

Making the Energy Sector More Resilient to Climate Change

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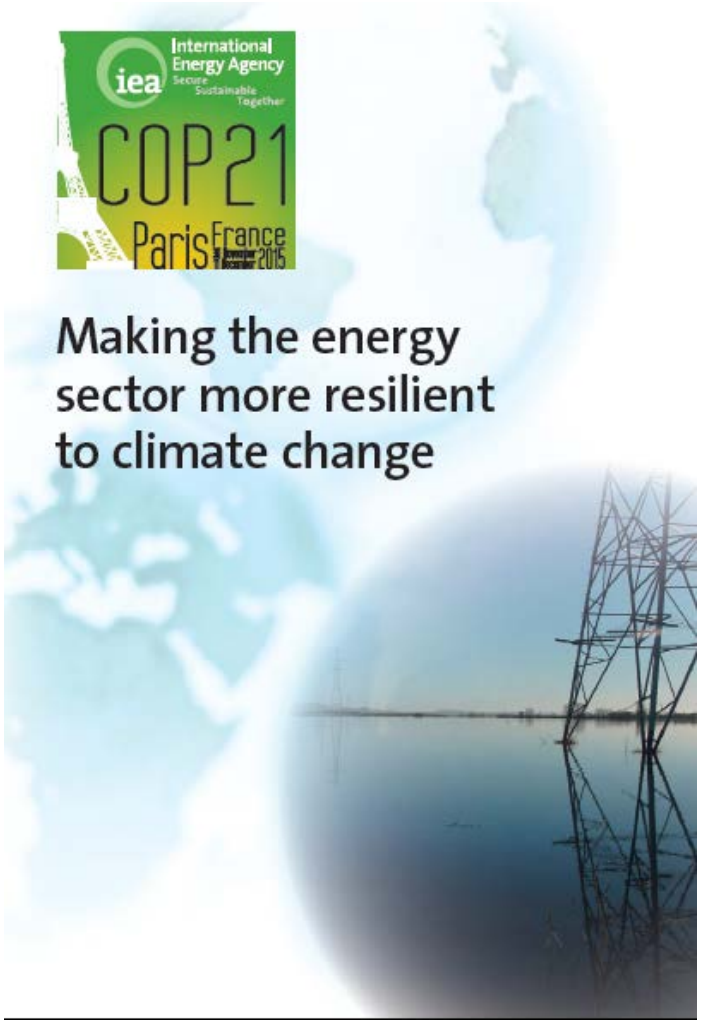
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IEA messages to COP21

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.**



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Risks to the energy sector from climate-change impacts

- **Extreme weather events** such as storms, forest fires, landslides, floods and extreme temperatures
- **Changes in water availability**
- **Unusual seasonal temperatures**
- **Rising sea levels**
- **Permafrost thaw**

- **Fuel production**
- **Fuel delivery**
- **Thermal power plants cooling**
- **Hydropower, biofuels**
- **T&D networks**

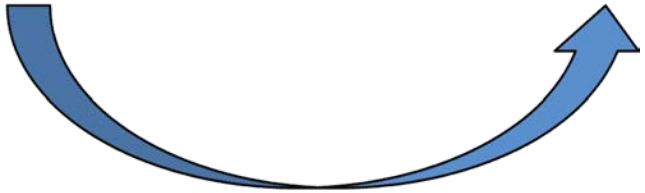
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More than energy, this is about economies and vital sectors like health and education . . .



In the climate change space:

Mitigation ⟷ **Resilience**



- **Mitigation is powerful resilience strategy**
- **Synergies between mitigation and adaptation actions should be emphasised (e.g. distributed generation, energy efficiency)**
- **Mode of decarbonization affects resilience challenge**

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The resilience “value chain”

- **Robustness: ability to withstand threats**
  - Risk assessment, auditing, reporting
  - Adaptive practices by businesses and governments
- **Resourcefulness: capacity to maintain essential functions under extreme events**
  - Emergency preparedness measures
- **Recovery: capacity to overcome service interruptions**
  - Reactivating systems
  - Pre-deployment of recovery assets

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Businesses are the key actors in resilience-building

- **Risk management is integral to business decision-making**
  - Climate risk assessment, prevention and management to
    - achieve robustness of assets,
    - resourcefulness of operations during extreme events and
    - quickly recover
  - Insurance
- **Adaptive practices**
  - Management and technical measures
  - Technological and structural measures
  - Training and education
  - Recovery and resourcefulness in addition to robustness

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Governments are also key actors in resilience

- **Create incentives to facilitate/prompt resilience-building by business**
- **Create enabling frameworks that include:**
  - Awareness raising and modelling
  - Inter-governmental coordination (domestic and international)

but also….

- **Emergency preparedness and response measures**
- **Managing "Own-assets"**

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IEA: a partner in the effort …

1. **Dialogue facilitation**
   - 5 Nexus Forum meetings since 2012
2. **Data and modelling**
   - WEO Special Report 2013: chapters on resilience, WEO 2015: water stress case studies in China, India
3. **Research stocktaking on impacts, vulnerability, resilience policies**
   - PAMs data base, country reviews, emergency response reviews
4. **Policy analysis**
   - Resilience brochure for the COP 21

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