



Switching to Green Electricity can make a difference!



The Role of Businesses and Public Authorities
in Promoting Climate Protection

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SUMMARY

In order to tackle climate change, one of the biggest environmental challenges we face in the 21st century, fundamental changes need to be made in the way the power sector generates electricity. WWF is calling on businesses and public authorities – which are large electricity consumers – to be the driving force for the development of climate friendly green electricity.

Climate change is affecting the well-being of people and the survival of plants and animals around the world. Economic damage from climate-related disasters grew tenfold to €41 billion between the 1950s to the 1990s, and could increase to an annual cost of around €313 billion. We cannot afford to let this situation continue.

The way we produce and consume energy is unsustainable. The power sector alone is responsible for more than 30% of CO₂ emissions in Europe. As a priority, many of our traditional coal, gas and oil power stations must be replaced with efficient and renewable energy technologies. With liberalisation of energy markets, switching to green electricity can make a difference!

This report demonstrates that if European public institutions and businesses purchased respectively 30% and 10% of their power from additional green electricity, there would be a total reduction of 56 million tonnes of CO₂ per year in emissions from the power sector. This amount is equivalent to all CO₂ emissions from Denmark in 1998 or to the annual emissions of 18 large coal power stations. This document also argues that this would be good for local

authorities and business, as well as for the environment.

But consumers need to be reassured that a decision to purchase green power really benefits the environment. To address this issue, WWF has partnered with other environmental and consumer NGOs to form the European Green Electricity Network (EUGENE), which has developed an international quality standard for green electricity. EUGENE will ensure that green electricity results into new climate friendly power generation and displaces polluting energy sources.

Legislation is needed to support labelled green electricity. To boost the developing voluntary market, governments should implement the following recommendations:

■ Disclose electricity information

All European citizens must be informed about the climate impacts of the electricity they consume. Energy Ministers should require that energy suppliers disclose the way in which electricity is produced and the related environmental impacts;

■ Promote green public procurement

European and national legislation should encourage the choice of labelled green electricity in public tender specifications;

■ Incentivise green electricity

Labelled green power should be exempted from energy taxes, since it offers a much lighter burden on the environment and on society than polluting fossil and nuclear fuels.

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CLIMATE CHANGE AND POWER GENERATION

The threat

Climate change is affecting the well-being of people and the survival of plants and animals around the world. There is no doubt that the extinction rate of species will increase as the climate warms up. Rare species, fragmented ecosystems and areas already under pressure from pollution, development and deforestation are the most vulnerable.

The situation is becoming critical. The world is warming faster than at any time in the last 10,000 years. The 1990s were (probably) the hottest decade in the past millennium. The year 2001 was the second warmest on record, beaten only by the year 1998. It was also the 23rd warmest year in a row. If current trends in emissions continue, the amount of CO₂ in the atmosphere will double before the end of this century, with further increases thereafter. Scientists have already observed hundreds of changes in our world due to climate change:

■ **Economic damage** from climate disasters grew tenfold to €41 billion between the 1950s to the 1990s. According to the United Nations Environment Programme's (UNEP) financial services initiative, this figure could increase to an annual cost of around €309 billion due to more frequent tropical cyclones, loss of land as a result of rising sea levels and damage to fishing stocks, agriculture, and water supplies.

■ **Polar bears** populations will be seriously affected by climate change, the Arctic being one of the regions on Earth where climate change will be seen early and where impacts will be dramatic:

- Air temperatures in the Arctic have, on average, increased by about 5°C over the last 100 years.
- Arctic sea ice extent decreased by approximately 3 per cent per decade between 1978 and 1996.
- The summer minimum thickness of Arctic sea ice has decreased by 40 per cent over the last 30 years.

