

## Global perspectives on Renewable Energy Markets and IEA's activities

Yoshiki Endo  
Programme Manager  
Renewable Energy Division  
International Energy Agency

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# Today's Contents

- **Overview of global energy market**
- **Projection of renewables market**
- **IEA's work for deploying renewables**
- **Conclusions**



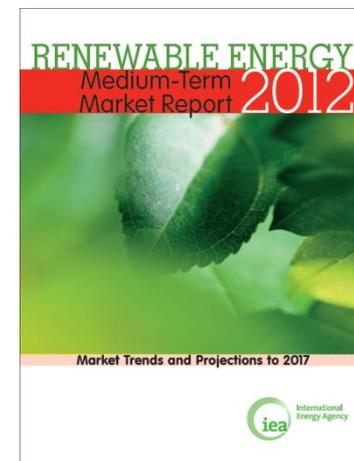
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# Recent analyses

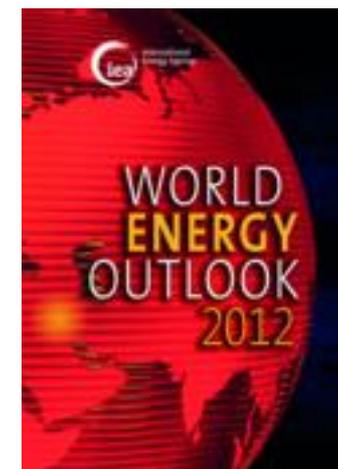
## ■ Medium-Term Renewable Energy Market Report

- First annual market report forecasting over five years
