



Energy and sustainable Development in the Mediterranean
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Renewable energy perspectives: recommendations from IEA

Roberto VIGOTTI
Chair of the OME RESD committee
Chair of IEA Renewable Working Party

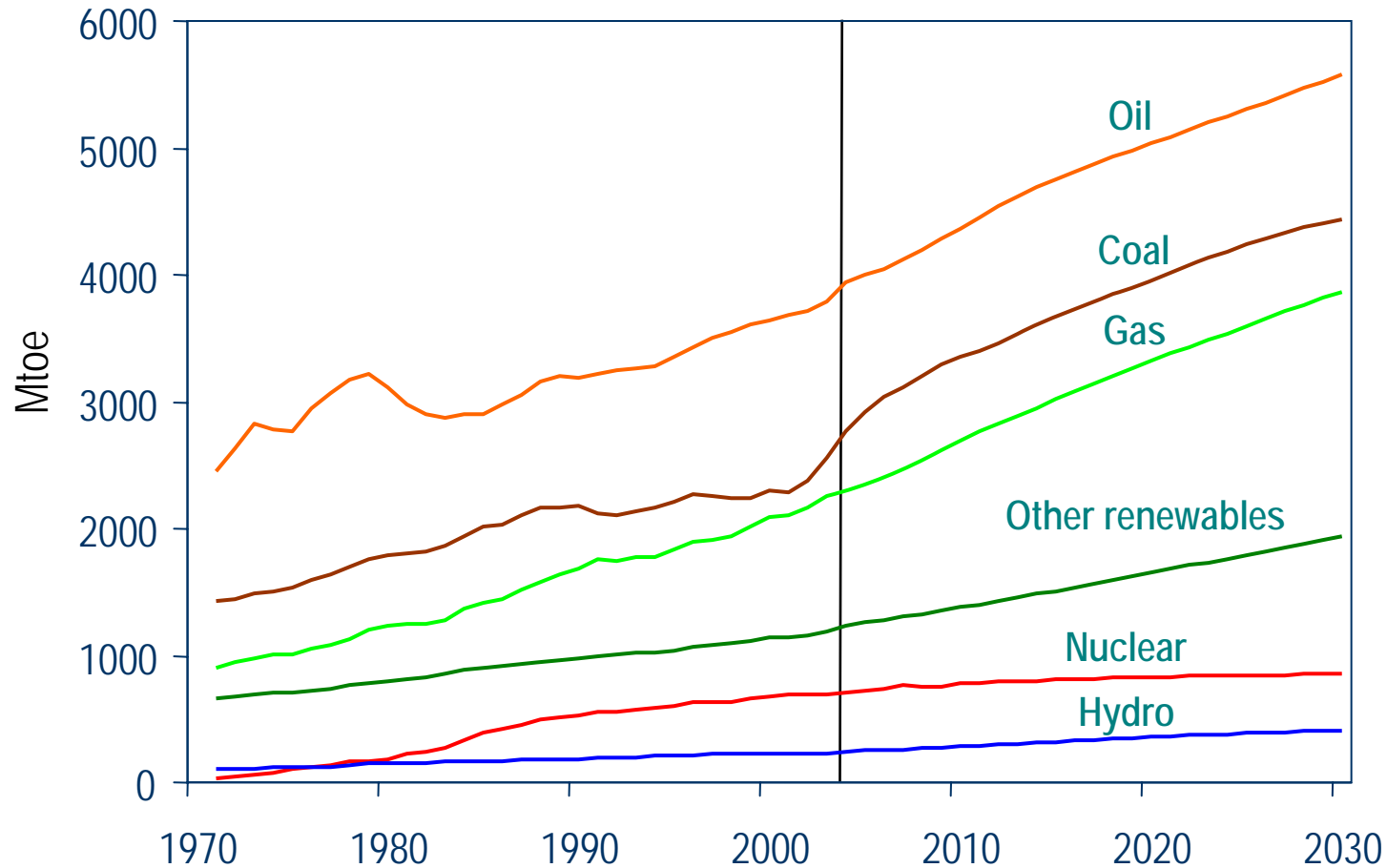


The Context

- × The world is facing **twin energy threats**
 - *Inadequate and insecure supplies*
 - *Environmental damage, including climate change*
- × There is an urgent need to curb the growth in fossil-fuel demand & related emissions
- × *WEO-2006* is a direct response to G8 request for advice on alternative energy scenarios
- × It confirms that the global energy system is on an unsustainable path...
- × ...but measures now being considered would curb the growth of fossil-fuel demand & emissions