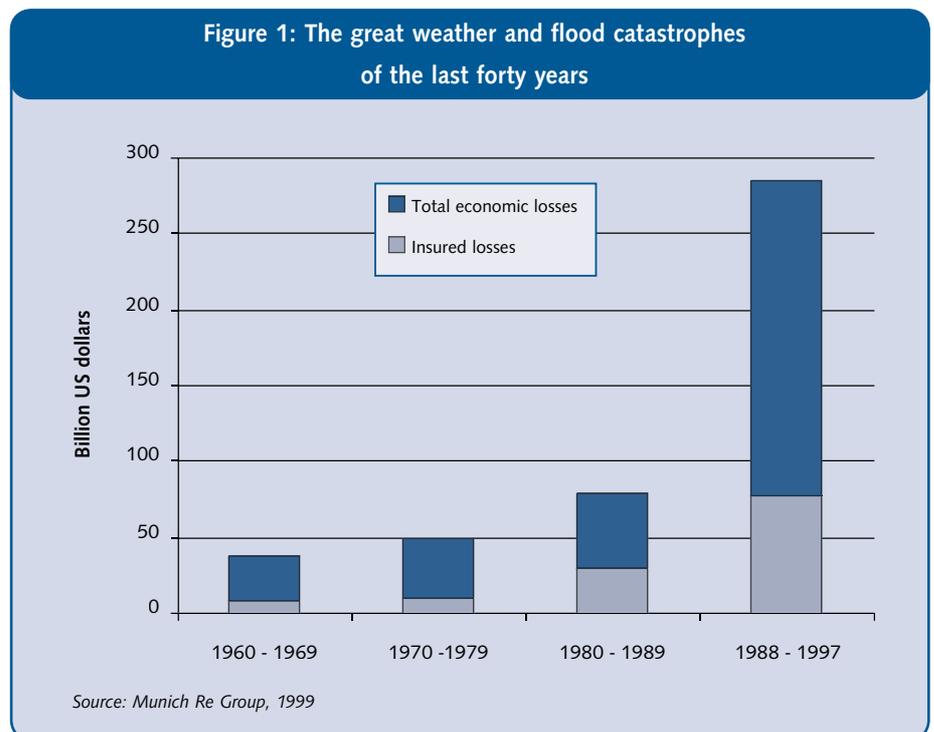
■ **Coral reefs** around the world have been severely damaged by unusually warm ocean temperatures and will continue to

be threatened by climate change. In 1998, coral reef mortality was estimated at up to 18% in some regions of the world. Climate change is also expected to hinder calcification by coral species due to increased concentrations of CO₂.

■ **Mountain glaciers** are shrinking worldwide, with an expected net loss of 25% by the middle of this century. There has been a 50% decrease in the volume of glaciers of the European Alps since 1850. The future outlook is very bad, with up to a 95% decrease predicted over the next 100 years and small glaciers disappearing in a few decades.

■ **One-third of global forests** are at risk due to the rapid rate of climate change.

Figure 1: The great weather and flood catastrophes of the last forty years



Warmer temperatures increase the rate at which trees use water, and if not balanced by increased precipitation, warming can directly threaten forest survival, particularly where tree species are already living at the edge of their ecological tolerances.

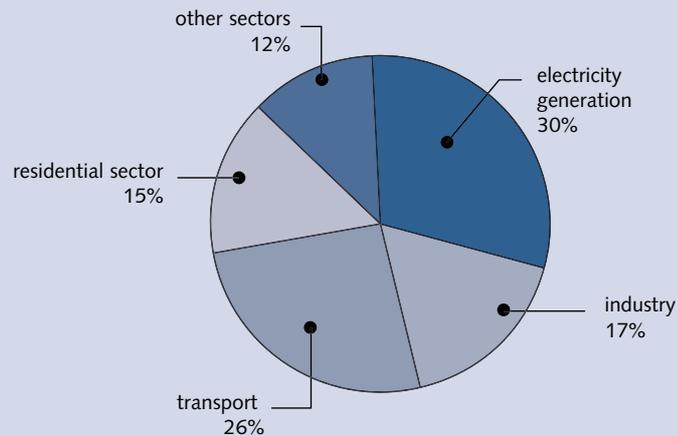
■ **Rising sea levels** threaten coastal areas and cities due to increased risk of flooding. The cost of responding to this threat has been estimated at up to 14.5% of the Gross National Product of some countries, with the one-meter increase in sea level that some models predict by the end of this century.

The leading cause – electricity generation

Atmospheric levels of carbon dioxide (CO₂) – the main climate-polluting gas¹ – are now higher than at any time in the past 400,000 years. Governments and scientists agree that most of the warming over the last 50 years is due to human activities such as burning coal, oil and gas for energy. In the European Union (EU), CO₂ accounts for over 80% of climate change pollution. In some countries the importance of carbon dioxide is even greater.

Whilst carbon dioxide is the most important greenhouse gas in the EU, electricity generation is the largest emitting sector, accounting for about 30% of the total carbon dioxide emissions (see Figure 2). Power generated by fossil fuels – such as coal, oil and natural gas –

Figure 2: Carbon dioxide emissions by sector (1998)



Source: Oko-Institute 2000

represents 50% of the electricity generation in the EU, with nuclear power accounting for 35% and renewable energies (mainly large hydro) representing another 12%.

What are the solutions?

Action has to be taken now before more irreversible damage is done. Fortunately, technologies to reduce CO₂ emissions and tackle climate change are already available. They are proven and cost-effective. Therefore, to reduce the impact of the energy sector, we must both produce and use energy more efficiently, and develop clean renewable energies.

Producing and using energy more efficiently

Many parts of the industrial sector are extremely energy-intensive, in which simple measures such as optimising and maintaining equipment can save significant amounts of energy and money.

