

## Breaking the energy chains that bind Europe

Wind power crucial for Europe's future secure and sustainable power supply!

### Introduction

**With news of melting glaciers, rising sea levels and other effects of dangerous climate change hitting the headlines daily, it is clear our challenge globally is to tackle the causes whilst still being able to meet the rising demand for energy and safeguard security of energy supplies.**

The solution is simple – as simple as the source itself - renewable energy in the shape of wind power. Wind power is one of the few energy supply technologies that has the ability to deliver deep cuts in carbon dioxide emissions, while guaranteeing independence from fluctuating fossil fuel prices, reducing the dependence on importing energy and increasing competitiveness.

### Making the switch

The European Union is currently reframing its power market, with a number of different directives and regulations in the climate and energy sector. There is a huge opportunity to switch from dirty imported fossil and nuclear fuels to renewable and local energy sources. Greenpeace believes that a long-term energy policy in favour of energy efficiency and renewable energy provides the solution to the threats we all face from further dangerous Climate Change. A detailed blueprint for Europe's energy supply until 2050, drawn up by Greenpeace, shows that wind energy could generate 17% of Europe's electricity by 2020 and more than 30% in 2050. It is now in the hands of the politicians to implement it.

### The European Union could lead the way to a clean energy future

The publication, Energy Revolution<sup>1</sup>, launched at the end of 2005 by Greenpeace International, shows that Europe can phase out fossil fuels and nuclear power and, at the same time, reduce its CO<sub>2</sub> emissions by 30 per cent by 2020 to avoid catastrophic climate change.

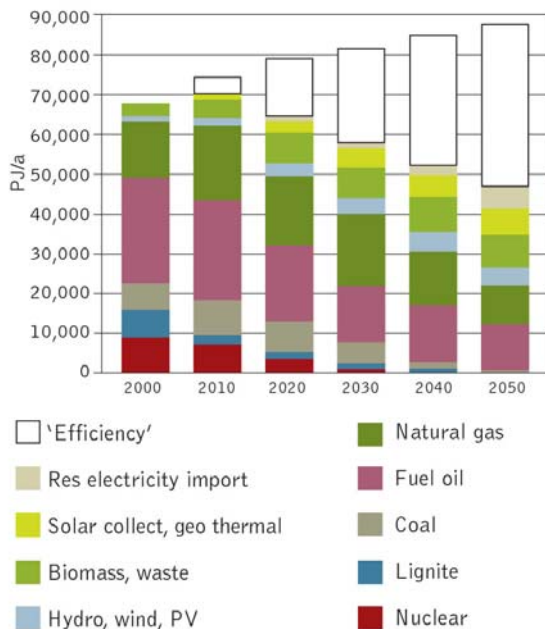
The electricity sector in the 25 European Union nations is still dominated by large centralised power plants using fossil and nuclear fuels. As much as 80% of Europe's primary energy supply still comes from fossil fuels. The 'Greenpeace Energy Revolution Scenario' shows that half of Europe's energy demand could switch to renewable energy sources and CO<sub>2</sub> emissions could be reduced by nearly 75% by 2050. It also shows that, if the EU fails to reform its **energy sector**, CO<sub>2</sub> emissions will increase by almost 50% by 2050.

The Greenpeace energy concept maps out how to build a future based on clean, renewable energy sources, independent of imported fossil and nuclear fuels. This will not only protect the climate, it will insulate national economies from the fluctuations of the global markets for fossil and nuclear fuels, benefit the economy and provide secure access to energy for future generations. In the short term, it could also create 700,000 jobs by 2010. Half of Europe's total energy demand could be covered from renewable energy sources by the year 2050

According to the Greenpeace blueprint, the electricity sector will continue to be the forerunner of renewable energy: In 2050, more than 70% of the electricity is to be produced from renewable energy sources, followed by renewable energies in the heating sector, which will produce more than half of the needed energy.

