



WORLD ENERGY TRILEMMA 2016

Defining measures to accelerate
the energy transition

June 1, 2016

What is the Energy Trilemma?

Meeting energy demands

Secure energy is critical to maintaining and driving economic growth

Delivering social benefits

Energy must be accessible and affordable at all levels of society

Minimising environmental impacts

The impact of energy production and energy use on the environment must be reduced



Source: World Energy Council/ Oliver Wyman

About the World Energy Council and Oliver Wyman

Annual Energy Trilemma research is supported by the MMC Global Risk Center

Oliver Wyman is a long-standing partner with the WEC

- Oliver Wyman is the sole project partner with the World Energy Council (WEC) to develop, prepare and write the annual *World Energy Trilemma* report
- The report discusses key issues in energy security, equity, and sustainability
- The annual *Energy Trilemma Index*, complements the report, by ranking almost 130 countries on the energy trilemma dimensions
- As a WEC patron and project partner, Oliver Wyman contributes existing deep knowledge of the energy and finance sectors, government policies and global risks from its own activities
- In addition, we contribute relevant data, strong analytical skills, and program support through a content manager, dedicated project manager and consulting staff
- 2016 marks the sixth year Oliver Wyman and the WEC have collaborated on this report and the Index



World Energy Trilemma annual reports 2011-2016

The report has served as a channel for the energy industry to express its views and stimulate dialogue among energy decision makers

2011

Policies for the future - Assessment of country energy and climate policies

- Showcased case studies in energy demand in mobility, energy efficiency and financing energy infrastructure

2012

Time to get real – the case for sustainable energy policy

- Showcased the views of more than 40 senior energy executives on what they need from policymakers

2013

Time to get real – the case for sustainable energy investment

- Featured responses from more than 50 governments, multilateral organisations, and development banks on what they need from the private energy sector

2014

Time to get real – the myths and realities of financing energy systems

- Presented insights from more than 50 senior experts from the finance community on how to increase investments in global energy infrastructure

2015

Priority actions on climate change and how to balance the trilemma

- Identified key messages from the energy sector to policies makers negotiating the COP 21 climate agreement

2016

Defining measures to accelerate the energy transition

- Featured insights from energy leaders, 5 years of energy trilemma indices and case studies to identify lessons on how to drive transitions in energy supply and demand

Source: World Energy Council/ Oliver Wyman

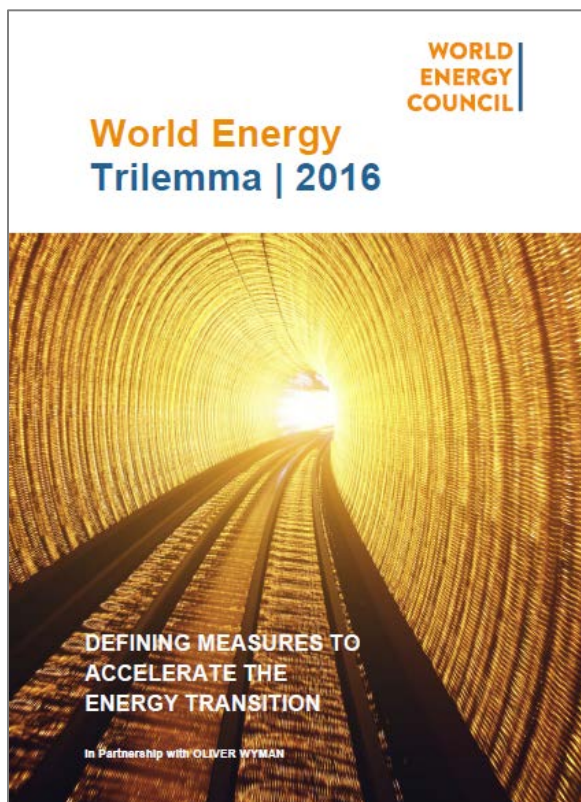
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Governments must continue to push the evolution of energy policies that support continued transitions and expansion of energy infrastructure

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Report overview: 2016 World Energy Trilemma

Effective policies in five focus areas can accelerate progress towards the energy trilemma goals of security, equity, and environmental sustainability