- Detailed analysis of 12 OECD countries and China, India, Brazil (~80% of world renewable electricity)



## ■ World Energy Outlook 2012

- World's most authoritative source of energy market analysis and projections
- It can be used for policy making, planning and investment decisions



## ■ Foundations of global energy system shifting

- *Resurgence in oil & gas production in some countries*
- *Retreat from nuclear in some others*
- *Signs of increasing policy focus on energy efficiency*

## ■ All-time high oil prices acting as brake on global economy

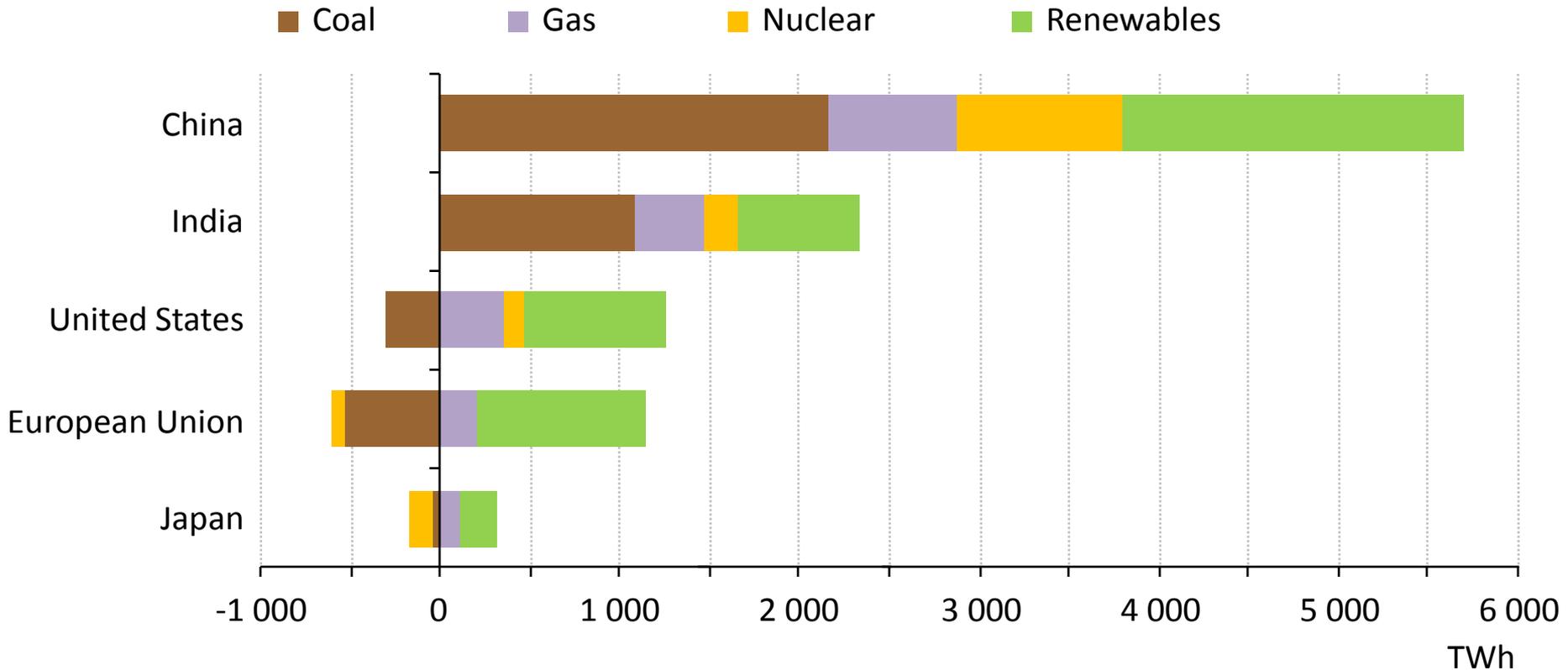
- *Divergence in natural gas prices affecting Europe (with prices 5-times US levels) and Asia (8-times)*