<sup>1</sup> Energy Revolution: A sustainable pathway to a clean energy future for Europe, Greenpeace International; September 2005

**FIGURE 1: DEVELOPMENT OF PRIMARY ENERGY CONSUMPTION UNDER THE ENERGY REVOLUTION SCENARIO ('EFFICIENCY' = REDUCTION COMPARED TO THE REFERENCE SCENARIO)**



The Greenpeace EU Energy Scenario leads to less primary energy imports, as the amount of oil gas and coal decreases of the next decades until 2050. However natural gas consumption, as a bridging fuel to phase-out CO<sub>2</sub> intensive lignite and coal, will increase approx 20% of the level of the year 2000 and remain on that level till 2025. After 2025 natural gas consumption in the EU will decrease substantially and drop down to less than half the current consumption by 2050.

Source: Greenpeace International, "Energy Revolution: A sustainable pathway to a clean energy future in Europe, 9/2005"

## The Role of Wind energy in the European Union

Today wind power installed in Europe is saving over 50 million tonnes of carbon dioxide a year and will by 2010 deliver one third of the EU's Kyoto Protocol greenhouse gas reduction commitment. Greenpeace and the Global Wind Energy Council (GWEC) launched a joint report in 2005<sup>2</sup>, which highlights that the value of the global market for wind turbines will increase from the current €8 billion to an €80 billion annual business by 2020. Wind power is one of the most effective power technologies that is ready today for global deployment on the requisite scale, and can be installed far quicker than other conventional power stations. According to this report, thirteen key countries around the world can play a leadership role to help unlock the major market deployment envisaged by this industry blueprint: Australia, Brazil, Canada, China, France, India, Italy, Japan, the Philippines, Poland, Turkey, the UK and the USA – four of them are EU countries. These markets are at an early but developing stage, and provide an insight into where major wind growth may be achieved.

The installed wind power capacity<sup>3</sup> in the EU-25 is currently about 40,500 MW, roughly 18,400 MW of this capacity is installed in Germany, 10,000 MW in Spain, 3,100 MW in Denmark and over 1,300 MW in the UK. Greenpeace believes that the overall installed capacity of wind energy in 2010 could rise to 80,000 MW and 230,000 MW in 2020 – including 70,000 MW offshore wind. In 2050 the overall wind capacity should be as high as 297,000 MW – with 133,000 MW offshore wind capacity

<sup>2</sup> GWEC/Greenpeace International: Windforce 12, 6/2005

<sup>3</sup> EWEA, "Wind Power Installed in Europe by End 2005 (cumulative)" www.ewea.org,

## Breaking dependency on energy imports

In reference to rising oil prices and the security of supply issues highlighted by the recent Ukrainian-Russian gas dispute, European Commission President José Manuel Barroso<sup>4</sup> said<sup>5</sup>:

*"The EU and its member states need a common approach to tackle their energy dependency. The world has entered a new energy era. We can no longer take secure and affordable supplies for granted."*

The overall European energy policy features high on the agenda of the EU Spring Summit (March 23-24, 2006).

The time is right to establish a long lasting energy policy as Europe's power plants are getting old and more than half of them are antiquated and need replacing; a new electricity supply, using renewable energy and energy efficiency requires a strong, long-term political commitment.

The policies and measures currently discussed at EU and national level cover a wide spectrum of interrelated climate and energy issues, such as:

- Compliance with the 2008-2012 Kyoto Protocol greenhouse gas reduction targets;
- Greenhouse gas reduction targets for the second commitment period under the Kyoto Protocol (2015) and beyond;
- The second round of the National Allocation Plans under the EU emissions trading scheme, as well as the revision of the scheme itself;
- The review of the European Climate Change Programme;
- The creation of a liberalised internal energy market;
- Moving towards a joint external European energy policy;
- The need for long-term renewable energy targets;
- New investment decision in Europe's energy infrastructure e.g. grids and pipelines.

These debates have to be steered to the right direction, if Europe is to break free from its dependency on imported fossil and nuclear fuels and move over to local renewable energy sources.

Without political support, renewable energy remains at a disadvantage, because of the distortions in the world's electricity markets created by decades of massive financial, political and structural support to conventional polluting and dangerous technologies. New renewable energy generators (excluding large hydroelectric projects) have to compete with old nuclear and fossil fuel power stations.