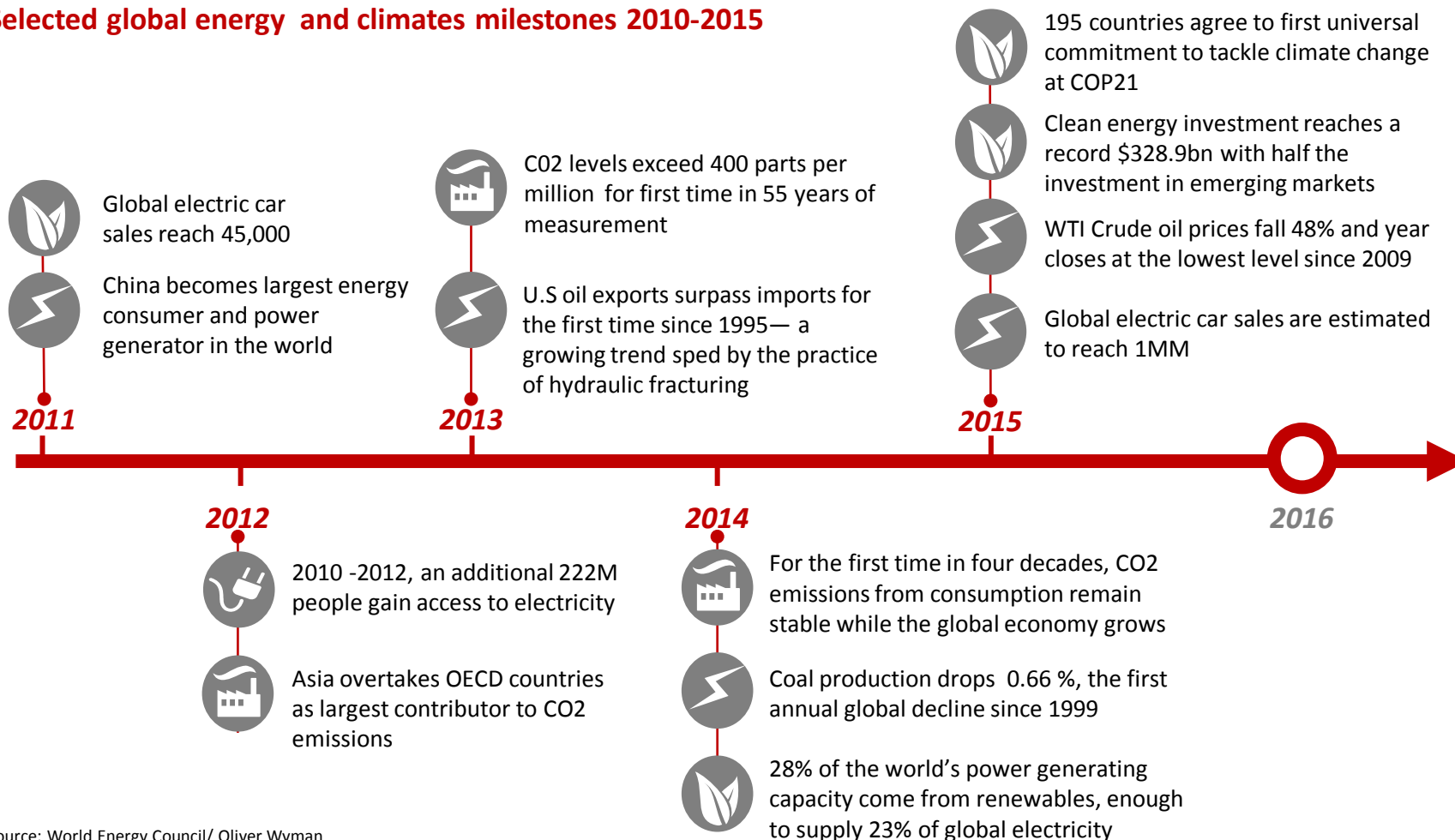


- The World Energy Trilemma report is prepared by the World Energy Council and Oliver Wyman, along with Marsh & McLennan's Global Risk Centre
- The report was presented to global policymakers at the [7th Clean Energy Ministerial](#) in San Francisco
- Based on expert interviews and a review of the past five years of Trilemma Index data, the report determines five focus areas energy policy must target:
 - Transforming energy supply
 - Advancing energy access
 - Enable consumer affordability and industry competitiveness
 - Improving energy efficiency and managing demand
 - Decarbonizing the energy sector
- Innovative policies in these focus areas offer key lessons for countries

The challenge: Policy making in a time of transition

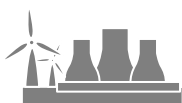
Global energy supply and demand is undergoing significant changes

Selected global energy and climates milestones 2010-2015



Source: World Energy Council/ Oliver Wyman

Policies should focus on five focus areas to make progress on the energy trilemma as countries focus on meeting energy and climate goals



1. Transforming energy supply

Diversification of primary energy supply and electricity generation, and transition towards a low-carbon energy supply



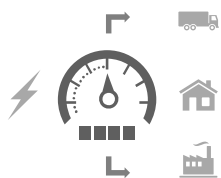
2. Advancing energy access

Increase and expand energy infrastructure and enable connectivity to modern energy



3. Enabling consumer affordability and industry competitiveness

Ensure energy remains affordable to lower income consumers, supports industry competitiveness and efficiency