¹ The six main greenhouse gases generated by human activity are carbon dioxide (CO₂) which is the biggest contributor (80%), nitrous oxide (N₂O), methane (CH₄), hydrofluorocarbons (HFC), perfluorocarbons (PFC) and sulphur hexafluoride (SF₆).
Data based on EEA sectors, UNFCCC for 1999

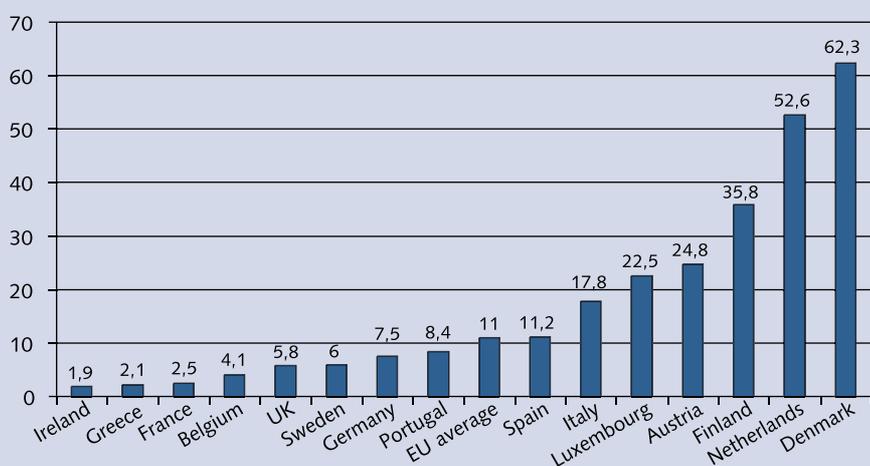
Combined Heat and Power (CHP) systems can also play an important role in reducing CO₂ emissions. CHP is a technology which utilises the heat produced when generating electricity. In doing so, it avoids much of the waste heat losses associated with conventional electricity production, thereby utilising up to 95% of the energy in the fuel rather than the average of about 36% in a conventional power plant. An expansion of CHP could therefore improve significantly the environmental performance of electricity and heat production.

The EU has a target to double the share of all electricity production from CHP from 9% in 1997 to 18% by 2010 (see Figure 3). This could lead to savings of CO₂ emissions of 150 million tonnes of CO₂ (Mt CO₂) year – the equivalent of 5% of 1990 emissions (Euroheat and Power, 2001). However, recent analysis

suggests that the CHP share of production is declining instead of increasing.

Additionally, the way buildings are constructed can make a huge difference to their energy consumption especially in terms of heating, cooling and lightening. The compactness of the building, its orientation (i.e. south-facing), the degree of insulation, the materials used and the presence of a buffer zone are all elements that contribute towards the efficiency of a building. These characteristics are best incorporated during the construction phase, although significant efficiency improvements can also be made during renovation. Potential savings of up to 400 Mt CO₂ have been identified through efficient heat use in buildings by 2010 in the EU, amounting to more than 10% of EU 1990 CO₂ emissions (Caleb Management Services, 1998).

Figure 3: Share of CHP electricity production (% , 1997)