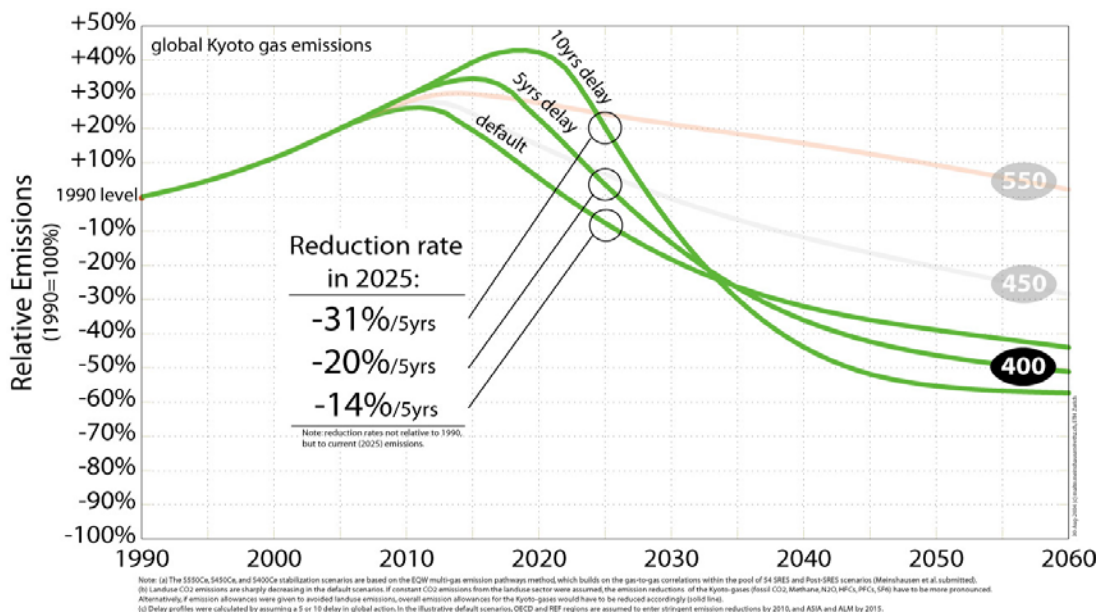
For decades, with no competition or regulation, utility companies monopolised the electricity market, setting high tariffs and overcharging their customers. This enabled the utility companies to keep their strong market position and keep new competitors off the market. This major distortion of the EU electricity market has slowed down innovation and new investments in general. It has also pushed utilities to extend the lifetime of their old and polluting power plants. It also had a very negative impact on investments in renewable energy and efficient cogeneration plants.

Political action is needed to overcome these distortions, and to create a level playing field for renewable energy sources. The EU needs to demonstrate its long-term commitment to renewable energy sources by setting 2015 and 2020 mandatory targets for their primary energy share. For 2020, this target should be a minimum of 20% renewable energy, coupled with a significant decrease in energy consumption, the renewable energy share from the EU-25 could reach up to 25% by 2020.

<sup>4</sup> [www.euractiv.com](http://www.euractiv.com), Speech at Georgetown University, Washington DC, on 9 February 2006.

<sup>5</sup> [www.euractiv.com](http://www.euractiv.com), 5 Jan. 2006.

The sooner we reduce CO<sub>2</sub> emissions, the easier the transition will be.



Graph: Malte Mainshausen, University of Zurich, Switzerland

We need to significantly reduce our greenhouse gas emissions: it makes environmental and economic sense. Due to the greenhouse gases we have already pumped into the atmosphere, we are already committed to a 1.2 or 1.3 degrees Celsius overall global warming, even if all emissions were cut immediately. The goal of climate policy should be to keep the global mean temperature rise to less than 2 degrees Celsius (2°C) above pre-industrial levels; above 2°C, damage to ecosystems and disruption to the climate system increases dramatically. We have a very short time frame, no more than twenty years, in which to change our energy sources to meet this target.

