

Renewables: the role of innovation

Cédric Philibert Renewable Energy Division International Energy Agency IEA Day, Le Bourget, 3 December 2015

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What does it take to achieve the 2°C target?



Global average annual investment by low-carbon power generation technologies in the 450 and Bridge Scenarios



Investments in Renewables should reach \$400 bn/y by 2030 in the Bridge Scenario and \$470 bn/y on average over 2026-2040 in the 450 Scenario

Power mix: a shift reversal





Evolution of the global power mix in the 450 Scenario

Renewables should account for over 50% of global electricity generation by 2040

Innovation is driving costs down





Indexed Cost Reductions Since 2008

Source: Ernest Moniz, US Secretary of Energy, IEA Ministerial, 18 November 2015

The future arrives for Five Clean Energy Technologies. Changes since the time of COPenhagen are facilitating COP talks in Paris.

Three pillars of system transformationiea



International Energy Agency

Together

Secure Sustainable

More flexible systems increase both diversification and resilience \rightarrow increase energy security

Wind power: the silent revolution

icea International Energy Agency Secure Sustainable Together



Recent wind turbines have lower specific ratings:

> Tapping a much bigger potential with lower speed winds

> Delivering more regular outputs with higher capacity factors

Maintaining the value of wind power at higher penetration

Facilitating integration in power systems

What next for solar?



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What's next for wind?











What's next for storage?











Innovative solar heat technology and application

Parabolic troughs protected from soiling





...in a greenhouse (Glasspoint technology)

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Accelerate energy technology innovation

Market deploymen

- Triple public investment in
- Ensure financing of firstof-kind projects
- Scale up collaboration between public and private entities in developed and developing countries



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- IEA roadmaps for clean technology development
- IEA is supporting 39 Technology Collaboration Programmes, and is ready to support new initiatives



This map is without prejudice to the status of or sovereignty over any territory, to the delimitation of international frontiers and boundaries, and to the name of any territory, city or area.

Innovation requires policy support and RE growth



- Innovation is already changing the energy landscape and the climate conversations
- Technology collaboration is very productive
- Innovation does not appears by itself, it requires policies and goes along with deployment
- Innovation must extend to new domains:
 - Financing and business models
 - Policy frameworks and market designs