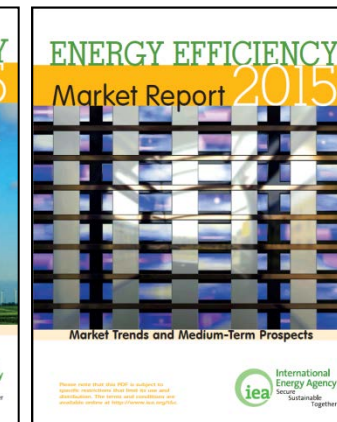
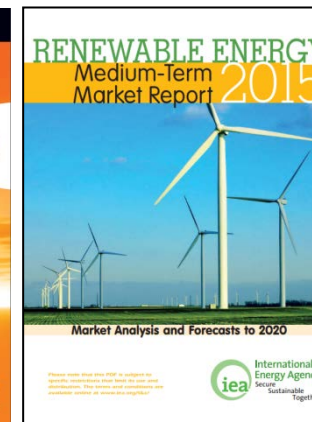
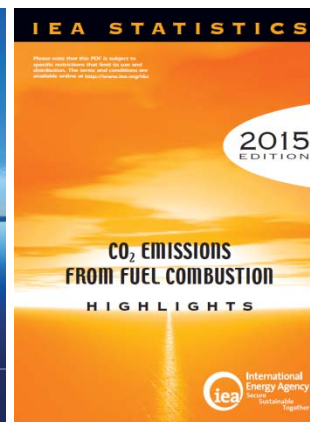
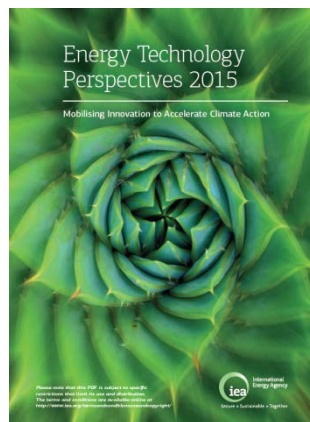
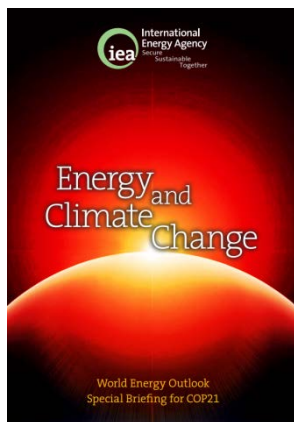
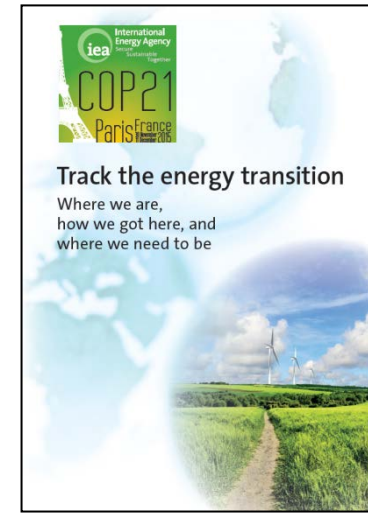
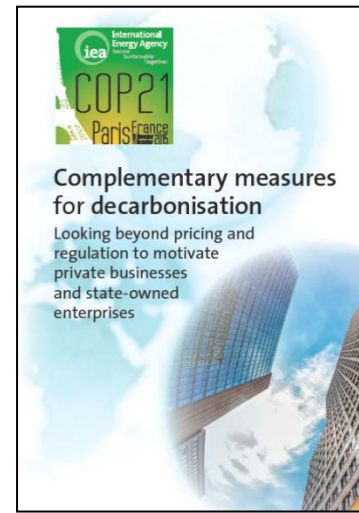
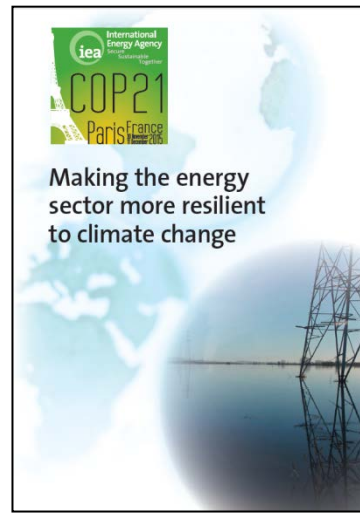
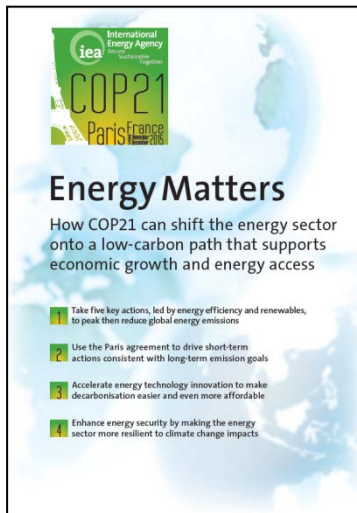
4. Enhance energy security by making the energy sector more resilient to climate change impacts.



Making the energy sector more resilient to climate change

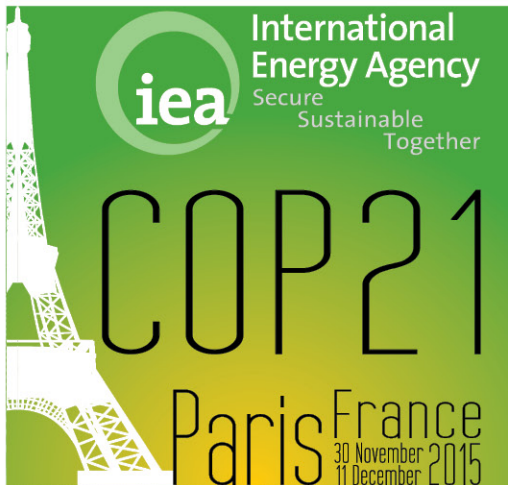
- Energy supply, transmission and demand can be directly affected by changes to the climate
- Extreme weather events and increasing stress on water resources pose threats to energy security by disrupting energy supply systems
- Greater resilience to climate change impacts will be essential for a sustainable energy sector and global energy security
- The resilience “value chain” integrates robustness - ability to withstand threats, resourcefulness - capacity to maintain essential functions under extreme events and quick recovery
- Synergies between mitigation and adaptation actions should be emphasised (e.g. distributed generation, energy efficiency)
- Businesses and governments are the key actors in resilience-building

IEA analytical inputs to COP 21



Conclusions

- The energy sector is key for a successful outcome in Paris
- INDCs are not yet enough to achieve our climate goal, but are a basis from which to build ambition
- Cost-effective action is possible now that could lead global emissions to peak around 2020
- The Paris agreement must send a strong signal to the energy sector through a long-term goal, 5-year reviews, and a strong tracking framework
- Additional focus is needed on energy technology innovation, and on building energy sector resilience to climate impacts
- The IEA stands ready to support implementation, bringing together data, modeling, policy and technology



**Thank you for
your attention**

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