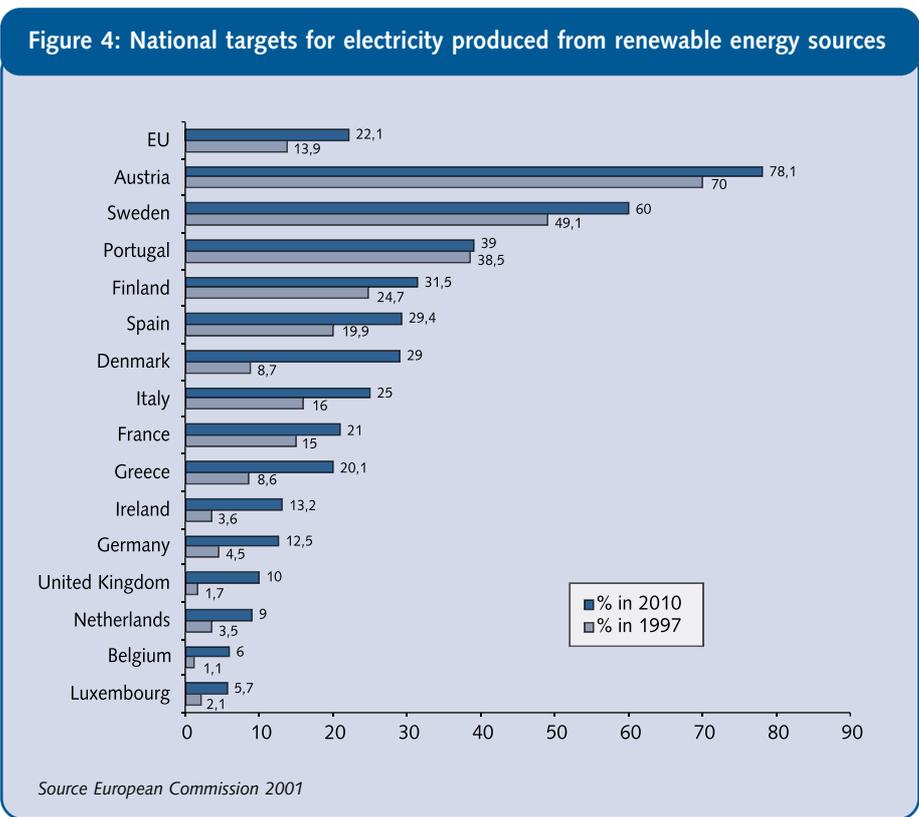
Source: COGEN 2001

Developing renewable energies

A major development of renewable energy technologies, such as biomass, wind and solar, is essential if we are to create a cleaner and more sustainable power sector. The EU has the objective of doubling renewable energy from 6 to 12% of inland consumption by 2010, which could save up to 200 Mt CO₂ emissions or an additional 6% of 1990 CO₂ emissions (Phylipsen, 1997). In this context, the EU approved a Directive with the target of increasing the share which renewable energy technologies contribute to power consumption from approximately 14% in 1997 to 22% by 2010. Accordingly, national goals have been set and countries are implementing various support schemes (see Figure 4).

Germany and Spain, for instance, compel utilities to buy electricity from a generator of renewable energy at a price that makes many of these installations economically viable. This system has been very successful in guaranteeing a good investment environment, which has led to a rapid development of new renewable energy capacity. Germany now accounts for nearly half of the world's wind power capacity. Similar systems have been implemented in France, Austria and Portugal. On the other hand, the United Kingdom has adopted the Renewables Obligation that requires suppliers to obtain 3% of electricity supplied to their clients from renewable energy between April 2002 and March 2003, rising to just over 10% in 2010.

However, taking into account the projected growth rates of electricity consumption by 2010, renewable energy targets are unlikely to be met under



current trends (European Environmental Agency, 2002). The prompt implementation of the measures contained in the EU Renewables Directive, together with additional national policies are needed to give a stronger stimulus to the development of renewable electricity for the national targets to be achieved. A voluntary market can increase demand for new and additional green power generation.

GREEN ELECTRICITY – A WAY TO PROTECT OUR CLIMATE

Green electricity products are a recent phenomenon. Therefore, the voluntary market for green electricity is still evolving. The idea was launched in the early 1990s with the opening of the electricity market to retail competition. However, suppliers in a monopolistic market can also offer green electricity products to their customers. A green electricity product can be offered to customers in two forms:

- electricity that is bought by a consumer is matched by the same amount of electricity produced from green sources (called green supply tariffs);
- customers contribute to a fund that will be used to develop green electricity capacity (called green fund tariffs).

Residential consumers' switching

A growing number of domestic customers throughout Europe are signing up to green electricity tariffs. Figure 5 presents the actual level of residential uptake in several European countries. The wide variation can in part be explained by the variation in environmental awareness of people in each EU country, different marketing strategies for green electricity in each country and the differences in the legislation used to support green electricity.

The striking success in the Netherlands – where in June 2002 green power consumers reached the symbolic figure of one million – has been facilitated by a number of policy and communication

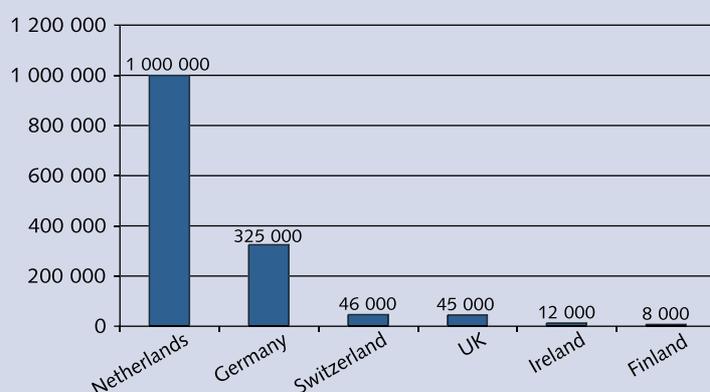
measures. The most important policy driver is the *tax exemption* for green power purchases. The ecotax, which was introduced in 1997, has increased substantially each year since then, particularly for small consumers using less than 10,000 kilo watt hours (kWh) per year. Since 1998, green power customers have been exempt from paying the tax.