The Reference Scenario: World Primary Energy Demand



Global demand for each primary energy source grows inexorably driven by population & economic growth

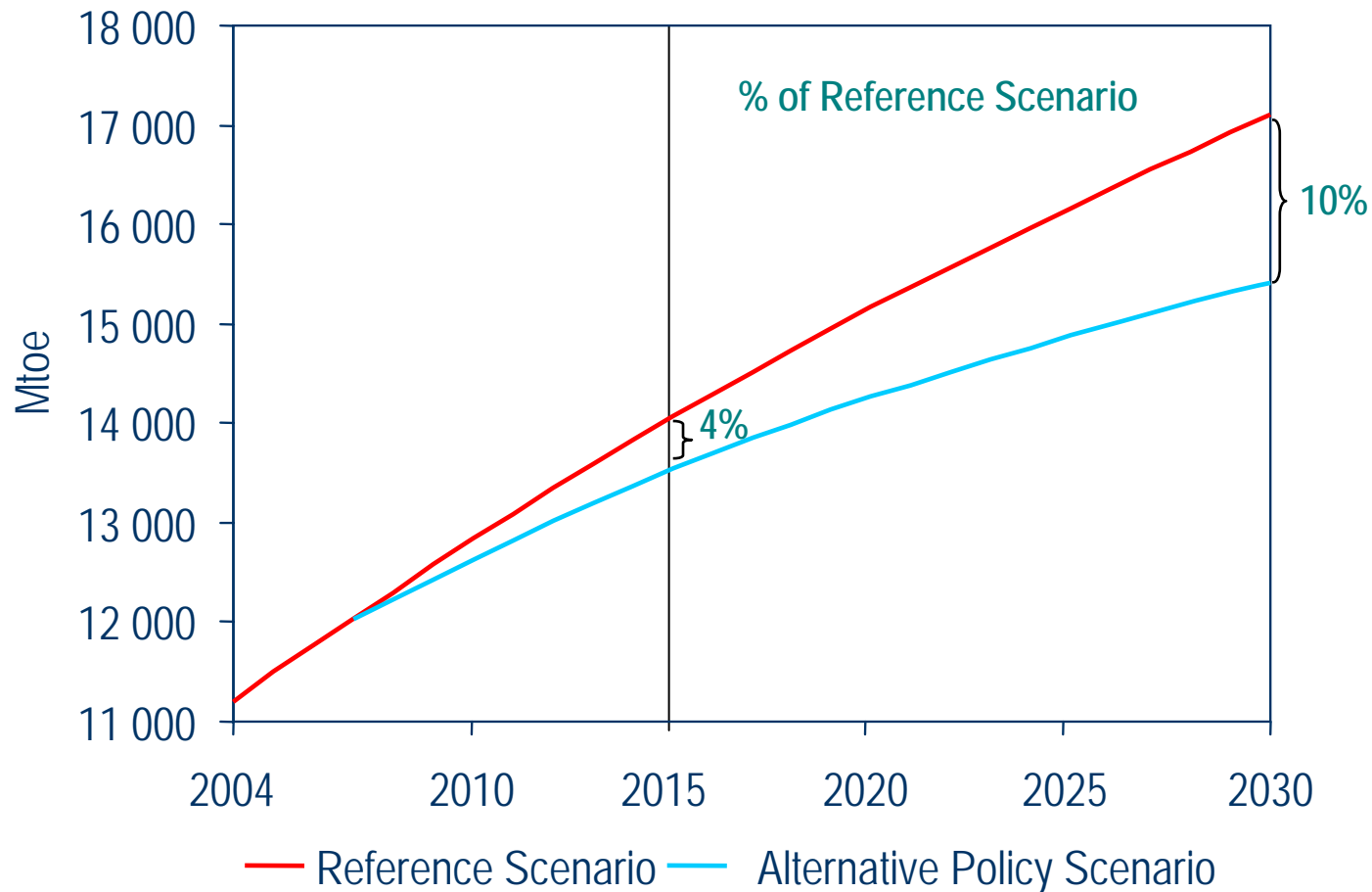


The Alternative Policy Scenario: Mapping a New Energy Future

- × Reference Scenario trends are not set in stone
- × The **Alternative Policy Scenario** analyses impact of government policies under consideration
- × Responds to call to IEA from G8 & IEA ministers
