



Federal Ministry for the  
Environment, Nature Conservation  
and Nuclear Safety

 2007\* DE



EREC

Conference programme

# 2007 European Renewable Energy Policy Conference

Security of Supply, Environmental Protection,  
Competitiveness

Brussels 29 - 31 January 2007

with the support of

Intelligent Energy  Europe





Today's energy concerns focus on truly global issues: climate change and its consequences; security of supply and the need to ensure a stable and diverse portfolio of energy sources; and addressing these problems whilst improving competitiveness.

I firmly believe that climate change is the most important global challenge facing the world. The real issue regarding global warming is that we can act today to bring it under control. If we do not, its negative effects will not be felt by us, but by our children and grandchildren. And if we do not act now, much evidence suggests it will be too late for future generations to reverse the trend.

To make sure that European energy policy is addressing all the challenges that we face, the European Commission will publish its Strategic Energy Review in January 2007. This will propose medium and long term goals for the development of the energy sector, in response

to the call of the Heads of State and government for a European Energy Policy. The review is accompanied by a roadmap for renewables, a report on the situation of the internal energy market, the outcome of the competition sectoral enquiry on the internal energy market, progress reports on the two renewable energy Directives, a priority interconnection plan, a communication on sustainable fossil fuels, a report on nuclear energy and a communication on energy technology.

Renewable energy has a clear place in any discussion of a future energy policy. And the future strong growth of renewable energy must be part of our energy policies. Renewable energies clearly reduce emissions, both local and greenhouse gas related. In addition, renewable energies generally improve the security of energy supplies, by diversifying and decentralising energy supply both with indigenous sources and with imports. And finally, renewable energy technologies form a dynamic hi-tech sector which provides economic growth and jobs for our economies and help maintain our competitiveness.

Renewable energy, together with energy efficiency and savings will be a major contributor to our future energy strategy, and the Renewables Road map will provide a long term vision in order to ensure growth of renewable energy, and spell out its positive consequences with respect to meeting energy policy objectives.

This conference, initiating the Sustainable Energy Week can therefore stimulate a timely debate on the Strategic EU Energy Review with particular focus on renewable sources of energy. The debates of this conference will contribute to the dialogue preceding the spring Energy Council and European Council meetings, to the coordination of efforts to promote renewable energy and to working together to this end.

I warmly invite you to participate at this conference under the German EU-presidency and wish you a fruitful debate.

Andris Piebalgs  
European Commissioner for Energy

## European Union Sustainable Energy week



Set in the context of the Sustainable Energy Europe 2005-2008 Campaign, the EU Sustainable Energy Week is a series of events, taking place right across Europe, on a wide range of sustainable energy issues. An initiative of DG Energy and Transport of the EC, these events are supported by EREC and its members, the European Parliament, the Committee of the Regions, the German Presidency of

the EU, the national authorities of Italy, the regions of Brussels and Murcia, the city of Grenoble, and the most relevant actors in the field. The programme of the EU Sustainable Energy Week is available on [www.eusew.eu](http://www.eusew.eu).



**T**he European Union and its Member States are facing major energy policy challenges. Energy prices are rising, our import dependency is increasing and climate change is advancing more and more in our countries too. In view of this ever deteriorating situation we need a new energy strategy. A strategy which allows Europe to speak with a common voice and enables us to make full use of our own strengths:

- to achieve, through greater energy efficiency, a higher output per kilowatt hour used and
- to produce more energy from renewable sources, using solar, wind, hydro, biomass and geothermal energy.

In its Green Paper of March 2006 the European Commission formulated the key points for an energy supply which is secure, environmentally sound, climate friendly and cost-effective.

Besides energy-efficient products and procedures, installations for the use of renewable energies are at the cutting edge of Europe's technology. They bring economic growth and greater employment to the European Union, they promote security of supply and innovative technologies and they ensure a sustainable development which takes account of climate and environmental protection.

However, this requires the right policies and instruments for market introduction. The 2007 Renewable Energy Policy Conference offers an excellent opportunity to comprehensively analyse and discuss

the potential of renewable energies and ways to politically anchor them in the electricity, heating/cooling and biofuels sectors. How and with what timeframe should the expansion of renewables be structured? How can we achieve existing Europe-wide targets for 2010? These are just two questions which are currently also being discussed in the European Commission and European Council.

I am therefore convinced that this Conference will provide impetus for the upcoming Spring European Council and for the landmark Action Plan to be adopted on "Energy Policy for Europe".

Let us view the current situation in Europe's energy and environment sectors not only as a challenge, but also as an opportunity. By promoting renewables, we have the chance to make the transition to a new energy era a sustainable one. With a modern, innovative and future-oriented energy policy, the European Union can send a signal throughout the world.

I warmly invite you to participate in this Conference, which is taking place during the German EU Presidency, and to support this goal.

*Sigmar Gabriel*

German Federal Minister for the Environment



**R**enewable energy has come of age. These are exciting times as the industry's transition into the mainstream global energy business accelerates.

At the same time the European Commission will put forward the most important and ambitious energy package it has ever presented.

The enormous challenge facing mankind is not only to tackle climate change, but also to meet the rising demand for energy and to safeguard security of energy supplies in a competitive way.

Renewables are the technologies that are capable of meeting all of these challenges, and they are ready for a broader roll out today.

This Conference will discuss the proposals from the Commission and make clear recommendations to the decision makers.

The leading experts, companies, decision and policy makers from around the world are gathered in Brussels for the 2007 European Renewable Energy Policy Conference to discuss these issues, present international best practices and display the latest developments.

This Conference is the most effective opportunity to meet, network and be fully updated on all the key trends. It will provide a solid base for making knowledgeable decisions and developing future strategies. Furthermore, it will arm participants with the tools, information and contacts necessary to play a key role.

Finally, I would like to thank all our sponsors; the German Ministry for the Environment & Nature Conservation for co-organising the event and the European Commission as well as the Renewable Energy & Energy Efficiency Partnership for their contribution and collaboration.

I welcome you to Brussels at Europe's premier renewable energy event.

*Arthouros Zervos,*

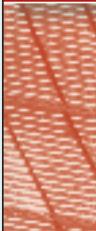
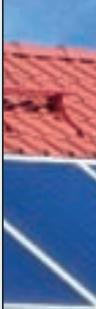
President, European Renewable Energy Council

# 2007

## European Renewable Energy Policy Conference

### Conference Programme

<b>Monday 29 January 2007</b> <b>Theme 1: Renewable Energy Sources Market Development &amp; Contribution to the Energy Policy for Europe</b>		
	09.00 - 10.00	Registration and Coffee
	10.00 - 11.00	<b>Official opening of the Conference</b> <b>H.R.H. Prince Laurent of Belgium</b> , <i>President, Global Renewable Energy &amp; Conservation Trust</i> <b>Mr. Sigmar Gabriel</b> , <i>German Federal Minister of Environment</i> <b>Mr. Andris Piebalgs</b> , <i>European Commissioner for Energy</i> <b>Ms. Eluned Morgan</b> , <i>Member of the European Parliament</i> <b>Prof. Arthouros Zervos</b> , <i>President, European Renewable Energy Council</i>
	11.00 - 11.30	<b>Grand opening: The new role of Renewable Energies:</b> <b>Mr. Al Gore</b> , <i>Former Vice President of the United States (t.b.c.)</i>
	11.30 - 13.00	<b>Session 1: Security of Supply</b> <span style="float: right;">p. 6/7</span>
		<b>Opening Speaker:</b> <b>Ms. Margaret Beckett</b> , <i>Foreign Secretary of the United Kingdom (t.b.c.)</i>
		<b>Moderator:</b> <b>Mr. Frank Umbach</b> , <i>President Fellow, German Council on Foreign Relations</i> <b>Mr. Claude Mandil</b> , <i>Chairman of the Council of Governors, International Energy Agency</i> - <b>Mr. Ole Pilgaard</b> , <i>General Manager, VELUX Solar Energy</i> - <b>Mr. Matthias Ruete</b> , <i>Director General, DG Energy &amp; Transport, European Commission</i> - <b>Mr. Graeme Sweeney</b> , <i>Executive Vice President, Renewables, Hydrogen and CO<sub>2</sub>, Shell</i> - <b>Mr. Andrej Vizjak</b> , <i>Slovenian Minister for Energy (t.b.c.)</i>
	13.00 - 14.30	Lunch
	14.30 - 16.00	<b>Session 2: Environmental Protection</b> <span style="float: right;">p. 8/9</span>
		<b>Opening Speaker:</b> <b>Mr. Stavros Dimas</b> , <i>European Commissioner for Environment</i>
		<b>Moderator:</b> <b>Mr. Steve Sawyer</b> , <i>Head of Greenpeace International's Political and Business Unit</i> <b>Mr. Andreas Carlgren</b> , <i>Swedish Minister for the Environment (t.b.c.)</i> - <b>Prof. Frank Convery</b> , <i>Professor of Environmental Policy, University of Dublin (t.b.c.)</i> - <b>Mr. Pierre-Yves Le Borgn'</b> , <i>Vice President Public Affairs Europe, First Solar</i> - <b>Mr. Peter Liese</b> , <i>Member of the European Parliament</i> - <b>Mr. Bernhard Pelikan</b> , <i>President, European Small Hydropower Association</i>
	16.00 - 16.30	Coffee break
	16.30 - 18.00	<b>Session 3: Competitiveness</b> <span style="float: right;">p. 10/11</span>
		<b>Opening Speaker:</b> <b>Mr. Peter C. Brun</b> , <i>Vice President Governmental Relations, VESTAS</i>
		<b>Moderator:</b> <b>Ms. Jackie Jones</b> , <i>Editor, Renewable Energy World</i> <b>Mr. Teun Bokhoven</b> , <i>Regional head of Northern Europe, Conergy</i> - <b>Mr. David Milliband</b> , <i>UK Secretary of State for Environment</i> - <b>Mr. Karl-Ulrich Köhler</b> , <i>Chairman of the Board, ThyssenKrupp Steel AG (t.b.c.)</i> - <b>Mr. Claude Turmes</b> , <i>Member of the European Parliament</i> - <b>Prof. Eicke Weber</b> , <i>European Renewable Energy Centres Agency</i>
	18.00 - 19.00	Evening Reception