As a result, green power has steadily become more cost-competitive with conventional power to the point where green power is actually cheaper than power produced by conventional means, or – as it is marketed today – is offered at largely the same price.

Government purchasing has also played a role in supporting the market for green power. Today, four federal ministries in the Netherlands, including the ministries of the Environment, Economic Affairs, Education, and Foreign Affairs, purchase green electricity to meet all of their electricity consumption. In addition, the government plans to purchase green power to meet 50% of the public sector's electricity needs during 2002-2004, as part of a national strategy to achieve carbon neutrality.

Finally, *marketing and media* campaigns run by WWF Netherlands in co-operation with the Ministry of Economy helped to boost sales considerably in late 1999. The campaign helped to increase the number of green electricity customers from 100,000 in September 1999 to 140,000 in January 2000.

Figure 5: Green electricity customers in selected European countries



Source: WWF's calculations based on Bird 2002

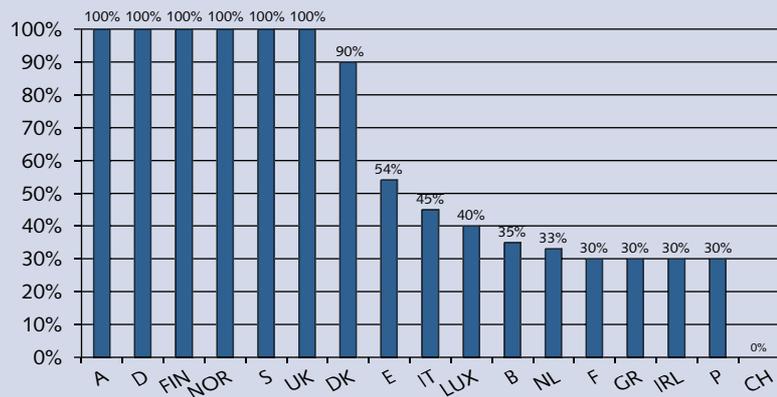
Large energy consumers can drive new green energy generation

Even with the large growth experienced in recent years (over 1,5 million residential customers), these figures do not represent a large percentage of electricity consumption. Business and government body support for green tariffs will be key if there is to be a major shift in energy generation patterns.

Liberalisation of energy markets offers a crucial opportunity for commercial consumers to choose their energy supplier on the basis of environmental criteria. At present all businesses and local authorities in Austria, Finland, Germany, Norway, Sweden and the UK have the opportunity to support renewable electricity via the purchase of green electricity, as do many larger organisations in other EU countries.

Although liberalisation of the electricity market is progressing at differing rates in each country, as is shown in Figure 6, the European Council recently agreed to fully open the EU energy markets for non-residential consumers by 2004. This will enable 60%-70% of the market to choose their electricity suppliers. Furthermore, even in those countries where full liberalisation has not yet occurred, electricity suppliers are still able to offer a green tariff to their consumers. For instance, in the Netherlands green tariffs were successfully launched in 1999 when energy markets had not yet been liberalised.

Figure 6: Declared market opening in Europe, 2001



Source: Adapted from European Commission, Staff working paper "First benchmarking report on the implementation of the internal electricity and gas market", updated in March 2002

How green is "green"?

Unfortunately, not every "green" product on offer represents a real improvement for the environment. In some cases the electricity offered comes from power stations which still represent a high burden on the environment. For example, producing electricity from urban waste incineration has a significant environmental impact. Incinerators often burn non-renewable sources, such as plastic, which produce toxic emissions. Their operation also undermines material reuse and recycling targets. For these reasons, energy from garbage burning cannot be considered green. In addition, hydro power plants can have significant negative effects on the ecosystems of rivers. Such impacts must be reduced or compensated for hydropower to be sustainable.

In the new context of energy liberalisation, WWF calls on public authorities and businesses to take the lead in greening our electricity supply. By switching to labelled green power, businesses can demonstrate to customers that they are serious about their environmental commitments. Public bodies can demonstrate consistency within their own governmental climate protection policies and goals.

In some other cases, the electricity offered at a premium price to customers is already part of a government scheme, such as a feed-in tariff or an obligation placed on the supplier. In other cases, it comes from existing installations which would have fed their electricity into the grid anyway. Consequently the consumer, by buying green electricity, does not promote new renewable electricity generation, but merely contributes further to a supplier's profits (see Box 1 and 2).

Creating additional demand for green electricity

A green energy product should always promote additional renewable energy generation – creating what is sometimes called additionality. Many consumers have shown willingness to pay a premium price to raise the share of renewable electricity in the power mix. However, they would not accept that they are simply reducing the amount of money that others would have to pay, or that they are helping supply companies to make more profit. In other words, consumers want to be sure that switching to green electricity will result in the generation of additional renewable energy.