## ■ Symptoms of an unsustainable energy system persist

- *Fossil fuel subsidies up almost 30% to \$523 billion in 2011, led by MENA*
- *CO<sub>2</sub> emissions at record high, while renewables industry under strain*
- *Despite new international efforts, 1.3 billion people still lack electricity*

# A power shift to emerging economies

## Change in power generation, 2010-2035



***The need for electricity in emerging economies drives a 70% increase in worldwide demand, with renewables accounting for half of new global capacity***



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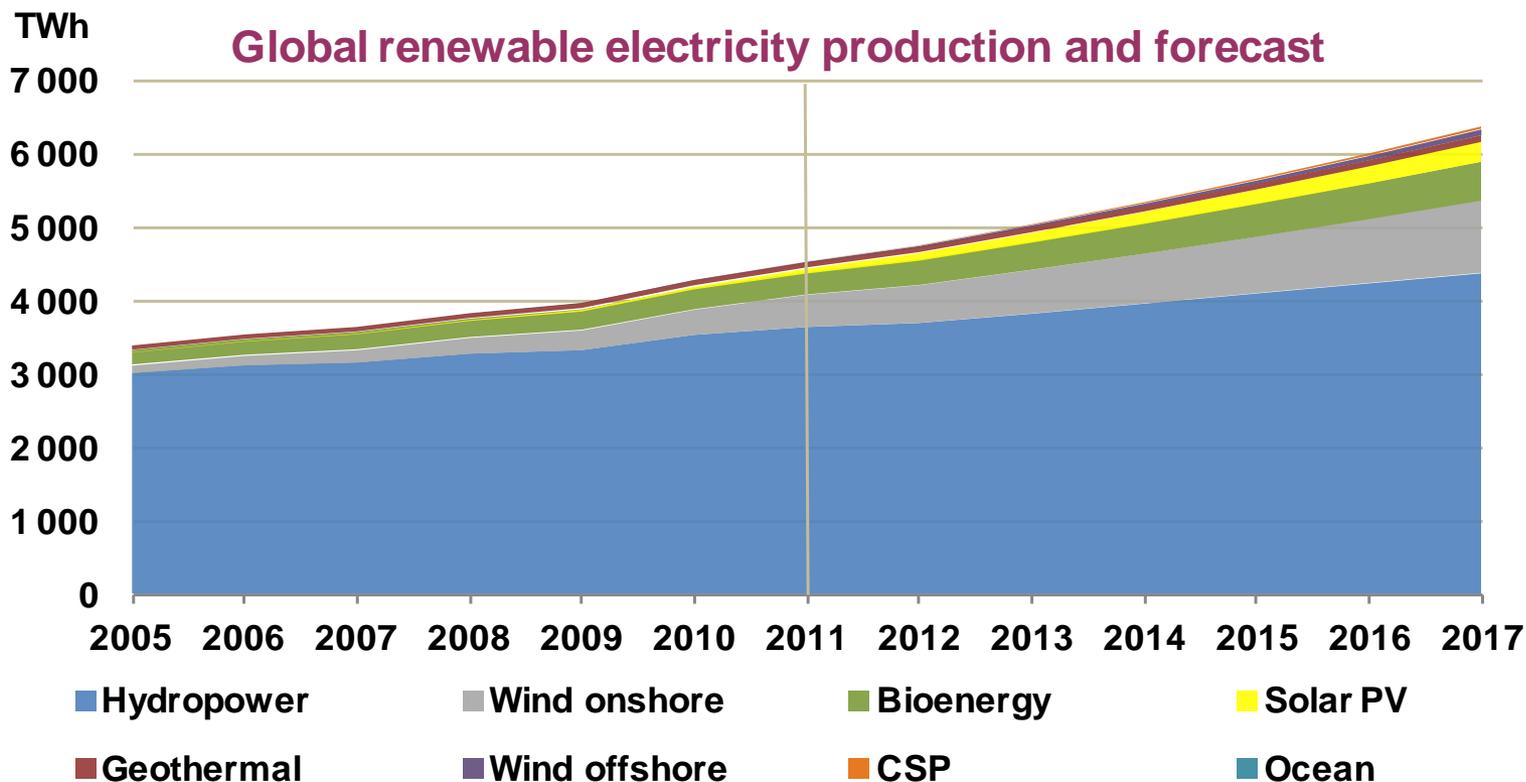
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# Key trends