Tuesday 30 January 2007		
Theme 2: The Renewable Energy Roadmap		
	09.00 - 11.00	<b>Session 4: Renewable Energy Roadmap</b> p. 14/15
		<b>Opening Speaker:</b> Mr. Fabrizio Barbato, Deputy Director-General, DG Energy and Transport, European Commission
		<b>Moderator:</b> Mr. Patrick Lambert, Director, Intelligent Energy Executive Agency
		<b>Mr. Winfried Hoffmann</b> , Schott Solar, President of the European Photovoltaic Industry Association - <b>Mr. Alfonso Pecoraro Scanio</b> , Italian Minister of Environment (t.b.c.) - <b>Mr. Hermann Scheer</b> , Member of the German House of Parliament; General Chairman - <b>Lord Truscott</b> , Permanent Under Secretary of State for Energy, United Kingdom
	11.00 - 11.30	Coffee break
	11.30 - 13.00	<b>Session 5: Renewable Energies in the Heating &amp; Cooling Sector</b> p. 16
		<b>Opening Speaker:</b> Ms. Mechtild Rothe, Member of the European Parliament, President of EUFORES
		<b>Moderator:</b> Mr. Solon Kassinis, Director Energy Service, Ministry of Commerce, Industry & Tourism of Cyprus
		<b>Mr. Martin Bartenstein</b> , Austrian Federal Ministry of Economics and Labour (t.b.c.) - <b>Mr. Alfonso Gonz�ales Finat</b> , Director, DG Energy & Transport, European Commission - <b>Mr. Heinz Kopetz</b> , President, European Biomass Association - <b>Mr. Burkhard Sanner</b> , President, European Geothermal Energy Council - <b>Mr. Gerhard Stryi-Hipp</b> , European Solar Thermal Industry Federation
	13.00 - 14.30	Lunch
	14.30 - 16.00	<b>Session 6: Renewable Energies in the Electricity Sector</b> p. 18
		<b>Opening Speaker:</b> Mr. Xavier Viteri, Director Renewable Energies, Iberdrola
		<b>Moderator:</b> Ms. Jennifer Morgan, Climate Change Programme Director, E3G
		<b>Mr. Joan Clos</b> , Spanish Industry Minister (t.b.c.) - <b>Mr. Matti Hilli</b> , CEO Vapo - <b>Mr. Hans J�rgen Koch</b> , Deputy State Secretary, Ministry of Transport and Energy of Denmark, Danish Energy Authority - <b>Mr. Johannes Lackmann</b> , President, German Renewable Energy Association - <b>Mr. Matthias Kurth</b> , President, Federal Network Agency
	16.00 - 16.30	Coffee break
	16.30 - 18.00	<b>Session 7: Renewable Energies in the Biofuels Sector</b> p. 20
		<b>Opening Speaker:</b> Mr. Fran�ois Loos, French Minister Delegate for Industry (t.b.c.)
		<b>Moderator:</b> Prof. Thomas B. Johansson, Professor of energy systems analysis, University of Lund, Sweden
		<b>Prof. Suani Coelho</b> , Deputy Environment Secretary, S�o Paulo, Brazil - <b>Mr. Kjell ac Bergstr�m</b> , President & CEO, Saab/GM Powertrain Sweden AB - <b>Mr. Jos Dings</b> , Director, European Federation for Transport & Environment - <b>Ms. V�ronique Hervouet</b> , Biomass & Synfuel Development Manager, Total - <b>Mr. Dietrich Klein</b> , Committee of Professional Agricultural Organisations in the European Union - General Confederation of Agricultural Co-operatives in the European Union
	19.00 - 23.30	Reception hosted by REN21 and Conference Dinner at the Albert Hall
Wednesday 31 January 2007		
Theme 3: Global Outlook for Renewable Energies		
	09.00 - 11.00	<b>Session 8: Global Outlook and Markets for Renewable Energies</b> p. 21/22
		<b>Opening Speaker:</b> Mr. Mohammed Boutaleb, Minister of Energy and Mines of Morocco (t.b.c.)
		<b>Moderator:</b> Prof. Klaus T�pfer, Former Executive Director, United Nations Environment Programme
		<b>Mr. Vilas Baburao Muttemwar</b> , Indian Ministry of New and Renewable Energy - <b>Mr. Mohamed El-Ashry</b> , Senior Fellow, United Nations Foundation - <b>Mr. Li Junfeng</b> , Secretary General of the Chinese Renewable Energy Industries Association - <b>Mr. Ernesto Macias</b> , Sales & Marketing Manager at Isofoton, President of the Alliance for Rural Electrification - <b>Ms. Marianne Moscoco-Osterkorn</b> , International Director, Renewable Energy & Energy Efficiency Partnership - <b>Mr. Jamal Saghir</b> , Director for Energy and Water, World Bank <b>Mr. Anders Wijkman</b> , Member of the European Parliament
	11.00 - 11.30	Coffee break
	11.30 - 12.30	<b>Closing Session</b>
		<b>Conference Conclusions:</b> Mr. Svend Auken, former Danish Minister of Environment <b>Closing Remarks:</b> Mr. Matthias Machnig, German State Secretary, BMU - <b>Prof. Arthouros Zervos</b> , President, European Renewable Energy Council



## Session 1: Security of supply

**T**he main characteristics of the present energy supply system in Europe are the dominating share of fossil fuels as well as the high dependence of energy imports. In the EU-25 fossil fuels contribute almost 80 % to the primary energy demand. Among the fossil fuels mineral oil is the most important source (37 %), followed by natural gas (24 %) and coal (18 %). Nuclear fuels rank at the fourth position with just under 15 %. The share of renewable energy is about 8 %.

Concerning this structure it must be kept in mind that the resources of fossil and nuclear fuels are limited in principle. This might not restrict the energy supply in the short- or middle-term but the peak of production of, at least, conventional oil is already expected to occur in the next two to three decades, with some geologists seeing this peak occur much sooner. An even more important problem with fossil fuels arises because most of them need to be imported. Indigenous production of fossil fuels in the EU-25 is rather poor. The overall import dependency in 2004 was about 50 %, almost 80 % of the total oil demand had to be imported versus 55 % in the case of natural gas. Even with coal included in the equation, the import portion still amounts to circa 50 %. Up to the year 2030 a strong increase of import dependency is expected resulting in a 94 % oil import share, an 85 % natural gas import share and an import share of solid fuels reaching almost 60 %. Furthermore, not only are we facing rising energy prices but also a high degree of price volatility.

Against this background the EU Commission's Green Paper on "A European Strategy for Sustainable, Competitive and Secure Energy" Brussels, (8 March 2006 COM 105 final) stated "Unless we can make domestic energy more competitive, in the next 20 to 30 years around 70 % of the Union's energy requirements, compared to 50% today, will be met by imported products – some from regions threatened by insecurity". Therefore not only does the rising import dependency appear to be the crucial problem, it is further reiterated by the fact that the fuels will have to be imported from politically unstable countries. This is particularly the case concerning mineral oil as it should be taken into account that more than three quarters of the total oil resources are located in OPEC countries. In addition, the reserves of natural gas are also concentrated in just a few countries. Today, roughly half of the EU's gas consumption comes from only three countries (Russia, Norway and Algeria).

To make energy supply more secure the EU Commission's Green Paper, amongst others, recommends to tackle the EU's rising dependence on imported energy through an "integrated approach – reducing demand, diversifying the EU's energy mix with greater use of competitive indigenous and renewable energy,

and diversifying sources and routes of supply of imported energy". And the Commission's statements concerning renewable energies are very clear: "Action on renewables and energy efficiency, besides tackling climate change, will contribute to security of energy supply and help limit the EU's growing dependence on imported energy."