In countries such as Germany, which have high feed-in tariffs for renewable energy generators, the green electricity market can help the development of technologies that are not supported by legislation. In countries that are promoting renewable energy through an obligation or quota system, real green electricity products offer the possibility for customers to increase generation from renewable energy beyond the targets set by government. Box 1 and 2 describe how tariffs can guarantee to be additional to the mandated markets.

Box 1: The feed-in tariff system

What is the feed-in tariff system?

Feed-in tariff schemes have proven to be a very successful instrument for the promotion of renewable energy. A number of European countries have implemented such schemes, including Germany, Spain, Austria and France. As described above, electricity products should be considered green if they offer an environmental improvements additional to those which would result from governmental support schemes.

The basic principle of a feed-in tariff scheme for renewable electricity is that there is an obligation for utilities (usually the regional distribution system operator) to enable renewable power plants to connect to the system, with the utility required to purchase the electricity at fixed, minimum prices. In order to provide an incentive for investment, these minimum prices are usually set higher than the regular market price for electricity. In addition, the feed-in payments are usually guaranteed over a certain period (for example, 20 years under the German Renewable Energy Law).

How to ensure additionality?

Obviously, consumers should not be asked to pay more for electricity which is already supported under the feed-in tariff support programme, as they are already financially viable. However, there will be certain types of renewable power plants, which do not receive feed-in payments, or which are still not economically viable even if they do receive the tariff. These are the technologies that could be supported by consumers wanting to choose a green electricity product. Additionality is only achieved if the electricity comes from plants that are not financially viable with feed-in support alone, or which are not eligible for the feed-in tariff.

Under a fund-based tariff, where an additional payment is made by the consumer to support new renewable energy developments, additionality can result if the extra money paid by customers is used to support the difference between the feed-in tariff and the cost of generation from the new plant, or is used to support schemes that are not eligible for support under the feed-in tariff.

Box 2: The Renewables Obligation

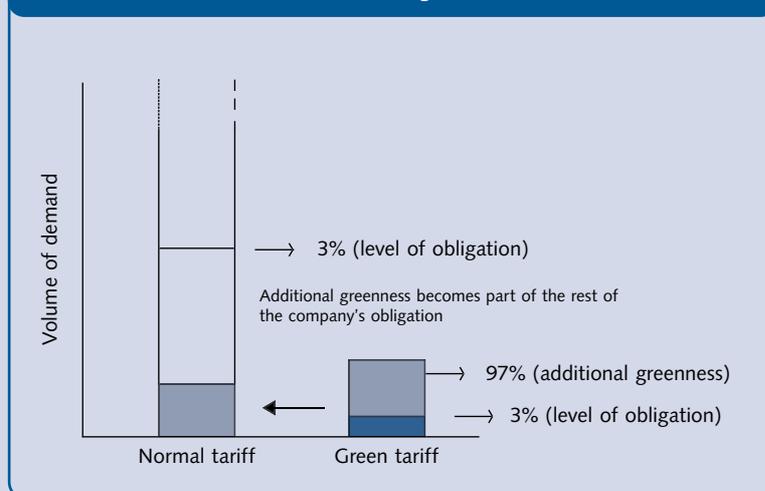
What is a renewables obligation?

Some countries, such as the UK and Belgium, have chosen to impose measures to compel suppliers to purchase renewable energy sources for a certain percentage of the electricity they supply. Tradable certificates are used in these countries to verify if the obligations are met. Tradable certificates are given to the producer of renewable electricity for each Mega Watt hour (MWh) generated. The producer sells these certificates to a supplier, though not necessarily the supplier to which the sale of physical electricity is made. The supplier keeps the certificates to fulfil its quota or to sell to another supplier that has not fulfilled its quota. The tradable certificates are thus exchanged on a secondary market that is independent of the physical electricity market. If a supplier does not purchase sufficient tradable certificates to meet its target it will have to pay a penalty, often called a 'buy-out' price.

How to ensure additionality?

Under such a system, a green electricity product will provide additionality only if the electricity sold as a green electricity product does not count towards the supplier's quota. Therefore additional certificates will need to be issued and purchased against the consumption of green electricity purchasers by withdrawing them from the market, rather than using them to meet a supplier's existing obligation (see Figure 7). Otherwise, if the certificates generated by the green electricity products are used by the supplier to meet its obligation, the premium paid by the customers will only reduce the cost to other consumers and not lead to an increase in renewable energy capacity. In the case of fund-based tariffs, where the extra payment from the consumer is used to fund new capacity, the electricity generated by this capacity should not generate certificates that could be used to fulfil the suppliers' obligations.