 - *To “advise on alternative energy scenarios and strategies aimed at a clean, clever and competitive energy future”*
- × 1 400+ different policies worldwide analysed to
 - *Improve efficiency in energy production & use*
 - *Increase reliance on non-fossil fuels*
 - *Bolster output of oil & gas in net importing countries*
- × Macroeconomic, population & oil/gas price assumptions are as per the Reference Scenario



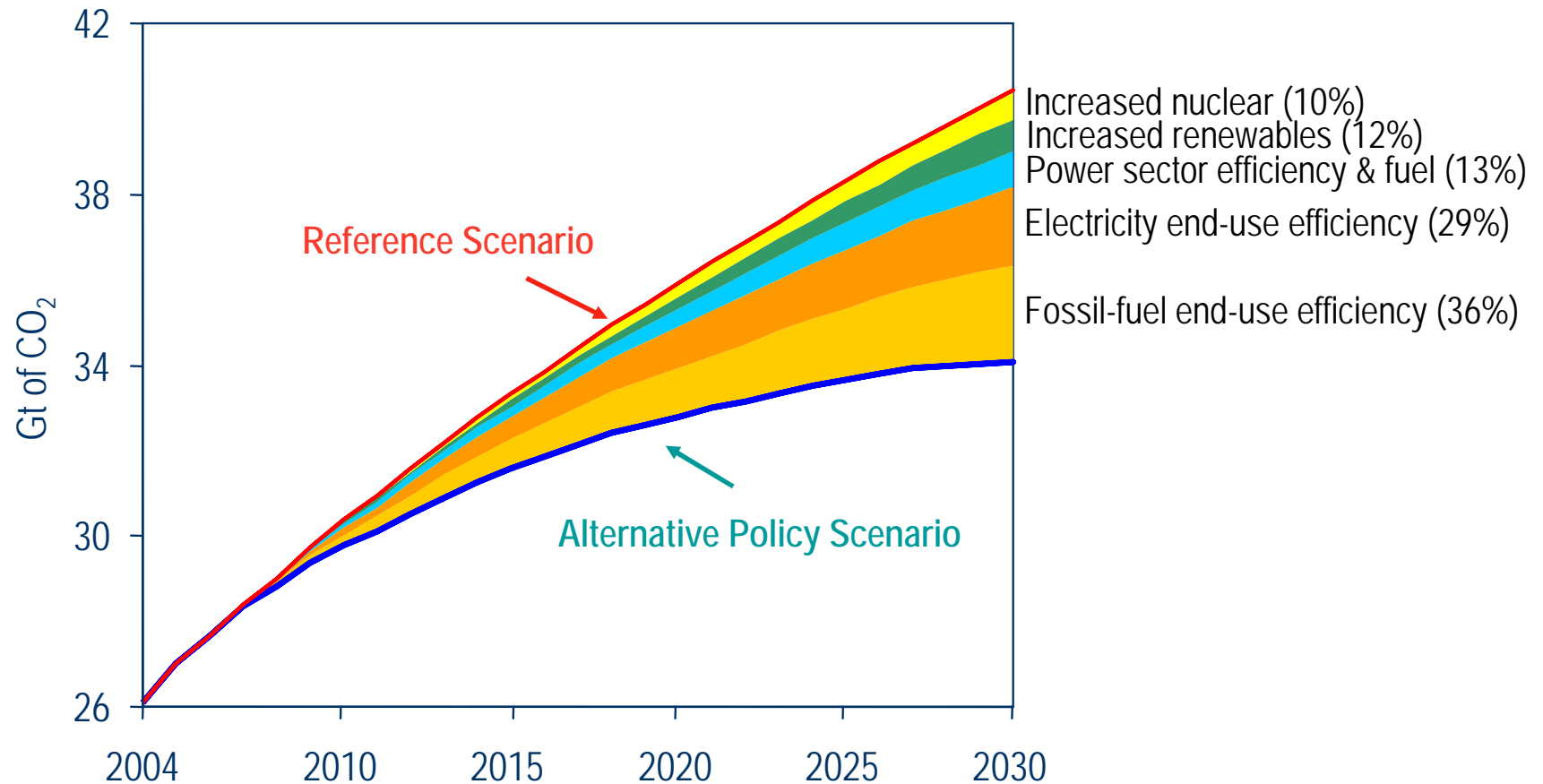
Alternative Policy Scenario: World Primary Energy Demand