In order to enhance the external security of energy supplies of the EU, the Commission's paper on "An External Policy to serve Europe's Energy Interests" (S160/06) as of June 2006 pointed out ten objectives among which "Encouraging energy efficiency, use of renewable energies including bio fuels, low emission technology and rational use of energy worldwide" play a major role.

Besides this we must not ignore the fact that decentralised and diversified systems for energy generation are less vulnerable to accidents (extreme weather conditions, terrorist attacks, etc.) and reduce transport needs. Renewable energy sources are particularly suitable for use in decentralised generation systems.

And more importantly, the Commission leaves no doubt that Europe must act urgently, because it takes many years to bring innovation on stream in the energy sector. Work has been progressing on these issues since the Commission's 2000 Green Paper on Security of Energy Supply, but given recent developments on energy markets, a new European impetus is needed. This is also true concerning renewable energies: At present the EU leads the world in promoting renewable forms of energy yet this position must be strengthened and even extended.

Taking the results of the recently published baseline ("business as usual") scenario, written by Mantzos and Capros, renewable energies will not fulfil these expectations. Not even will they meet the targets fixed by the EU for 2010. It is true that from 2025 onwards renewables will become the most important indigenous energy source, but according to the baseline scenario by Mantzos and Capros their contribution to the total primary energy demand will only be roughly 8 % in 2010, slightly more than 12



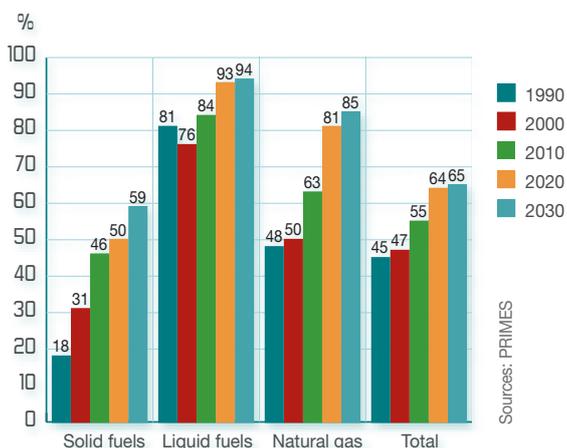
% in 2020 and only 12 % in 2030 – far from the necessities we are facing. And it is also much farther from the huge potential within renewable energy sources.

To strengthen the security of supply and to contribute to the restructuring of the energy system by means of renewable energy the European Union must set more ambitious long-term mandatory sector targets to guarantee stability, and commitment for investment decisions. Similarly it was pointed out in the EU Green Paper of March 2006: “The full potential of renewable energy will only be realised through a long-term commitment to develop and install renewable energy.” Without a major shift towards renewable energy sources in combination with energy conservation and efficiency we will lose the chance of securing our energy supply system. If we take that chance, the EU could become the most energy import independent region in the world.

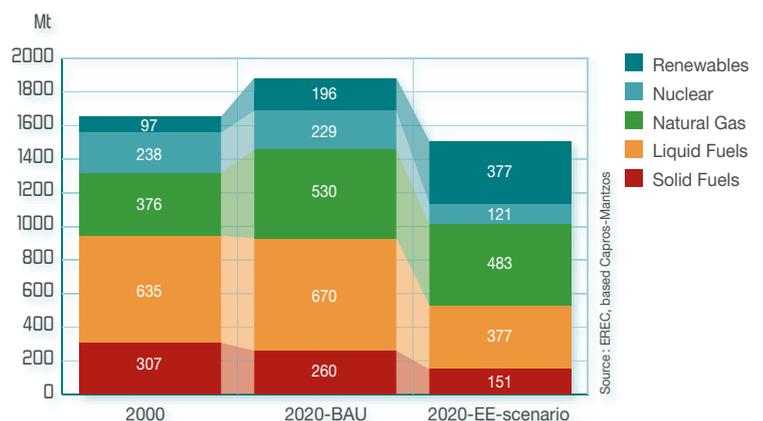
### Questions to be addressed:

- What are the risks of energy sources related to their import in the EU 25?
- What are the risks in the security of energy supply that may be caused by exporting countries?
- Does the security of energy supply improve by an intensified use of renewable energies or do other risks arise?
- Is an explicit target of specific import quota appropriate for the improvement of the security of energy supply?
- Do we need specific targets for renewable energies?
- Which sources of energy will be replaced mainly by renewable energies?
- Which role does foreign policy play regarding the security of energy supply?
- Which role should renewable energy play in a common European foreign policy?

### Import dependency in EU-25 according to a business as usual case



### Primary energy demand 2020 in EU-25: business as usual case and EE-scenario



## Session 2: Environmental Protection



Climate change is speeding up. Since the beginning of the 20<sup>th</sup> century, the average global temperature has risen by around 0.8 degrees Celsius – faster than ever before in the previous 1,000 years. The Intergovernmental Panel on Climate Change (IPCC) estimates a further increase between 1.4 and 5.8 degrees Celsius compared with 1990 levels by the year 2100 – unless something is done to curb global emissions of greenhouse gases. In recent decades, warming of the earth's atmosphere has actually accelerated significantly, associated with changes in the global climate system: Sea levels are rising, glaciers worldwide are melting, more frequent and more intensive storms and extreme rainfall, heavy rain and flooding, periods of drought, abrupt climate changes, and the possibility of a serious slowdown in the North Atlantic Drift.

People will flee in search of conditions that will allow them to survive – into the cities of developing countries, into fertile regions in their own country, to neighbouring countries or to industrialised nations - environmental refugees. This development may lead to serious conflict and violent disputes over habitable land or natural resources such as freshwater.

In contrast to just a few years ago, the need to act is no longer disputed. In the Kyoto Protocol, the industrialised nations made a binding commitment to reduce their combined emissions of the six main greenhouse gases – including carbon dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>) and nitrous oxide (N<sub>2</sub>O) – by at least five percent compared with 1990 levels in the period from 2008 to 2012. The first commitment period under the Kyoto Protocol is just an essential first step towards international climate protection. More steps have to follow.

The economic damage caused by climate events has already increased six-fold since the Sixties. Climate change causes global damage running into billions of dollars - unless we can succeed in curbing climate change. The recently released report by Sir Nicholas Stern shows: the costs of inaction or delayed action by far outweigh the costs of action to mitigate climate change: The cost of doing nothing could reach 20% of the gross global product by mid century, with conservative estimates suggesting at least 5%, resulting in the worst economic depression in modern history. The cost of action to reduce Greenhouse Gases emissions and to stabilise atmospheric greenhouse gas concentrations at a level that would prevent catastrophic climate change is likely to be in the order of 1%. Costs can be even lower with faster innovation in low-carbon technologies.

In other words, climate protection pays: Taking active measures to prevent climate change is far cheaper than bearing the costs of damage compensation and adaptation measures. For example, it is far less expensive to promote energy efficient technologies and renewable energies than to be forced to build dams to tackle rising sea levels, as economic studies have verified. The later we react, the more expensive the damage becomes.

In future, rich industrialised nations must continue to bear the brunt of greenhouse gas reductions. This is only fair, since these countries account for the highest per capita emissions of greenhouse gases in the world. On average, a person residing in the USA produces around 20 tonnes of carbon dioxide (CO<sub>2</sub>) per annum, four times the global average. In the EU, the average figure is around eight tonnes of CO<sub>2</sub> per annum. The European Union estimates that industrialised countries will need to cut their emissions by 60 to 80 percent by 2050 compared with 1990 levels – this is more than the average of all countries put together. By 2020, the European Union

proposes a reduction of its own greenhouse gases in a range of 15 to 30 percent compared with 1990 levels. Global warming has to be limited to not more than a two degree Celsius increase compared with pre-industrial levels.

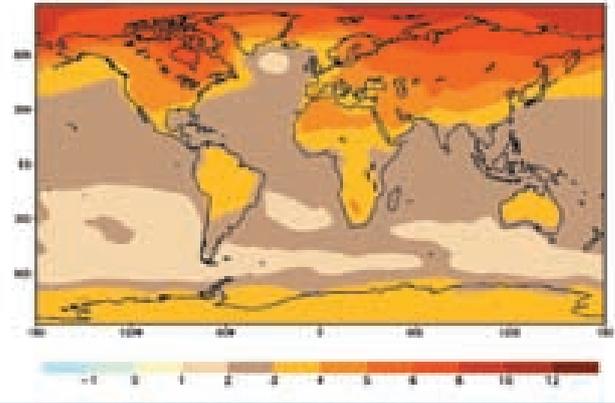
Against this background the right energy policy strategy is in essence also the right approach for ambitious climate protection. A focused energy efficiency strategy and the expansion of renewable energies are core for reducing greenhouse gas emissions to the extent needed worldwide. A strategy, which can halve global emissions by 2050, is already feasible with the technologies available today, and the costs are also affordable. Throughout the world we must – in line with an increase in energy efficiency on both the production and the demand side – press on with an economically efficient expansion of renewable energies, in order to enhance security of supply, reduce the increasing demand for energy and thus curb the rise in energy prices. Only in this way will the European Union achieve greater security of supply, reduce its import dependency and increase the value added domestically; only this will lead to better competitive capacity and the resultant growth in prosperity. This is a win-win-win strategy for industrialised and developing countries equally. Over the next 10 to 15 years the window of opportunity must be used to connect the emissions reduction necessary for climate protection with the requisite investments in energy systems.