- **As a portfolio of renewable technologies matures, global renewable power generation is forecast to rise 40%**
  - Supported by policy/market frameworks and economic attractiveness in increasing range of countries and circumstances
  - Technology cost developments, grid/system integration, cost/availability of financing also weigh as key variables
  - High level of economic/policy uncertainty in some countries
  
- **This projected growth is an acceleration vs previous period**
  - Growth is 60% higher over 2011-17 versus 2005-11
  
- **Renewable deployment is projected to spread out geographically, with increased activity in emerging markets**
  - Deployment spurring economies of scale in some technologies - virtuous cycle of improved competition and cost reductions

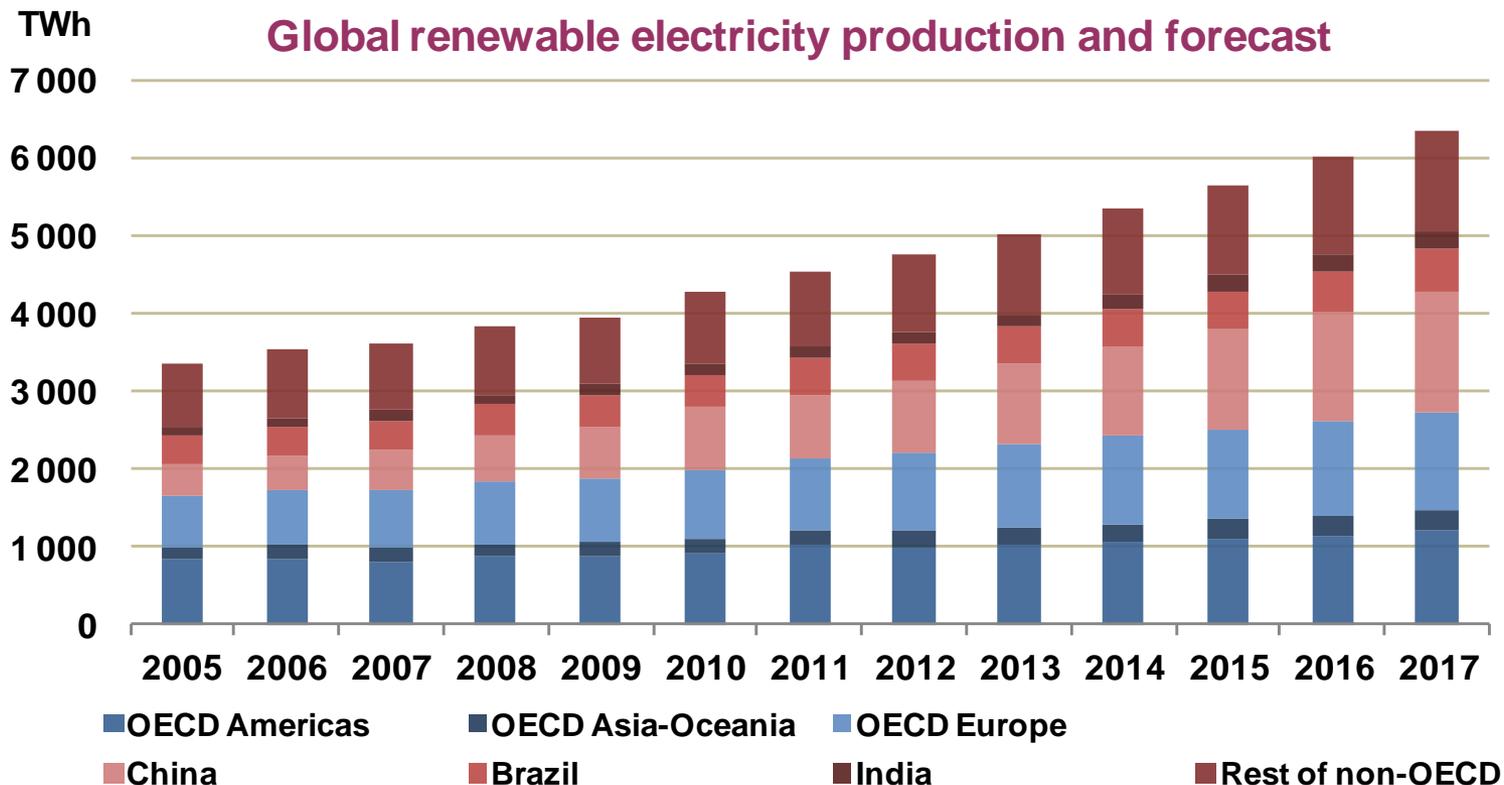
# Growth in renewable power is forecast to accelerate

- Hydropower remains the main renewable power source (+3.1% p.a.)
- Non-hydro renewable sources grow at double-digit annual percentage rates (+14.3% p.a.)