The impact of new policies – though far from negligible – is less marked in the period to 2015 because of the slow pace of capital stock turnover



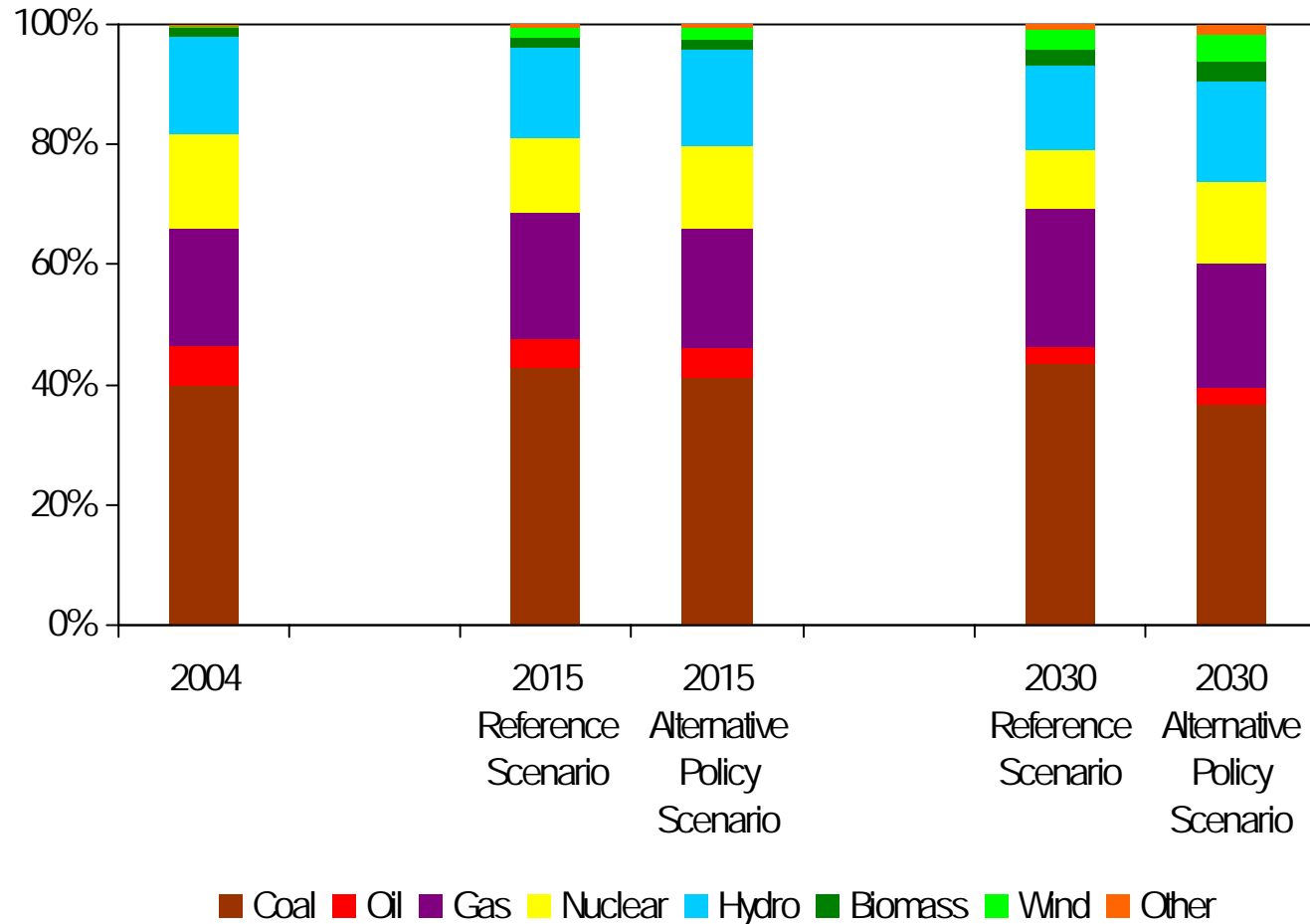
Alternative Policy Scenario: Global Savings in Energy-Related CO₂ Emissions