### Questions to be addressed:

- *What is the contribution of renewable energies to climate protection?*
- *Does climate protection provide an opportunity to initiate ecological market economy?*
- *Which benefits will result from renewable energy-based climate protection policy?*
- *How can the EU maintain its leading position in climate protection and how can it be extended?*
- *Can renewable energies play a major role in CDM and JI projects?*

### Anticipated change in the annual average temperature in °C

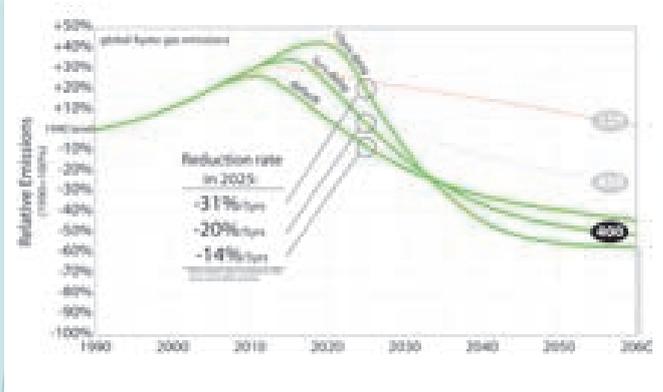
(average 2071-2100 compared to 1990)



Source: IPCC, third status report 2001

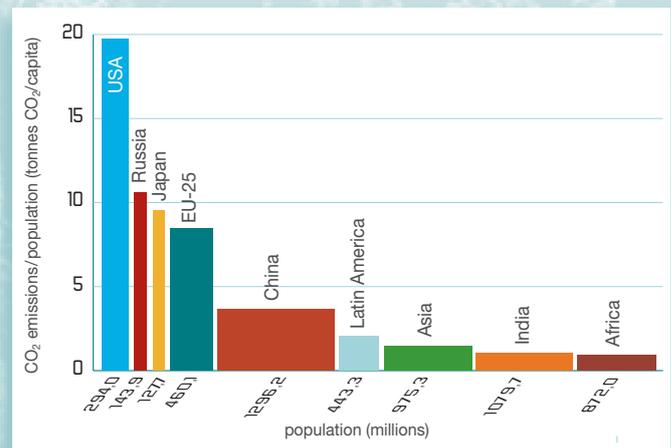
### Implications of delays in reductions of CO2

The longer we wait, the higher reduction rates need to be



Source: Malte Meinshausen, Swiss Technical University

### CO<sub>2</sub> emissions and population



source: IEA, CO<sub>2</sub> emissions from fuel combustion 1971 - 2004, 2006 edition

## Session 3: Competitiveness

**R**enewable energies have manifold advantages. They not only protect the climate and strengthen security of supply, they also stimulate economic growth and employment as well as increasing export chances and avoiding the (hidden external) costs of non-action regarding climate change. As a result renewable energies have the ability to enhance overall competitiveness. These will be the topics to be discussed in detail in the third session.

It should not be ignored that renewable energy sources already play an important economic role in many countries. As it was stated in the REN21 Renewables Global Status Report 2006 update, record investment in new renewable energy capacity occurred in 2005 - 29€ billion, up from 23€ billion in 2004. Almost all the increase was due to increased investment in solar PV and wind power. Technology shares of the 29€ billion annual investment were wind power (37 %), solar PV (26 %), solar hot water (11 %), small hydropower (11 %), biomass power and heat (7 %), and geothermal power and heat (7 %). An additional \$11–15 billion was invested in large hydropower. Germany and China were the investment leaders, with about \$7 billion each, followed by the United States, Spain, Japan, and India. Wind power registered the second highest added capacity, almost as much as large hydropower, with existing capacity growing 24 % to reach 59 gigawatt (GW).

The renewables industry has captured investors' attention already, as the number of renewable energy companies or divisions with market valuations greater than \$30 million increased from 45 to 64. The estimated total valuation of companies in this category was \$38 billion, double the 2004 estimate, as several high-profile initial public offerings took place. The solar PV industry invested record amounts in new plant and equipment (about \$4,5 billion), as did the biofuels industry (more than \$0,7 billion). The wind industry continued international production expansion, including in Australia and China, where several European manufacturers have been establishing manufacturing facilities.

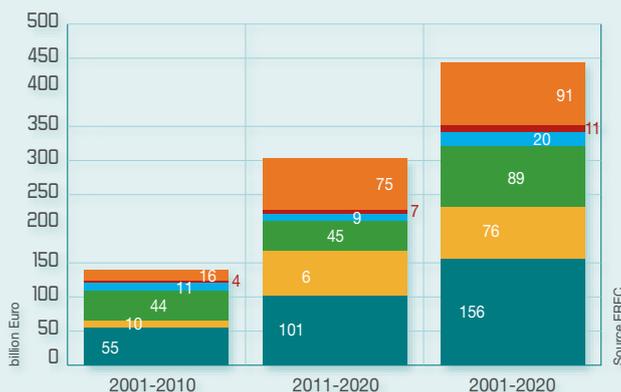
In its recent Green Paper "A European strategy for sustainable, competitive and secure energy" the EU Commission also emphasises the relevance of renewable energies for the economy and technological leadership of Europe in this sector with a reference to approximately 300,000 jobs in the EU. According to EREC the employment in the EU created by renewable energy technologies could expand up to 1.067 million jobs in 2010 and up to 2.023 million jobs in 2020.

The following decades renewable energy sources will probably increase with very high rates each year. This will be connected with corresponding investments and their macro-economic impacts. Depending on the underlying scenarios, estimates exist which expect an increase of world-wide investment volumes for renewable energies up to the year 2020 of approximately 250 billion € p.a. and until 2030 of approximately 460 billion € p.a. (prices of 2000).

Renewable energies thus represent an expansive global growth market. If the EU maintains its leading position in the field of renewable energies, this will help the European industry to participate in this growing market as exporters. In this sense, renewable energies will also contribute to the "Community Lisbon Programme" to boost growth and create more and better jobs by promoting knowledge and innovation and making Europe an attractive place to invest and work.

Furthermore, it is important to take into account that the world is facing an economic crisis due to the ever-growing global demand for fossil fuels and that the world is also facing severe price risks. The best way of protecting the world's competitiveness, growth and living standards is by encouraging resource use efficiency and renewables.

Benefits of increasing the share of renewable energy in EU-15 Investments





We all know that the economic costs of climate change are substantial. In fact, the calculations of these costs vary in a broad range. Nevertheless there is a wide consensus that we are facing costs in a magnitude of some trillions of Euros per year by the middle of this century if we do not take immediate actions for global climate protection. And this includes the expansion of renewable energies. Indeed, this is another reason why we should not neglect the economical importance of renewable energies. The costs of non-action regarding climate change are much higher than the costs for expanding renewable energies to avoid these costs. Such types of hidden costs of climate change and other externalities should be included in all economical evaluation of renewable energy sources.

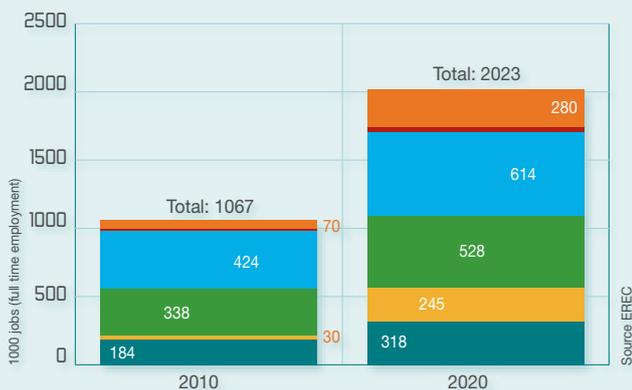
Besides all the above, renewable energies are in a position to abate the risks of the increasing and volatile prices of fossil fuels because the fuel prices for wind or sun will always be the same - namely zero. Further taking into account the cost reductions of renewable energy investments, these energy sources will

become more and more competitive compared with conventional fuels. With the economic opportunities for new industries, craft and trades, renewable energies can make a significant contribution to the required structural change in the EU's industry and overall economy.