Figure 7: Large utility using green tariff to help meet their obligation



In this illustration we see that the additional greenness of the green tariff (the yellow box) is used to fill the obligation of the utility. If the green tariff is to present some additionality, at least part of the additional 97% should not be used for the overall obligation of the utility.

THE ROLE OF LABELLING

Labelling programmes have emerged as important vehicles for verifying renewable energy supplies and ensuring that products have true environmental benefits. In other words, they ensure that green power suppliers really utilise green energy sources and that they include power from new renewable energy sources. At present there are several labelling bodies in Europe, set up by environmental and consumer groups, which guarantee their independence and credibility.

Overview of European labelling programmes

Germany



Two inter-linked labelling programmes operate in Germany. The OK-Power was developed jointly by the Institute for Research on Applied Ecology, the Consumer Organisation of Northrhine-Westphalia, and WWF Germany. To ensure additionality in the context of the German Renewable Energy Law of April 2000, green products must promote the development of new power stations that are not covered by the renewable energy law, or that would not be economically viable under the scheme.

The *Grüner Strom* label was launched by environmental and solar energy organisations and does not certify utility offerings if the company is involved in nuclear power generation. The label certifies only 100% renewable products. As of July 2001, the *Grüner Strom*



program certified 46 products, primarily those offered by municipal utilities and Naturstrom AG.

Switzerland



The Association for Environmental Friendly Electricity (VUE) launched the *Naturemade* labelling program in June 2000. VUE is a new independent organisation supported by environmental organisations (including WWF), consumer groups, renewable energy associations and the power industry. Only products supplied with green hydropower can obtain *Star* certification, while all hydropower products are eligible for *Basic* certification. Both standards require marketers to supply at least 2.5% of their power from new renewable energy sources (solar, wind, or biomass built after 1995).

Sweden



The "*Bra Miljöval*" (or good environmental choice) eco-labelling programme is offered by the Swedish Society for Nature Conservation. Since its inception in 1996, the *Bra Miljöval* programme has certified 21.8 Tera Watt hours of green power sales. Currently, it certifies more than 70 green power providers, or about 40% of all power companies in Sweden. The *Bra Miljöval* programme requires products generated primarily from hydropower to have at least 5% of the power content supplied from biomass, wind, or solar resources, which is essentially equivalent to a requirement for generation from new renewables.

Finland



The Finnish Association for Nature Conservation certifies more than 30 retail green power products under its *Norppa* eco-labelling programme. The current programme criteria allow the following renewable resources to be eligible for certification: biomass (excluding municipal solid waste), solar, wind and hydropower constructed prior to 1996. To become certified, hydro facilities must prepare an action plan and take steps to mitigate environmental impacts to the affected waterway. Companies marketing certified green power products are expected to support the development of new renewable projects (except in the case of hydropower).

Other labelling programmes for green electricity are currently being developed in Italy, under the *Bollino verde* initiative, in France and in Spain (for further information see back cover).

The future of green labelling in Europe

Within the context of a European energy market, the existence of different labelling programmes with different approaches can be rather confusing for power consumers and producers. For this reason, the need has emerged for a harmonisation of labels and the development of an international standard for green electricity.

WHAT IS EUGENE?

The European Green Electricity Network (EUGENE) was set up in 2001 by a wide coalition of environmental and consumer groups, research institutions and green labelling bodies. The objective of EUGENE is to develop and promote an international standard for green electricity labelling.

The EUGENE standard is based on five basic principles to be met by green electricity schemes. These rules are complemented by additional criteria to implement the standard at the national level. EUGENE is planning to establish national working groups across Europe (for a list see page 23).

Electricity suppliers seeking certification for their green products should contact their EUGENE national organisation. If their green electricity product is found to conform to the label criteria, the electricity supplier will be allowed to distribute the product as a EUGENE-accredited product. Within the European market, one single labelling system will identify the benefits of green electricity.

Box 3: The five principles of EUGENE

Principle #1

GREEN ELECTRICITY SOURCES

Green electricity must come only from one or more of the following eligible resources: solar power, wind, geothermal, green biomass (energy crops, agriculture and forestry wastes, other organic wastes, or sewage gas), green hydro (the hydropower plant has to meet basic ecological criteria at the local level, so that the river system's principal ecological functions are preserved). In some countries highly efficient natural gas-fired cogeneration (up to a maximum share of 50%) is also accepted.



Principle #2

ADDITIONALITY

The green power offering must either contribute to increases in green electricity generation over and above the governmental requirements (such as feed-in tariffs and quota systems), or reduce the environmental impacts of existing hydropower plants.

Principle #3

INDEPENDENT VERIFICATION

The suppliers undergo an annual independent verification to substantiate product content claims and ensure that enough renewable power has been purchased to meet customer demand.