Improved end-use efficiency of electricity & fossil fuels accounts for two-thirds of avoided emissions in 2030



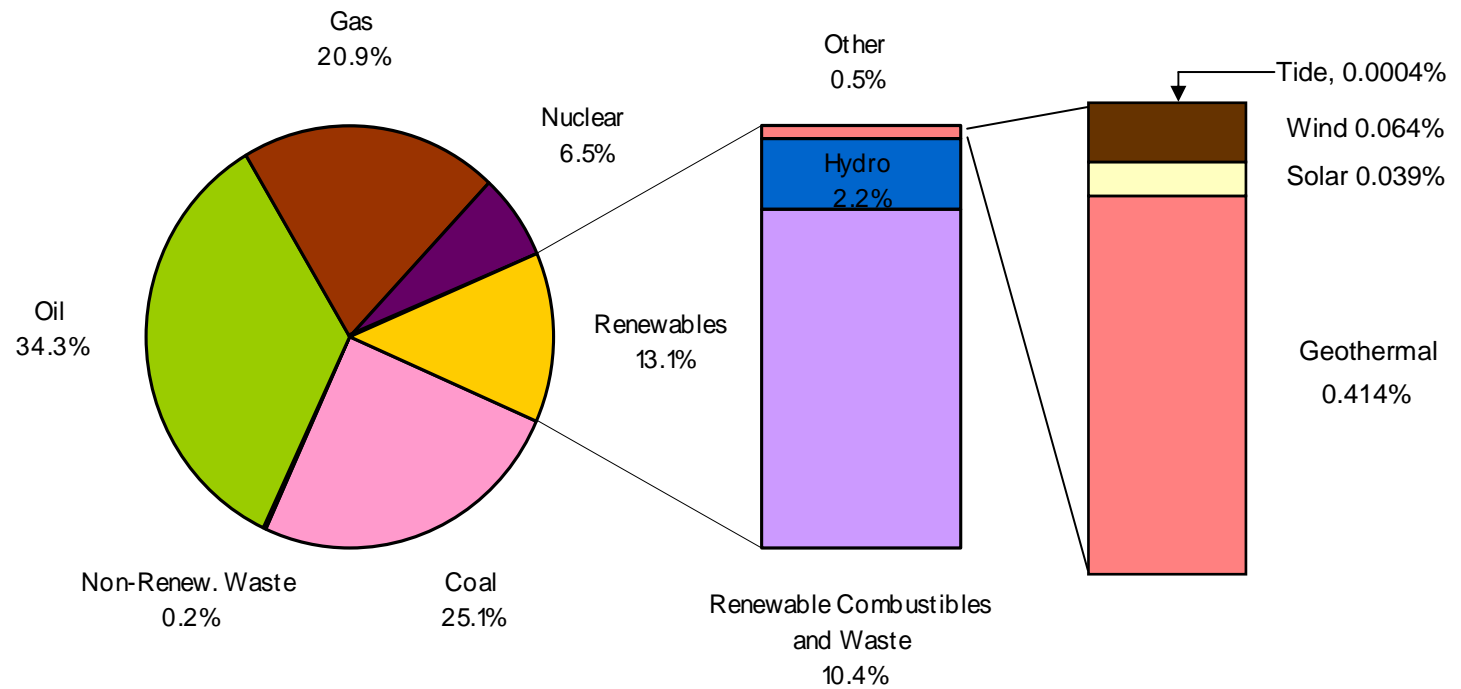
The Alternative Policy Scenario: Global Fuel Shares in Electricity Generation