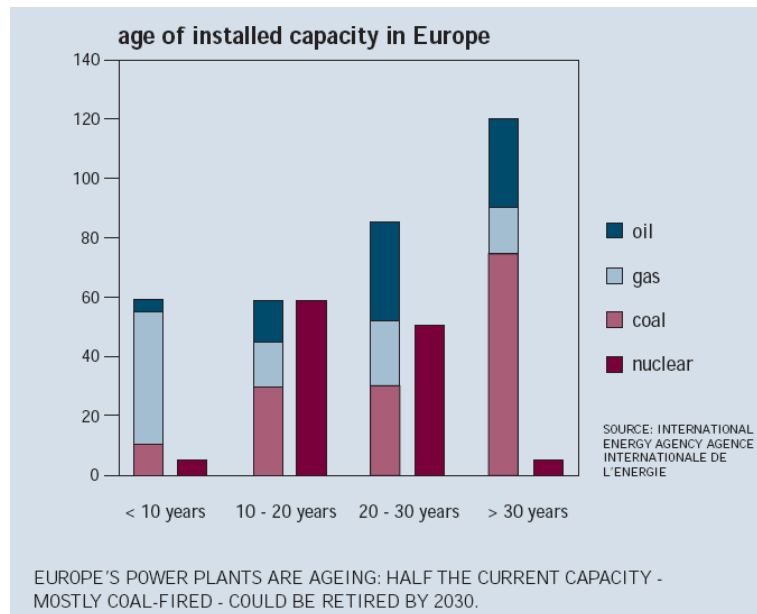
Last year, the Spring European Council endorsed the goal of keeping global temperature rise below 2 degrees Celsius over pre-industrial levels. The debate on a *New European Energy Policy* cannot ignore this objective for the climate. Today's energy decisions must contribute not only to meeting the existing commitments under the Kyoto Protocol, but also to putting us on the right path towards the deeper emission reductions that are required, so that the 2-degree objective is met. In order to stay below this temperature limit with significant certainty, the EU must reduce its greenhouse gas emissions by at least 30% by 2020 and by 80% by 2050.

**Wind energy is among the most important technologies for meeting the required greenhouse gas reduction targets AND for securing energy supply for the future.**

### 'Repowering' of old plants – the opportunity for change

The power sector is getting old. This is Europe's chance to shift to renewable energy. The average age of the power plants in Europe is between 20 and 30 years. Roughly 100,000 MW of Europe's coal-fired power plant capacity is over 20 years old. That means that approximately 75 to 100 coal power plants will have stopped functioning by 2020<sup>6</sup>. The graph shows the age structure of the EU's power plants, showing that coal-fired power plants could have an overall lifetime of over 50 years.

<sup>6</sup> Whose power is it? Report Greenpeace International, April 2005



## Offshore wind – the “problem child”

Offshore wind farms have the potential to supply about 10% of Europe's electricity sector by 2020<sup>7</sup>. Offshore Wind represents a crucial technology in the race to cut greenhouse emissions, but urgent political action is needed to build up an environmentally friendly powerhouse for Europe. Especially in the United Kingdom and Germany, offshore wind developments are seriously behind schedule due to financial problems and long and complicated processes to get construction permits. The lack of offshore electricity grid capacity will hinder further expansion plans beyond 2015. One of the critical parts of the energy solution in Europe will be to integrate 70,000 MW offshore-wind capacities – equal to 70 coal power plants - into the existing electricity grid. This will require a power grid at sea, as one does not exist at the moment, so planning and preparation must start now to guarantee the construction. Greenpeace urges Governments to support the planning and construction of an offshore-wind electricity grid within EU waters.

Europe is facing a profound transformation of the energy system over the next few decades. In that time frame, Governments and utilities will decide over the next generation of power plants, replacing fossil fuels with renewable energies and dramatically increasing energy efficiency. The first offshore wind projects are needed to unlock further cost reduction potential of this new technology. Time is running and the infrastructure must be ready by 2015.

## Conclusion

**To make the energy revolution real and to avoid dangerous climate change, Greenpeace demands for Europe's energy sector:**

- Ambitious, legally binding targets for the share of renewable energy sources;
- The phasing out of all subsidies for fossil fuels and nuclear energy;
- The internalisation of external costs of conventional, polluting energy sources;
- Defined and stable returns for investors;
- Guaranteed and priority access to the grid for renewable energy sources;
- Carbon dioxide allowances under the EU Emissions Trading Scheme (EU-ETS) should be auctioned and the proceeds must be channelled to the financing of renewable energy and energy efficiency projects.

<sup>7</sup> Greenpeace report “Offshore Wind - Implementing a new Power House for Europe”

## Energy Revolution A sustainable pathway to a clean energy future for Europe | A European Energy Scenario for EU-25