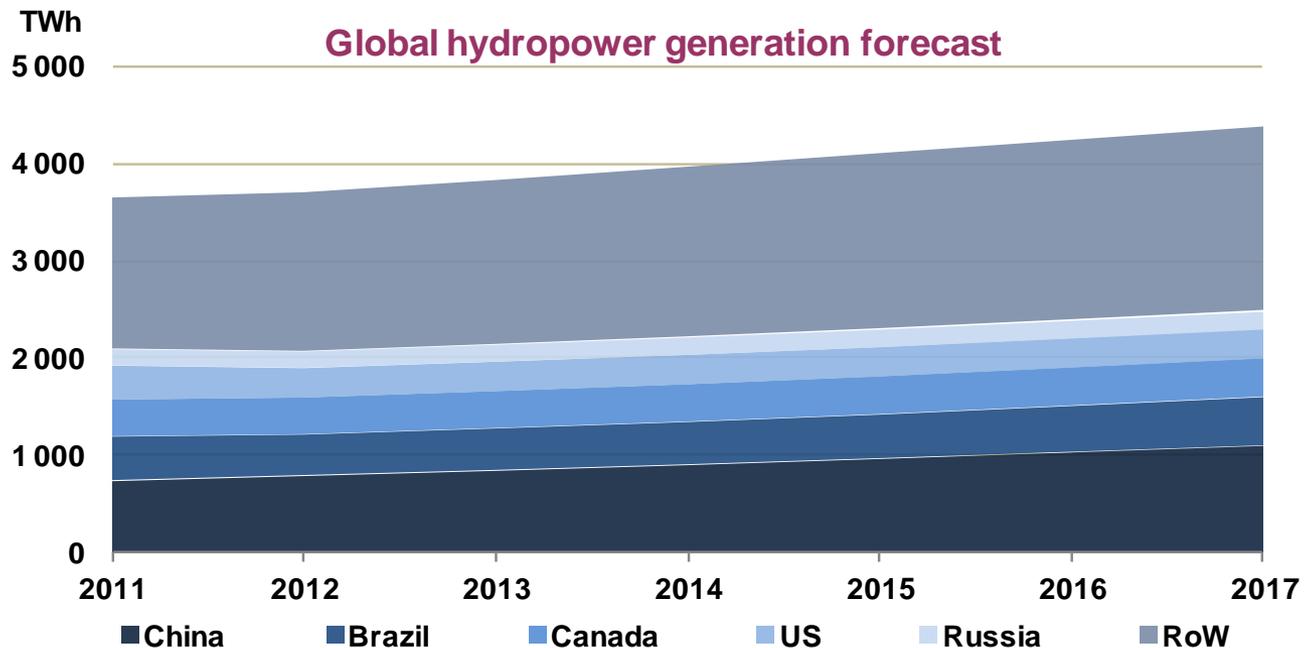
# Growth is led by non-OECD countries

- Non-OECD accounts for two-thirds of the overall growth
  - China, Brazil, India lead; others grow significantly as well
- OECD growth still largely driven by Europe but Americas and Asia-Oceania make significant contributions



# Medium-term hydropower outlook

- **Global generation to reach almost 4 400 TWh in 2017**
  - **China accounts for 25% of world hydropower production in 2017 (up from 20% in 2011), adds 110GW in 2011-17**
  - **Brazil grows significantly, 21GW in 2011-2017**
  - **Other non-OECD areas grow strongly (Asia, Africa and Latin America) while in OECD only Turkey sees a significant growth**



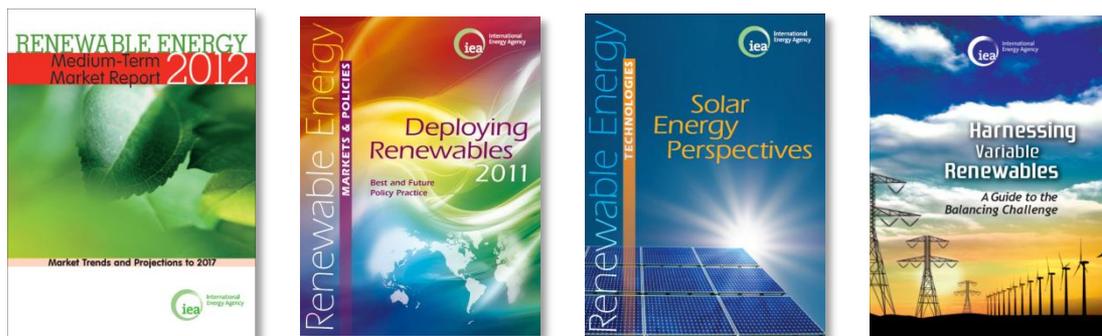


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# Publications

## ■ Analytical books



## ■ Technology Roadmaps



**Based on collaboration with IAs**

# What is Implementing Agreement?

- A multilateral technology initiatives that enables experts from governments and industry to carry out common issues on energy technology
- There are currently 42 IAs working in the areas of:
  - Cross-Cutting
  - End-Use (buildings, electricity, industry, transport)
  - Fossil Fuels
  - Fusion Power
  - Renewable Energy and Hydrogen

# What are the IAs working?

- **Typically, the work includes:**
  - **Basic research, information exchange**
  - **Technology assessment, feasibility studies, environmental impact studies, market analysis, policy implications**
  - **Databases, modeling and system analysis**
  - **Expert networks (Meetings, Workshops)**