Over a quarter of global electricity comes from renewable energy sources in 2030 in APS

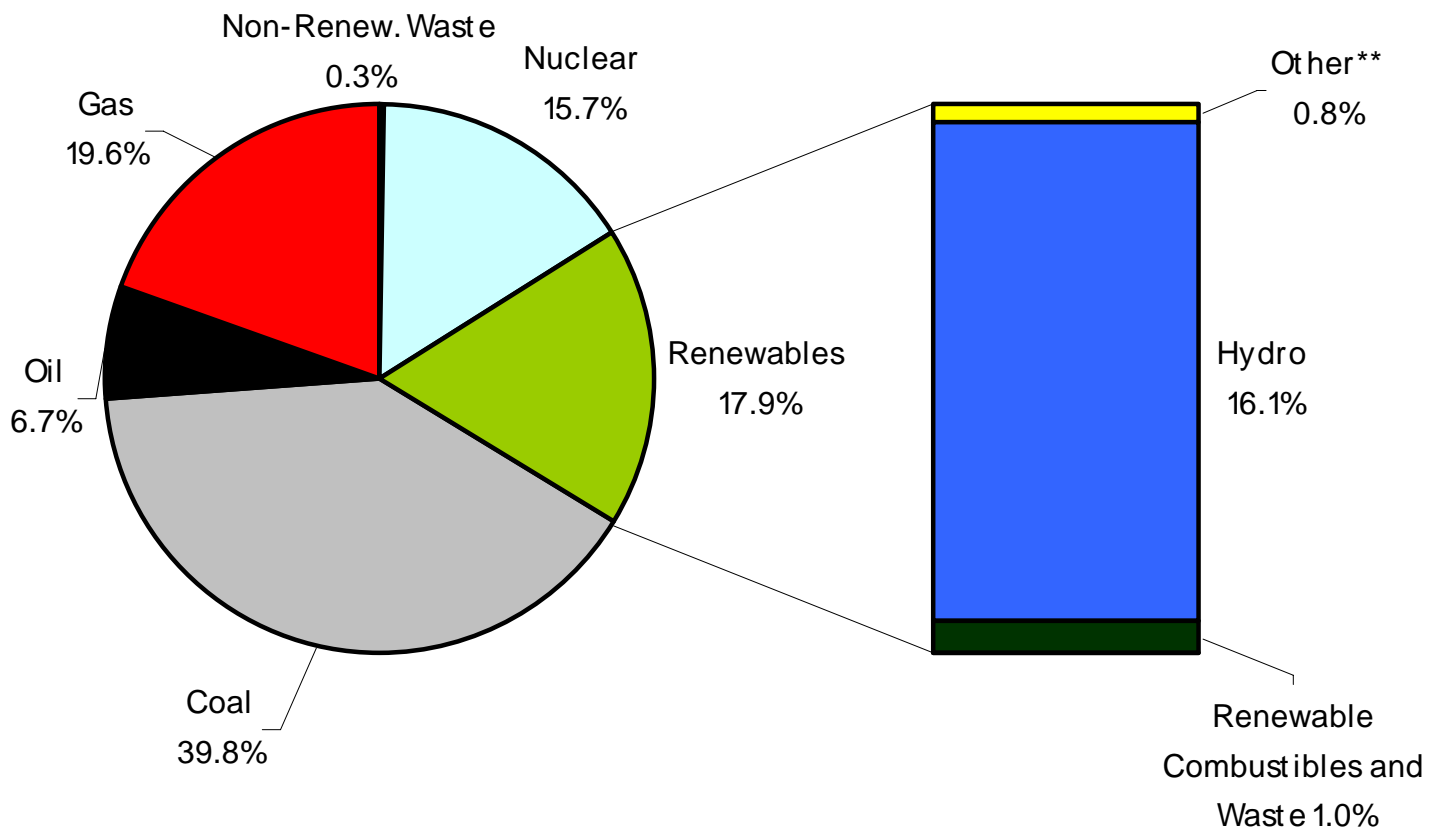


2004 Fuel Shares of World Total Primary Energy Supply





2004 Renewables in Electricity Production



** Geothermal, solar, wind, tide/wave/ocean.



Identified barriers

1. There is not a level playing field for renewable energy technologies
 - ✓ **Subsidies for conventional** technologies = 6:1
 - ✓ **Externalities are not internalised** in energy/fuel prices
2. The **incentives** for governments and private companies to support renewable energy development are **insufficient or not continuous**
3. **Financing is unreasonably costly** for renewable energy technologies
4. **Technology standards are lacking** for renewable energy technologies and fuels



Identified barriers

5. **Import tariffs** and technical barriers impede the **trade** with renewable energy technologies
6. **Planning & Permitting** for new RE plants are difficult to obtain
 - ✓ Approval procedures are lengthy and troublesome
 - ✓ Lack of spatial planning for renewable energy
7. Energy markets are not prepared for renewable energy
 - ✓ **Integration of intermittent** energy sources
 - ✓ **Grid connection and access** is not fairly provided
 - ✓ Other **markets imperfections** in energy markets
8. Renewable energy skills and awareness is insufficient
 - ✓ **Lack of knowledge, awareness and acceptance**
 - ✓ **Lack of training and education**

Renewables can add new value to the energy mix by(1)

... **enhancing security of supply** - both for **geopolitical**-concentrated in few countries in critical regions- and **infrastructure**-power plants, pipeline, sea straits...

...allowing energy **sources diversification & reducing imports** for consumers/ **deferring production** for exporters

...**mitigating risks in current energy portfolio** and trends, due to **volatility and instability of fossil** prices;



Renewables can add new value to the energy mix by(2)

- ...creating **framework for investment** enhancing industrial **competitiveness** – and opportunities for **export**
- ...creating new **jobs**, favouring economic development
- ...advancing **environmental targets**;
- ...providing **unique access to energy** services;
- ...increasing public participation in energy decision-making



Create fair market rules

Energy prices do not reflect the true costs of generation options - a market failure:

- the **social and environmental costs** of polluting energy are **not internalised**
- The **added values of RE** for diversification, reduced portfolio risk, job creation, industrial competitiveness **not accounted for**
- there are also **massive subsidies to ‘conventional’ energy sources**

To acknowledge the benefits of Renewable Energy, **support frameworks are established – not just “subsidies”**

- They should be viewed as **compensation mechanisms** for correcting these market failures and
- a **learning investments to reduce cost and improve performance**



National Policy Measures

Establish legally binding targets for renewable energy

*Essential for maintaining and further **stimulate investor confidence***

Establish incentive mechanisms which provide **defined and stable returns for investors**

***Definition** of technologies admitted*

*The price for renewable power must **allow for risk return profiles** that are competitive with other investment options.*

*The **duration** of a project must **allow investors to recover** their investment.*

Appropriate administrative procedures

Fair grid access and strategic grid planning

Public acceptance and support

Focused R&D investment in support of industrial competitiveness



Complementary Strategies

- × **R&D, Feed-In-Tariffs and Tradable RE Certificates** should be considered as **technology development policies**:
 - ✓ **R&D** encourages **new applications**
 - ✓ **Feed InTariffs** support **industry development**
 - ✓ **Tradable RE Certificates** support **markets** for lowest cost/most mature technologies

- × **Certified Emission Reductions monetise environmental externalities**



Policy messages-1

- × **Current policies will not bring us on a path towards a sustainable energy future** A more sustainable energy future is possible with a **portfolio of clean and efficient technologies**.
- × It will take a **major coordinated, international effort** to achieve the results implied : **unprecedented co-operation between the developed and emerging economies**, and between industry and government will be needed.
- × **The task will take decades** to complete and it will **require significant investments costs**. But also **Business as usual would cost a lot!**
- × **The task is urgent:** to ensure that the energy sector remains on a sustainable path in the future **it must be carried out before a new generation of inefficient and high-carbon energy infrastructure is locked into place.**