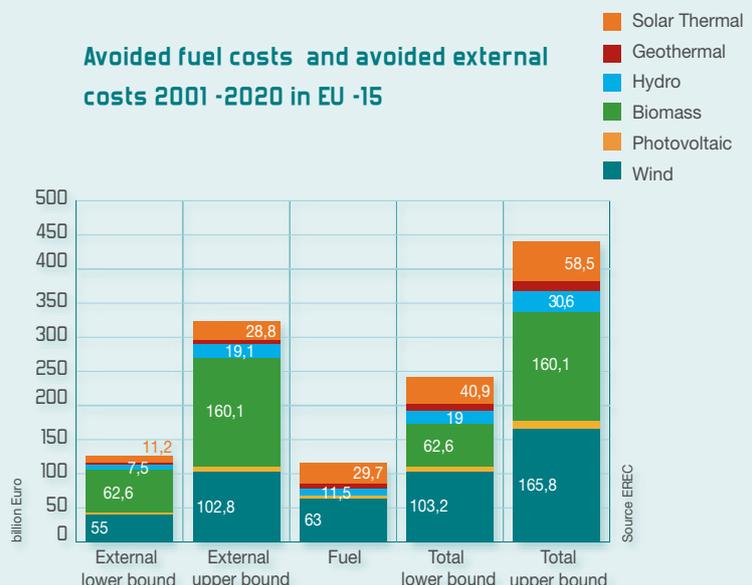
### Questions to be addressed:

- Which relationship exists between the competitiveness of renewable energies versus conventional techniques and the impact of renewable energies on the overall competitiveness of the European economy?
- Are there negative economical effects due to the fact that the expansion of the renewable energies is still dependent on a financial promotion?
- What will be the job-creating effects of renewable energies in the coming twenty years in the European Union?
- Are the high labour costs not simultaneously a problem for the competitiveness of renewable energies?
- What will be the contribution of renewable energies regarding the predictable industrial change?
- Which industries will be the winners, and which the losers, of the structural change caused by the expansion of renewable energies?

### Using renewable energy technology creates employment in EU-15



### Avoided fuel costs and avoided external costs 2001 -2020 in EU -15



Some see an endless horizon  
We see endless potential



At Vestas it's never been our ambition to make the world's biggest turbines - just the most efficient. Take our new V90-3.0 MW. Rather than simply scaling up existing technology, we've taken a fresh look at turbine design.

By rethinking everything from blade and nacelle technology, to tower construction and transport, the V90-3.0 MW delivers more power from a smaller investment. And that makes renewable energy even more competitive. If you're looking for an efficient route to more power, look no further than the V90-3.0 MW.

[www.vestas.com](http://www.vestas.com)



## **SOLAR POWER – YES, PLEASE!**

**Because the sun is a global player.**

The sun is equally available to all of mankind. It shines on all the continents and oceans of our planet. It provides us with life and a future. The sun is a global player. Sharp, a company from the land of the rising sun, has been following the course of this most important star from an early stage. The company has been present in Europe since 1968. Sharp's eleven European subsidiaries as well as manufacturing facilities in Spain, France and the United Kingdom are indicative of its European spirit.

Since 1959, Sharp has been applying its know-how to expanding photovoltaic systems and was the leading manufacturer of solar cells with a product volume of 428 Megawatts in 2005. A size which involves environmental obligations. Sharp's commitment to future generations is evident with the consistent implementation of its environmental management programme according to ISO 14001, which has won several awards. **In Europe and all six remaining continents of the world.**

**ENERGY BY NATURE. SHARP SOLAR**

**SHARP**



## Session 4: Renewable Energy Roadmap

**T**he European Union began to set targets for renewable energies in 1997, in its White Paper on renewable energy sources. An overall target of doubling the contribution from renewable energy in the final EU energy consumption was set with a target date of 2010.

Since that time, new legislative frameworks have been put in place at an EU level with a view to ensuring that these targets will be achieved in both the renewable electricity and biofuels sectors. The relevant Directives include targets for each EU Member State up to 2010. The renewable heating and cooling sector is still missing in legislation.

Targets represent a first step in policymaking but not the only one. Nevertheless they give a clear direction and security for investors. Since energy investments are always long-term investments the existing targets are by no means sufficient any longer.

It is high time for the EU to set new targets for renewable energies for the year 2020 in order to give this important signal to the market players. One of the main pillars of the renewable energy roadmap should be the proposal of a new target, maybe followed by targets for the different sectors (electricity, heat/cold, biofuels). These targets would give clear and stable market incentives to the operators, in order to allow them to make long-term commitments safely and accordingly to policy priorities. A clear and ambitious target for 2020 should be introduced as soon as possible. This overall target could be translated in sectorial targets for electricity, heating and biofuels as already demanded by the European Parliament. These targets could be translated into specific national targets.

These targets must give clear and stable market incentives to the operators, in order to allow them to make long-term commitments safely and accordingly to policy priorities. A clear and ambitious target for 2020 of at least 20% renewables share must be introduced as soon as possible. This overall target needs to be translated in sectorial targets for electricity (at least 35% by 2020), heating (at least 20% by 2020) and biofuels (at least 12% by 2020) as already demanded by the European Parliament. These targets must be translated into specific national targets at national level.

When faced with the fact that only few Member States of the EU are currently on track to meeting their targets for 2010, it is of utmost importance to ensure that these existing targets for renewable energies are being achieved. Besides initiating manda-

tory national targets, an increasing coordination among Member States with similar support schemes (like the German-Spanish Feed-in-Cooperation) and an intensified exchange of information on obstacles, such as administrative barriers or discriminatory access to the grid still to be overcome, are promising approaches to guarantee the achievement of existing and future targets.

A number of countries are showing a rapid increase in renewable energy use through supportive national policy frameworks. But under current trends the EU will miss both targets by 1-2 percentage points. If the EU is to meet its longer-term climate change goals and reduce its dependence on fossil fuel imports, it will need to meet and indeed go beyond these targets.

For renewable energy to fulfil its potential, the policy framework needs to be supportive.

The full potential of renewable energy will only be realised through a long-term commitment to develop and install renewable energy. In parallel to the Strategic EU Energy Review, the Commission decided to bring forward a **Renewable Energy Roadmap**.

This renewable energy roadmap should cover at least the following aspects:

- **an active programme with specific measures** to ensure that existing targets are met;
- **propose new targets beyond 2010**, in order to provide long term certainty for industry and investors, as well as the active programmes and measures needed to make this a reality;
- **a new Community Directive on heating and cooling**, complementing the Community energy saving framework;
- **a detailed short, medium and long-term plan** to stabilise and gradually reduce the EU's dependence on imported oil. This should build on the existing Biomass Action Plan and the Strategy for Biofuels;
- **Research, demonstration and market replication initiatives to bring clean and renewable energy sources closer to markets.**

The roadmap is launched early January 2007 and the panel will discuss the proposals of the Commission. The roadmap should accelerate the implementation of renewable energy policy in order to reach the short-term commitments up to 2010 and set new targets for at least 2020.

*“The European Union and its Member States have pioneered policy initiatives to drive renewables forward. Building upon this, the 2007 European Renewable Energy Policy Conference is the single most influential renewable energy policy event in 2007 for discussing further steps.”*



*Mechtild Rothe,  
Member of the European Parliament,  
President of EUFORES.*

*“We are going to import an ever-growing share of our energy at unpredictable prices in competition with the rest of the world and at unbelievable environmental costs. Regardless of whether we are successful in energy diplomacy or not, we have no idea about the future cost of energy we will be paying to maintain current supply.*

*Only renewable energy guarantees stable and predictable prices at decreasing costs.”*



*Prof. Arthouros Zervos,  
President of the  
European Renewable Energy Council*

### **Questions to be addressed:**

- *Are the targets for renewable energy sufficient and ambitious enough?*
- *Would binding targets bring a breakthrough and could they be achieved politically?*
- *Are the proposed measures coherent and sufficient for reaching the targets?*
- *Are additional measures necessary?*
- *Is the renewable energy roadmap in line with the EU's overall energy strategy?*

# Session 5: Renewable Energies in the Heating and Cooling Sector

**T**he renewables heating and cooling sector is missing in the policy framework. Specific sectorial targets were included in the White Paper, but they were never included in European legislation. This policy hole is jeopardising the chances of the EU to reach its overall target for renewable energies, as recently stated by the European Commission itself.

Renewable heating (RES-H) so far has received less political attention than renewable electricity (RES-E), both at EU level and in most Member States.

Due to this, renewable energy in heating has grown slowly over the last years. The Directive on the promotion of cogeneration (CHP Directive) and the Building Directive have a direct impact on efficient heat use. But there is no legislation in place addressing renewable heat production. It is still a sector dominated by traditional biomass use and a new dynamism is needed to deliver the necessary contribution to achieve the objective of a 12% share in renewables by 2010 and to develop the sound potential that exists in the new Member States.

In many countries, administrative barriers and unfavourable bureaucratic conditions limit the use of renewable heating and cooling. Often these barriers are due to esthetical, planning or safety regulations that have been conceived without keeping in mind the specific situations of RES-H applications.