# The benefits of participation

- There are numerous advantages to international energy technology research collaboration. For example:
  - Reducing cost and duplication of work
  - Greater project scale
  - Sharing information and networking
  - Accelerating development and deployment
  - Harmonizing technical standards
  - Strengthening national RD&D capabilities

# Examples of RE IA's major attempts & achievements

- **Wind** (Task 28 : Development and Deployment of Small Wind Turbine Quality Labeling)
  - Establishing the International Standard (IEC 61400-2: Design requirements for small wind turbines)
- **PVPS** (Task 12 : PV Environmental, Health And Safety)
  - Developing PV recycling model and the life cycle assessment for addressing environmental issues of PV modules
- **Bioenergy** (Task 32 : Biomass Combustion and Co-firing)
  - Developing the Database on biomass co-firing experiences in different power plants

# Examples of RE IA's major attempts & achievements (Continued)

- **Solar Heating and Cooling** (Task 40 : Net Zero Energy Solar Buildings)
  - Joint working with the other IA such as Energy Conservation in Buildings and Community Systems (ECBCS IA)
- **Geothermal** (Annex 7 : Advanced Geothermal Drilling and Logging Techniques)
  - Introducing the Best Practice for well construction of geothermal plants
- **RETD (RE-COST)**
  - Investigating “True” costs for benefit between RE technology and non-RE technology, and providing the Recommendation to policy makers



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# Policy messages

- **Clarity, predictability and a long-term orientation of RE policy frameworks are keys to maintaining investment**
  - Policymakers should avoid stop-and-go decision making, which can cause investment to stall
- **These frameworks should focus on the whole portfolio of renewables (incl. hydropower, bioenergy, RE heat, etc.)**
- **Meanwhile, there needs to be increased focus on market designs that integrate higher levels of renewables in power systems (both variable and dispatchable)**
- **A radical turn away from renewables now would be more costly in the long run in terms of climate costs and energy import bills**



# Role of IEA's work

- **The IEA continuously sends out signals as significant messages and recommendations to all stakeholders, providing authoritative and unbiased research and statistics through our publications, projects, activities with Implementing Agreements.**
- **In terms of RE issues, particularly the industry including manufacturers, utilities, financial sector and investors should unite to design the RE market for its sustainability. The IEA should invite their attention over time.**



# For further insights and analyses...

## [www.iea.org](http://www.iea.org)

The screenshot shows the IEA website homepage. At the top left is the IEA logo and the text "International Energy Agency". Below it is the tagline "Working together to ensure reliable, affordable and clean energy". On the top right, there are language options for Russian and Chinese, a search bar, and social media icons for RSS, Twitter, Facebook, LinkedIn, and YouTube. A navigation menu includes links for HOME, ABOUT US, TOPICS, COUNTRIES, NEWSROOM AND EVENTS, PUBLICATIONS, and STATISTICS. Below the navigation menu are sub-links for Governments, Consumers, Media, Business, and Students. The main content area features a large news article titled "First IEA regional technology study plots carbon-neutral Nordic energy system" with a background image of wind turbines. Below this are several smaller news snippets: "Oil market tightened in December: IEA monthly report", "Powering down to save energy need not be a turn-off", and "Energy policies can aid economies of Middle East and North Africa". To the right of the main article is a "Popular" section with a "Latest" tab, listing items like "Key World Energy Statistics 2012", "Bookshop", "World Energy Outlook", "Free publications", "Data Visualisation", "Oil Market Report", and "Sustainable Buildings Centre". Below the main article are three sections: "Eye on energy" with "Frequently asked questions", "Opinion leaders on the World Energy Outlook 2012", and "Multimedia" featuring a video of Dr. Birol's interview with BBC HARDtalk and the "World Energy Outlook 2012: Part II - Presentation". At the bottom right is an "In focus" section listing "Policies & Measures Databases", "Iraq Energy Outlook", "Medium-Term Reports", "World Energy Outlook", "Energy Technology Perspectives", "International Low-Carbon Energy Technology Platform", and "Multilateral Technology Initiatives".

**Thank you for your attention! [yoshiki.endo@iea.org](mailto:yoshiki.endo@iea.org)**