Delaying implementation by a decade would reduce the cut in cumulative emissions to 2030 from 8% to 2%

Delays in stepping up R&D – particularly carbon capture & storage – would hinder cutting emissions after 2030



Policy messages-2

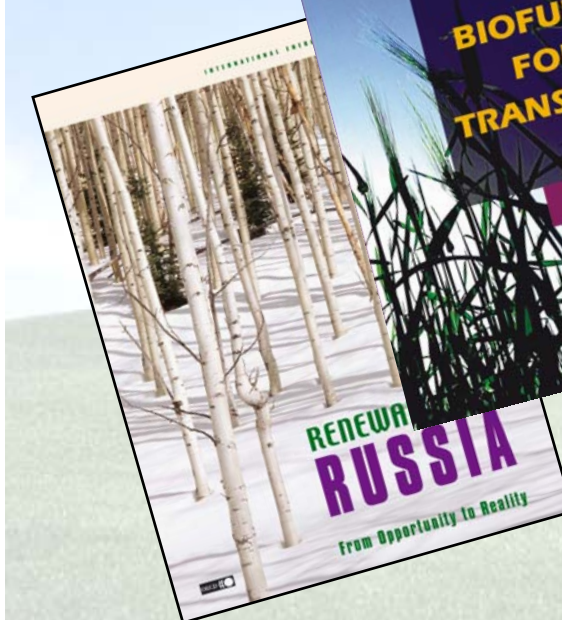
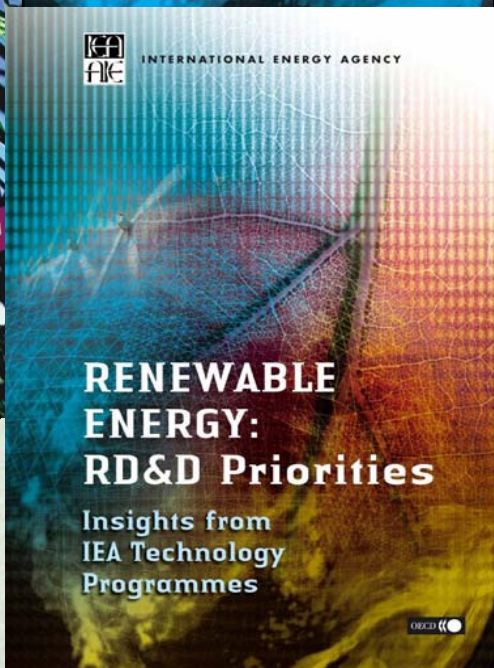
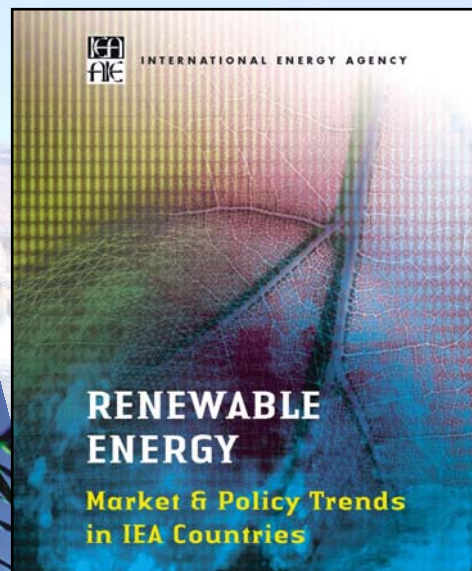
- × Implementing the ACT Scenarios will require **a transformation in:**
 - ✓ ***the way power is generated,***
 - ✓ ***the way homes, offices and factories are built and used,***
 - ✓ ***the technologies used for transport.***

- × In the end, it is the **private sector that will have to deliver the changes required. But the market on its own will not always achieve the desired results.**

- × **Governments** have a major role to play in **supporting innovative R&D** and in **helping new technologies to surmount some daunting barriers:** this will happen only with **credible, consistent and long term policy intervention**



IEA Renewable Energy Publications





Contact

RenewablesInfo@iea.org

<http://renewables.iea.org>

<http://www.iea.org>

roberto.vigotti@inergia.it