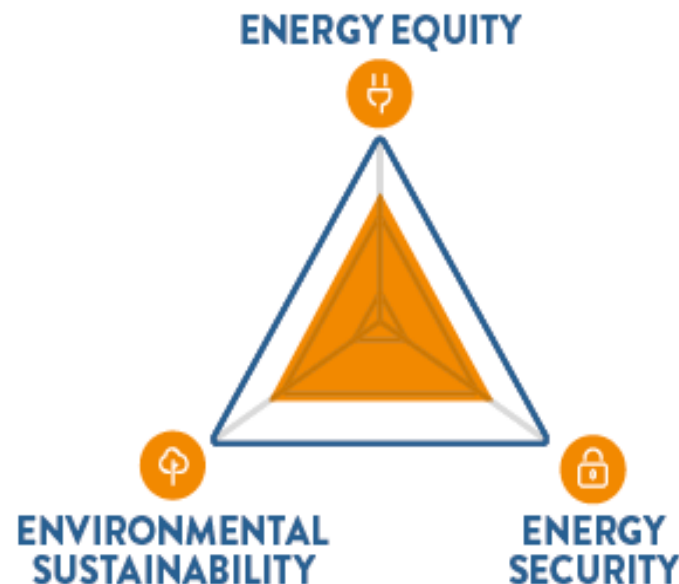
4. Improving energy efficiency and managing demand

Increase efficiency of energy generation, lower transmission and distribution network losses, and provide for demand response



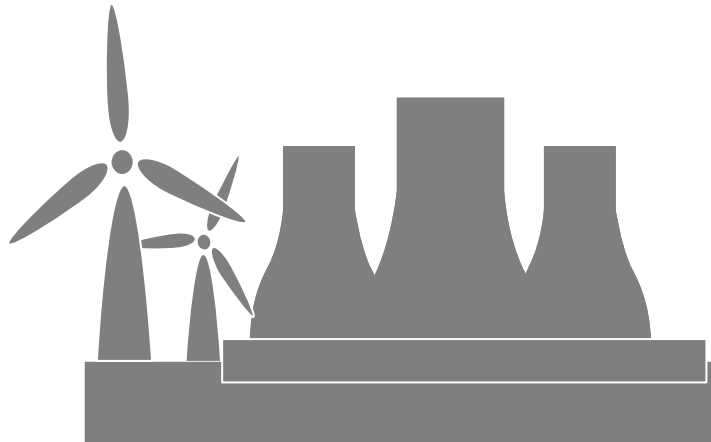
5. Decarbonizing the energy sector

Increase the share of nuclear, hydro and renewables in the electricity generation mix and price carbon adequately



Source: World Energy Council/ Oliver Wyman

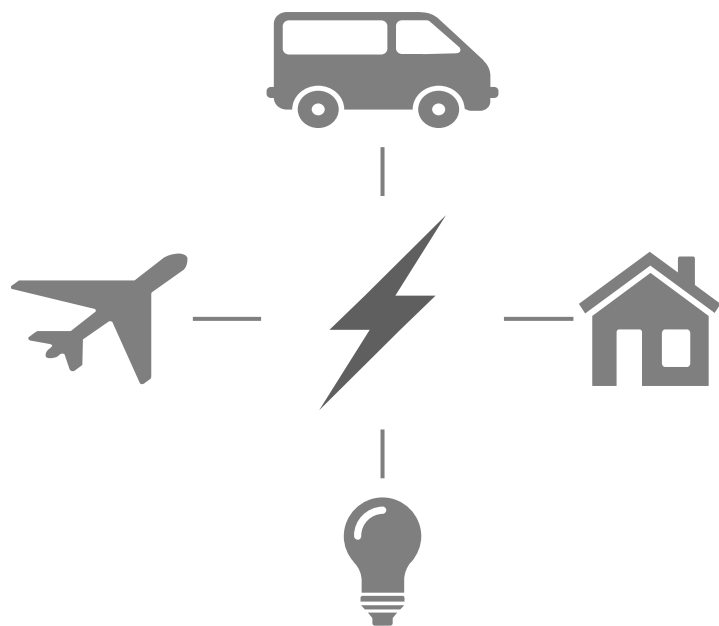
Transforming energy supply to ensure energy security includes measures to diversify primary energy supply and electricity generation



Emerging policy lessons:

- Policymakers and decision-takers must set clear and straight-forward energy targets
- Focus on building a broad industry and public consensus for the transition in energy supply and demand
- Transition in energy supply and demand must include new entrants to the energy sector and early engagement with affected communities
- An adaptive approach by launching pilot projects and regularly analyzing policy effectiveness is crucial