Despite generally resulting in much lower operation costs, investment costs are usually still significantly higher. Even though the payback of renewable heating systems is in many cases within reasonable periods, homeowners and businesses often find it difficult to finance the investment costs.

Experience has shown that, without an EU policy framework, RES-H develops well only in a few Member States, and that this is not caused by the distribution of natural resources. If efforts to promote renewable heating and cooling will not take place in a coordinated way throughout the Union, the EU will miss its overall targets on renewables and will continue to dissipate precious fossil sources and electricity that could be used for other purposes.

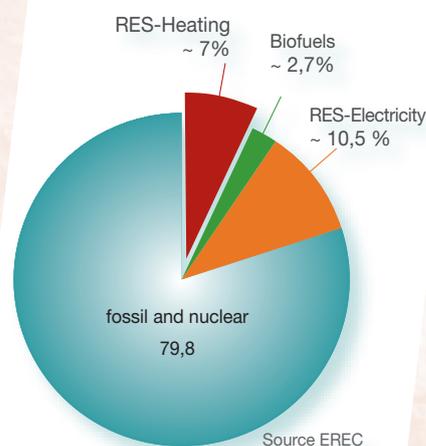
Continuity in time is the single most important element of a well-designed and managed policy measure for RES-H. Several examples from different countries and RES-H technologies show that discontinuous financial incentives can damage the development of healthy market structures by creating a stop-&-go market dynamic. Under such conditions, the supply side and the professional groups mentioned above are discouraged from investing.

A short-timed incentive scheme may boost demand for a while, but does not create healthy market structures.

With the announcement by the Commission for a Directive on the promotion of heating and cooling from renewable energy sources, this session will discuss its implications and possibilities. Possible improvements as well as the further political process shall be discussed and outlined by the Panellists.

The missing gap in EU legislation needs to be filled in order to reach the overall RES targets.

**Legislative gap in RES-Heating**  
Share of RE-Sectors according to the 20% target for 2020



## Questions to be addressed:

- Are the announced measures ambitious enough?
- Will a Directive really boost the uptake of RES-H?
- Which should be the core elements of a future EU Directive?
- What additional measures are necessary?
- Will all available technologies get equal attention by the proposed measures?
- What can and must be done on the national level?



## VELUX Solar Energy - solar excellence by design

Solar thermal energy continues to be an important tool in our common endeavours to achieve the objectives of the European Union energy policy.

### Solar thermal energy for buildings

Solar thermal installations can cover a substantial part of the household energy demand for hot water, heating and even cooling. This is crucial for the design of renovation and new building projects since buildings are major consumers of energy. Buildings represent about 40% of the total energy consumption in Europe and the figure is rising.

### VELUX design to suit future needs

VELUX one stop packaged solar solutions are designed for easy installation, optimal functionality and performance without compromising the aesthetics of buildings. With more than 50 years of experience in roof integration, VELUX has designed a solar solution that integrates perfectly with the roofing material and provides a harmonious fit with existing building architecture. VELUX solar solutions can cover up to 30% of a family's yearly demand for hot water and room heating.

For more information about VELUX solar thermal energy and the Atika project, see [www.velux.com](http://www.velux.com)



### VELUX Atika

#### - design with solar cooling

VELUX has designed a future concept for better living conditions with less energy consumption. VELUX solar thermal solution provides the house with hot water, heating and cooling. Atika is currently exhibited in the Gernika harbour in Bilbao, Spain and will later visit several parts of the Mediterranean.



# Session 6: Renewable Energies in the Electricity Sector

**A**lthough liberalisation of electricity markets has shown some benefits much more remains to be done. At present all EU electricity markets, except in Nordic countries, remain national in economic scope. For almost all countries, imports of electricity are not yet sufficiently developed to provide customers with a real alternative to the nationally established suppliers. There is no real competition on more than 90% of the EU electricity market, and unless the current distortions in the emerging Internal Electricity Market are overcome, there will be no effective Internal Renewable Electricity Market for Renewables to compete in.

In order to compensate for these market distortions, the EU in 2001 adopted the Directive for the promotion of electricity from renewable energy with the goal of increasing the share of renewables electricity from 14% to 21% by 2010 in the EU.

Even though the Directive contained only indicative targets it has shown its effect in various countries and has led to the adoption of favourable frameworks for RES-electricity. On the other hand many countries initially implemented the Directive only in words and not in spirit, which lead to significant differences in the development of renewables in the Member States.

While some Member States, such as Germany, Spain and Denmark are well on track in reaching their targets, others are far behind, which will lead to falling short of reaching the overall EU target of 21% if no additional measures are taken.

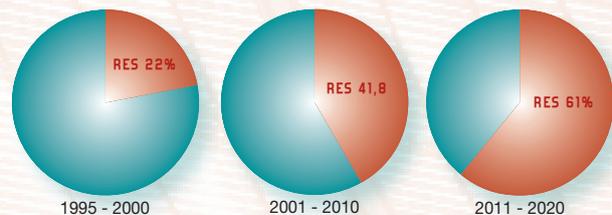
At the moment, market players can observe that a second “wave” of countries are improving their national frameworks - including financing schemes, removal of administrative barriers and grid connection rules - in the light of falling short behind the targets. This observation is obviously a well-received development, but still seems insufficient for stimulating the market development in the necessary means.

Apart from the necessary measures that need to be implemented in those Member States that are behind, additional goals need to be set and a way needs to be defined on how to reach these goals.

A new target for the year 2020 could have been proposed by the Commission within the renewable energy roadmap, but the question still remains on how to reach them concretely. An amendment of the existing Directive could be necessary as well as guidelines for the Member States on the efficient implementation of existing regulation. Moreover, a possible development in the creation of a true liberalised electricity market raises questions as to what extent support mechanisms should be defined on the national or European level.

In addition, with increasing shares of renewable power an interconnected grid for Europe is a challenge that needs to be addressed, including infrastructure investments and financing.

## Contribution of Renewables to new Electricity Generation Capacity % in the EU 15



Source EREC

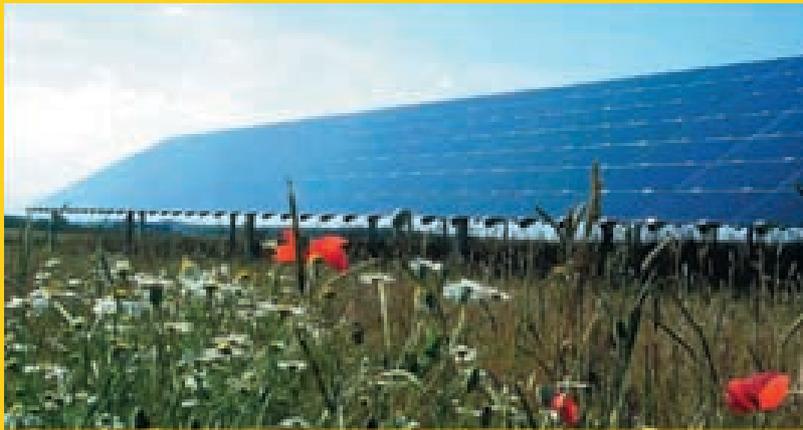
## Contribution to new Electricity Generation (GW)

	1995-2000	2001-2010	2011-2020	2001-2020
Wind	10,3	62,2	105	167,2
Photovoltaic	0,06	3	32	35
Biomass	2,6	18,3	27	45,3
Hydro	2,7	10,2	9	19,2
Geothermal	0,14	0,3	1	1,3
<b>TOTAL RES in EU 15</b>	<b>15,8</b>	<b>94</b>	<b>174</b>	<b>268</b>
New Generation Capacity (IEA)	71,9	225	285	510
Share of RES (%)	22,0%	41,8%	61,0%	52,5%

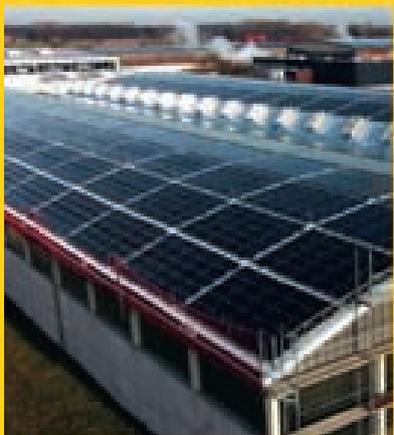
Source EREC

## Questions to be addressed:

- *What new electricity targets should be set?*
- *How can large investments be stimulated?*
- *What are today's barriers to renewables electricity growth?*
- *Is a harmonisation of support mechanisms necessary?*
- *Would a further liberalisation package (including ownership unbundling, European regulator) stimulate further development of renewable energies?*
- *How has the European-wide grid to be reinforced and expanded in order to be ready for large-scale integration of renewable energies?*
- *What should be the policy of grid regulators concerning decentralised electricity supply, the diversity of electricity supply, and the maximum percentage of renewable electricity on the grid?*
- *Are different promotion mechanisms necessary for different (small/large scale) technologies?*



Creating  
Sustainable  
Solar Energy  
Solutions



[www.firstsolar.com](http://www.firstsolar.com)

# Session 7: Renewable Energies in the Biofuels Sector



In the EU the transport sector relies today for more than 90% of its energy on mineral oil, with a growing proportion of this having to be imported in the future. This is unacceptable from the point of view of the future security of EU energy supply, as well as from an environmental perspective. The transport sector is responsible for an estimated 21% of all greenhouse gas emissions that are contributing to global warming, and the percentage is rising.