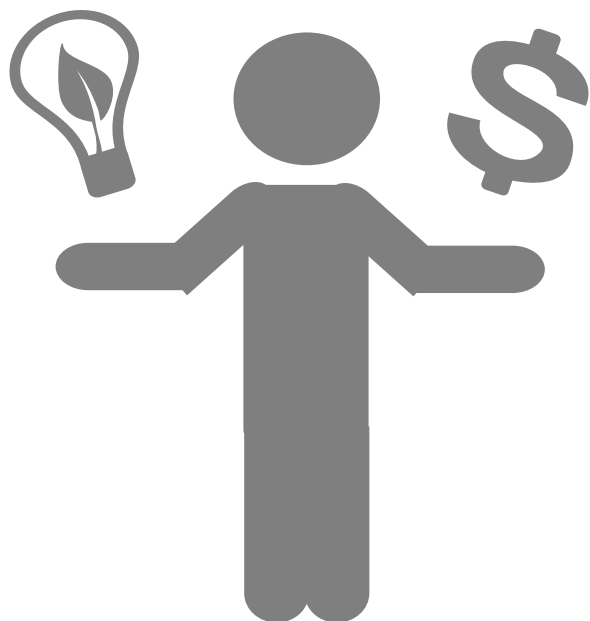
To advance energy access, countries need to increase and expand their energy infrastructure and enable connectivity to modern energy sources



Emerging lessons from policy:

- Efforts to increase overall energy infrastructure are leading many countries to open their markets
- An enabling regulatory and policy framework is needed to ensure private sector innovation in alternative technologies and business models
- Innovation in energy supply and delivery, driven by the private sector is a major driver to increasing overall energy access and affordability

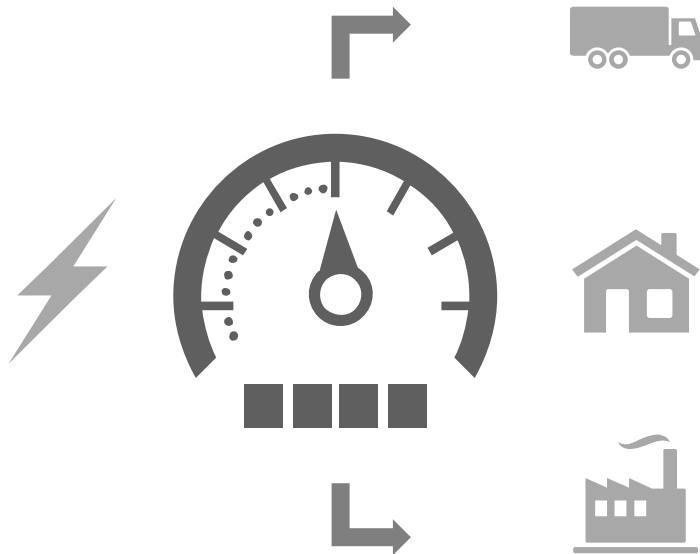
Enabling consumer affordability and industry competitiveness is critical to ensure access to modern energy and support a thriving economy



Emerging lessons from policy:

- Effectively deployed subsidies can enable access for lower-income consumers
- Innovative payment models, such as mobile banking solutions, provide a tool to better target subsidies to in-need populations
- Energy prices are critical to the competitiveness of energy-intensive sectors
- Policy makers must balance economic competitiveness, energy pricing and stimulations for energy efficiency

Improving energy efficiency and managing energy demand has positive impacts on all aspects of the energy trilemma



Emerging lessons from policy:

- Energy-efficiency standards can stimulate product innovation in favor of higher efficiency
- National energy efficiency institutions and programs can drive significant energy savings
- Feedback mechanisms and decision-making processes that integrate the private sector are critical
- Industry-targeted energy-savings schemes should be subject to a robust independent evaluation, measurement and verification (EM&V) process
- Efficiency investments with longer payback periods require additional incentives

Source: World Energy Council/ Oliver Wyman

Decarbonizing the energy sectors requires dynamic and flexible renewable energy investment policies that respond to evolving market dynamics and technological developments



Emerging lessons from policy:

- Renewable energy investment policies must be dynamic to respond to developing technology and market demand
- The process to amend policies needs to be transparent and phased
- Policy makers must carefully consider the sequencing of actions to support the infrastructure transition and maintain an energy trilemma balance
- The government has a strong role in educating and incentivizing the private sector to embrace green goals
- Carbon markets allow emissions to be reduced in the most cost-efficient way

Source: World Energy Council/ Oliver Wyman

The report proposes the following recommendations to strengthen energy policy and overcome barriers to progress on the energy trilemma

- ✓ Provide clarity to the market
- ✓ Focus implementation on critical areas, leveraging a staged, adaptable, and long-term approach
- ✓ Support private sector investment in innovation and research, development and demonstration
- ✓ Adopt change management approach in communicating policies and setting expectations
- ✓ Stimulate broader industry engagement

“Political leadership matters and sometimes critical pressure is needed to move forward”



Thank you!