This justifies serious efforts by all sectors of society. Moreover, global oil supplies are finite and the majority are located in regions of the world which are distant from the EU. As a result, oil prices have already shown increasing volatility in recent years, and this volatility can only be expected to increase in the future.

In this context, the EU has in 2003 implemented two Directives which are designed to promote significant increases - up to nearly 6% in 2010 compared with the current 0.6% - in the use of biofuels, such as biodiesel and bioethanol, for transport applications.

Moreover a range of actions is already being undertaken. Vehicle manufacturers are developing new models that are cleaner and more fuel efficient, as well as working on new concepts. Efforts are also being made to improve public transport and encourage the use of environmentally-friendly modes of transport where possible. However, further endeavours are needed to make reductions in the amount of energy used for transport.

Although most biofuels are still more costly than fossil fuels their use is increasing in countries around the world. Encouraged by policy measures, global production of biofuels is now estimated to be over 35 billion litres.

The EU is supporting biofuels with the objectives of reducing greenhouse gas emissions, boosting the decarbonisation of transport fuels, diversifying fuel supply sources and developing long-term replacements for fossil oil. The development of biofuel production is expected to offer new opportunities to diversify income and employment in rural areas.

According to the Biofuels Directive, the Commission should carry out a review before 31 December 2006. Attention should be paid to the issue of cost effectiveness, the level of ambition after 2010, and the assessment and monitoring of the full environmental impact of biofuels.

While existing technologies do not at present offer cost-competitive solutions for the EU, the benefits of encouraging the development of biofuels should outweigh the costs.

In this context, the development of second-generation biofuels, in which research and development has an important role, could further contribute to their cost-effectiveness.

## The EU Strategy for Biofuels has in principle three aims:

- to further promote biofuels in the EU and developing countries, ensure that their production and use is globally positive for the environment and that they contribute to the objectives of the Lisbon Strategy while taking into account competitiveness considerations;
- to prepare for the large-scale use of biofuels by improving their cost-competitiveness through the optimised cultivation of dedicated feedstocks, research into "second generation" biofuels, and support for market penetration by scaling up demonstration projects and removing non-technical barriers;
- to explore the opportunities for developing countries – including those affected by the reform of the EU sugar regime – for the production of biofuel feedstocks and biofuels, and to set out the role the EU could play in supporting the development of sustainable biofuel production.

## Questions to be addressed:

- Are the new proposed targets ambitious enough?
- How are they related to their full potential and possible interference with other renewables targets?
- How can sustainability be guaranteed?
- What are the prospects for second-generation biofuels?
- What mechanisms and legislation should be introduced on the European and the national level in order to foster a further market uptake?

## RES-T TRANSPORT fuel production potential (Mtoe)



Source: Analyses of the EU renewable energy sources' evolution up to 2020 (FORRES)



## Session 8: Global Outlook and Markets for Renewable Energies

**R**egarding the baseline scenarios on the future of worldwide energy systems, we see a steadily increasing energy demand and a supply that is still mainly based on fossil fuels. Given these developments it is clear that the World's energy economy is far from being sustainable. According to the recent IEA baseline scenario to 2050, for instance, global energy use more than doubles, oil and gas prices are high, and energy-security concerns increase, while CO<sub>2</sub> emissions rise by an unsustainable 137% from 24.5 Gt in 2003 to 58 Gt in 2050.

In the publication "Energy Technology Perspectives: Scenarios and Strategies to 2050" the IEA shows that policies to accelerate the uptake of energy efficiency and the deployment of low carbon technologies that are already proven or are under development could dramatically change this outlook. Regarding this, global CO<sub>2</sub> emissions could be returned to current levels by 2050 and the growth of oil demand could be cut in half.

According to the IEA analysis, energy efficiency is of paramount importance in achieving these results. Besides decarbonising power generation through CO<sub>2</sub> capture and storage, renewables, especially increased use of biofuels for road transport, and, in those countries where it is accepted, nuclear, will be essential. Depending of the particular scenario, reductions in CO<sub>2</sub> emissions below the baseline in 2050 by means of renewable energies will contribute to the total reduction by 11% to 22%.

Although the IEA scenarios are ambitious it cannot be ignored that they are not consistent with the necessity to reduce CO<sub>2</sub> emissions on a worldwide level at least by 50% relative to 1990. This only seems to be possible if the share of renewable energy sources could be enlarged far above the IEA scenarios.

Obviously we will not be able to restructure our energy system towards a more sustainable path without a fundamental change of policies. Because there is no independent global policy this needs a common and co-ordinated international effort of the community of states.

Concerning the renewable energy sources it will be crucial that their respective national potential should be utilised in all countries as far as possible. For a certain time this will mean establishing an effective promotion scheme for these energies. In accordance with this, our attention will have to turn especially to the extension of biofuels in



the transport sector, the solar thermal technologies for heating and cooling, as well as to the whole bundle of renewable energy sources for the electricity production.

It is crucial that all countries agree to taking effective measures alone or together with other countries to enlarge the share of renewable energies substantially. Therefore existing initiatives and cooperation on the international level should be pursued and extended.

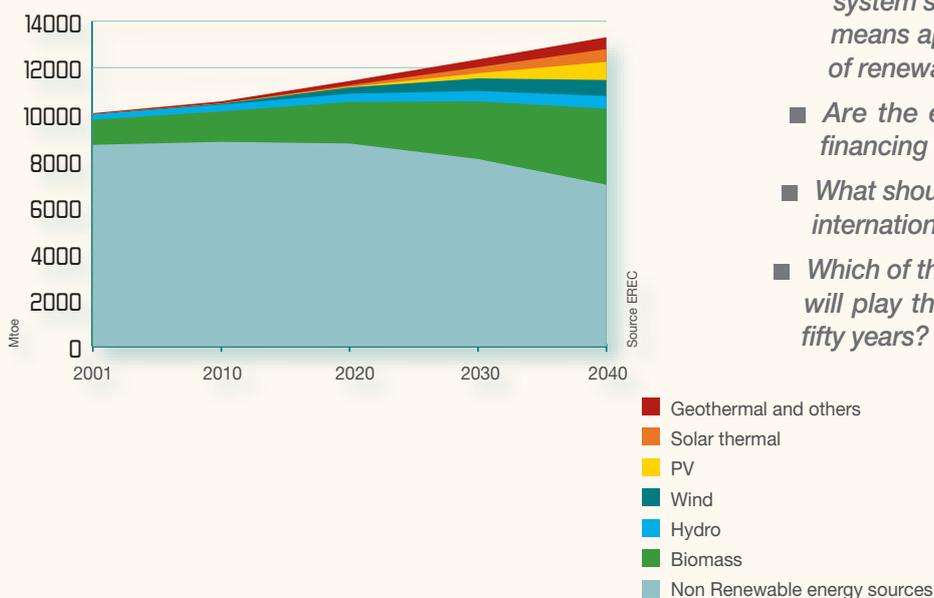
An important initiative is undertaken by the Johannesburg Renewable Energy Coalition (JREC) to set up a "review arrangement" in the framework of the UN system. Supported by other initiatives such as the Global Energy Efficiency and Renewable Energy Fund (GEEREF), JREC will come up with clear proposals for the Commission for Sustainable Development (CSD15) on how to improve the coordination for the follow-up activities.

The International Conference for Renewable Energies, renewables2004, and the political follow-up process accelerated the expansion of renewable energies throughout the world. The main outcome of the conference, the International Action Programme (IAP) covers nearly 200 actions and commitments from all regions of the world. One of the key follow-up activities of the renewables2004 is the development of an international network for renewable energies, the Renewable Energy Network for the 21st Century – REN 21, involving governments, international organisations, industry, scientific community and representatives of civil society. REN 21 presented the first reliable survey of the expansion of renewables worldwide, the "Renewables 2005: Global Status Report" and its 2006 update.

Besides partnerships such as Renewable Energy and Energy Efficiency Partnership (REEEP) and Mediterranean Renewable Energy Partnership (MEDREP), another concrete collaboration in the field of renewable energies is the new Implementing Agreement Renewable Energy Technology Deployment (RETD) within the framework of the International Energy Agency (IEA), which gives assistance in overcoming administrative, technical, trade and other barriers for the deployment of renewable energies on an international level.

The session will discuss the respective politics and the specific market conditions in selected countries as well as possibilities to globally enhance the promotion of renewable energies.

### The contribution of Renewable Energy Sources to the world energy supply in 2040 - Projections - Advanced Policy Scenario



### Questions to be addressed:

- Do we need specific targets for renewable energies for a faster development of their markets?
- Which would be the most ambitious but still realistic scenarios/prognoses for renewable energies within the next 50 years?
- How could the promotion of renewable energies be globally strengthened? Could it also be linked to the promotion of energy efficiency globally?
- What are the comparative advantages of both industrialised and developing countries to enforce the use of renewable energies?
- Is the present international financing system sufficient and are the financial means appropriate for the promotion of renewable energies?
- Are the existing public and private financing tools appropriate?
- What should be changed regarding the international financing systems?
- Which of the renewable energy markets will play the major role within the next fifty years?

### Reductions in CO<sub>2</sub> emissions below the baseline in the IEA scenarios by contributing factor, 2050 (Mt CO<sub>2</sub>)

Scenarios	Map	Low nuclear	Low renewable	No CCS	Low efficiency	TECH plus
Hydropower	513	506	23	582	382	464
Biomass power generation	537	557	97	725	567	577
Other renewable power generation	1966	2060	1397	3192	1927	2676
Increased use of biofuels in transport	1794	1794	1794	1805	1611	2306
<b>Total reduction by renewable energies</b>	<b>4810</b>	<b>4917</b>	<b>3311</b>	<b>6304</b>	<b>4487</b>	<b>37420</b>
<b>Total reduction</b>	<b>32053</b>	<b>31125</b>	<b>31283</b>	<b>28324</b>	<b>26807</b>	<b>37420</b>
<b>Share of renewables</b>	<b>15%</b>	<b>16%</b>	<b>11%</b>	<b>22%</b>	<b>17%</b>	<b>16%</b>
Total CO <sub>2</sub> emissions in 2050 without reductions	58022	58022	58021	58022	58021	58022
Total CO <sub>2</sub> emissions in 2050 with reductions	25969	26897	26738	29698	31214	20602
CO <sub>2</sub> emissions relative to 2003	6%	10%	9%	21%	27%	-16%

Source: IEA, Energy Technologies Perspectives: Scenarios and Strategies to 2050, Paris 2006



## The father was a jet. The mother a vegetarian.

The Saab 9-5 BioPower gives you power made from wood chips, sugarcane and other natural resources turned into bioethanol. When the 2.0-litre turbo engine runs on bioethanol it delivers 30 extra horsepower. 150 bhp becomes 180 bhp, eco-friendly turns high-performance.

If bioethanol isn't available, you can fill up with petrol, or a mix of petrol and bioethanol. The car automatically adjusts, so it won't notice the difference. But the environment will.

[www.saab.com](http://www.saab.com)

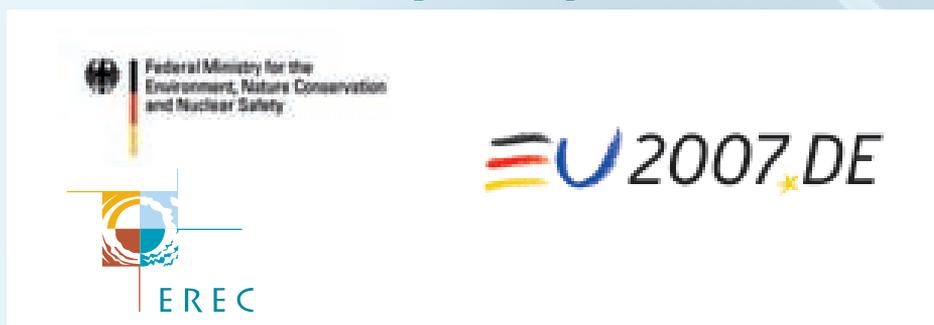
Fuel consumption (2.0 BioPower Sedan, manual, combined driving) petrol, 9.2/100 km; 885, 11.7/100 km. Carbon dioxide emission (CO<sub>2</sub>): petrol, 218g/km; with 885, up to 80% reduced fossil CO<sub>2</sub> emissions. Environmental class 2005. Car shown with optional extras.

Saab 95 BioPower



move your mind™

## Organised by



## The organisers would like to thank the following sponsors

### Platinum Sponsors



### Gold Sponsors



### Silver Sponsors



### Conference Badge Sponsor



### Business Centre Sponsor



### Technological Solutions Sponsor



## Official Media Partners of the European Renewable Energy Policy Conference are



### Conference secretariat

European Renewable Energy Council

Renewable Energy House

Rue d'Arlon 63-65 - 1040 Brussels, Belgium

T: +32 2 546 1933 - F: +32 2 546 1934 - E: [conference@erec.org](mailto:conference@erec.org)

[www.erec.org](http://www.erec.org) [www.bmu.de](http://www.bmu.de)

The sole responsibility for the content of this publication lies with the authors. It does not represent the opinion of the Community. The European Commission is not responsible for any use that may be made of the information contained therein.



EREC

# REGISTRATION FORM

PLEASE FAX BACK TO +32 2 546 19 34

FOR ELECTRONIC ON-LINE REGISTRATION

[www.erec.org/events/2007PolicyConference](http://www.erec.org/events/2007PolicyConference)

## Practical information

Start of the Conference: 29 January 2007 at 09:00  
Closing of the Conference 31 January 2007 at 12:30.

Venue: Flagey Convention Centre  
Place Sainte Croix - 1040 Brussels, Belgium [www.flagey.be](http://www.flagey.be)

Simultaneous translation into English, French  
and German will be provided.

## Participant details

Title  Prof  Dr  Mr  Ms  Mrs

Firstname: \_\_\_\_\_ Lastname: \_\_\_\_\_

Job Title: \_\_\_\_\_ Company: \_\_\_\_\_

Street: \_\_\_\_\_ Postal Code: \_\_\_\_\_

City: \_\_\_\_\_ Country: \_\_\_\_\_

Tel. \_\_\_\_\_ Fax \_\_\_\_\_

Email \_\_\_\_\_

I would like to register for the Conference Reception and Dinner  
on Tuesday 30 January 2007 at 19:00

## Payment information

Please indicate if you are a member of one of the EREC member organizations

No  Yes, from: \_\_\_\_\_

EREC's members are



I am representing a governmental organization:  Yes  No

The participant's fee will be settled by:  Bank Transfer  
 On Receipt of Invoice

Please select one of the two options below:

Please indicate your VAT Number: \_\_\_\_\_

In case your company does not have a VAT Number, please tick this box

**Registration Submission Procedure:** Access to all sessions and conference activities is subject to availability. Places will be allocated on a first pay first serve basis. Only the settlement of the registration fee secures a conference entrance. In order to ensure that your registration information is processed quickly and correctly, the organizers strongly recommend that you register using the online form.

	Registration Fees for Members of EREC Member Associations	Registration Fees for Non-Members
Regular Conference Fee	500 Euros	900 Euros
Conference Dinner	50 Euros	50 Euros

*Representatives of governmental bodies can participate free of charge!*

*Registration fees include VAT, Conference material, five coffee breaks, two lunches and a conference reception. The conference dinner fee is excluded unless specified on the registration form.*

## Payment Details

If paying the registration fee by bank transfer, it is essential to quote the registration number in the communication section of the transfer in order to track the payment.

The account details of EREC are as follows: Fortis Bank  
Place du Luxembourg, 14  
BE-1050 Brussels, Belgium

Account: 210-0377169-85 IBAN: BE 89 2100 3771 6985 SWIFT code: GEBA BEBB

## Invoicing Procedure

An invoice will be issued for all registered participants. It will be indicated on the invoice whether this is a receipt, or a demand for payment. All demands for payment should be settled within 30 days. The VAT number must be included (if relevant) for invoicing purposes.

## Cancellation Policy

For cancellations made before 29/12/06 a refund will be possible, however an administration charge of 15% will be applicable. After this date it will no longer be possible to receive a cash refund, however registration can be transferred to another representative.

## Late Registration

For registration after 15/01/07, the conference fee should be paid by bank transfer and proof of payment must be shown at the registration desk on the day of the conference. In exceptional cases payment can be accepted in cash.

## How to get to the Flagey Convention Centre

The engineering works on the Flagey square don't affect the accessibility by car or public transport. However, parking is difficult. The entrance to the halls is on the Place Ste-Croix. The building is accessible for persons with reduced mobility.

### Bus & Tram

Flagey is easily accessible by bus and tram. You will find the bus & tram schedule on [www.flagey.be/upload/moben.pdf](http://www.flagey.be/upload/moben.pdf)

### Train

from the Gare centrale: bus 71 direction Delta,  
bus 38 direction Homborch or bus 60 direction Vivier D'Oie

from the Gare de Luxembourg: bus 38 direction Homborch or bus 60 direction Vivier D'Oie

### Hotels

A list of hotels is available on

[www.erec.org/events/2007PolicyConference/hotel\\_booking.htm](http://www.erec.org/events/2007PolicyConference/hotel_booking.htm)

**REGISTRATION FORM**

**PLEASE FAX BACK TO +32 2 546 19 34**