Principle #4

CONSUMER INFORMATION

The supplier fully discloses to customers the percentage and type of renewable resources in their electricity product.

Principle #5

ENERGY IMPORTS

Import of green electricity is allowed, but only if the imported electricity is generated from eligible sources and it meets the additionality principles according to the standard defined by the label of the *exporting* country. The imported green electricity also has to meet eligibility criteria of the importing countries.

What are the costs of green electricity?

Green electricity costs vary widely across Europe. In general, electricity from climate friendly sources may be more costly than conventional energy – such as fossil fuels and nuclear power – because the pollution costs related to the energy sources are not fully accounted for in their price. Renewable energy schemes can have significantly lower or virtually no adverse environmental impact. Moreover, the fossil fuel and nuclear power industries have benefited from both direct and hidden subsidies (for example, the nuclear industry doesn't have to have an insurance to cover the full cost of a major accident which is then be covered by society as a whole).

However, in several countries it may actually be cheaper to sign up to a green tariff, as there is a tax reduction for green electricity which compensates for the avoided pollution costs. In the UK, for example, organisations that buy renewable energy do not have to pay the climate change levy of 0.7 Eurocent/kWh. This makes green electricity competitive with conventional electricity, in many cases. In the Netherlands, renewable electricity benefits from a tax exemption (REB, Regulerende Energiebelasting) set at 5.5 Eurocent/kWh in 2001.

Due to liberalisation of the electricity sector, energy prices have fallen in most EU countries between 1985 and 2001 (see Table 1). Many energy consumers, whether large, medium or residential customers, are paying significantly less for electricity than they were a few years ago. In Germany, for instance, wholesale prices fell by more than 30%. Industry and local authorities could use a small percentage of these savings to cover any extra costs of green energy.

"We wanted to do something for the environment without higher costs!"

Landrat Hans Vollhardt, Ebersberg County (Germany).

Table 1: Energy prices (Euro/GJ at 1995 prices)

	Price 1985	Price 2001	Percentage change in price 1985-2001
INDUSTRY			
Electricity	26.2	13.6	-48%
Natural gas	8.6	5.1	-41%
HOUSEHOLDS			
Electricity	43.6	30.8	-29%
Natural gas	16.7	12.2	-30%

Source: European Environment Agency, 2002

HOW CAN LOCAL AUTHORITIES PROMOTE GREEN ELECTRICITY?

As outlined in Agenda 21 – a guideline for sustainability in the 21st century adopted at the UNCED conference in 1992 – Local and Public Authorities have several ways and means at their disposal to work towards sustainable development. By purchasing green electricity, they can make a difference and contribute actively to the promotion of climate protection.

Box 4: Local Agenda 21

As so many of the problems and solutions being addressed by Agenda 21 have their roots in local activities, the participation and co-operation of Local Authorities will be a determining factor in fulfilling its objectives.

Local Authorities construct, operate, and maintain economic, social and environmental infrastructure, oversee planning processes, establish local environmental policies and regulations and assist in implementing national and sub-national environmental policies.

As the level of governance closest to the people, they play a vital role in educating, mobilising and responding to the public to promote sustainable development.

Local Authorities as consumers

Why should local authorities require labelled green electricity in tender specifications?

In 1999 approximately 6% of the total electricity consumed in the EU was purchased by the public sector. This amounted to 148,460 Giga Watt hours (GWh; see Figure 8). This electricity is primarily used to provide power to buildings which host government bodies or institutions such as schools, hospitals or public sport facilities.

Environmental criteria are an important consideration to be taken into account in awarding public contracts. Indeed the decision to switch to labelled green electricity would make a real difference for climate protection. If local authorities purchased an additional 30% of their electricity from renewable energy sources, it would lead to a reduction of 18 million tonnes of carbon dioxide (CO₂) per annum. This represents 5% of the EU Kyoto Protocol reduction target commitment, or the annual emissions of six large coal-fired power stations.

This percentage could be achieved if all organisations bought an electricity product that provides 30% of its electricity from green sources. Alternatively, the same result could be achieved if 30% of the sector purchased electricity from 100% green electricity products. As a consumer of electricity, local authorities have the

Box 5: County of Ebersberg in Germany

All of the 1,000 MWh consumed by the public buildings in the county of Ebersberg in Bavaria (Germany) will be supplied by green electricity in the near future. Ebersberg decided to cancel its electricity supply contract and issued a national and European tender for a new supplier. HEAG NaturPur AG won the bid with its "NaturPur-Strom light" product (certified by OK-Power in Germany). This will lead to reductions of approximately 600 tonnes of CO₂ emissions per year following the switch. As well as supplying green electricity, NaturPur will also build a photovoltaic system on one of the county buildings. This installation will demonstrate the commitment of the county to renewable energy sources.

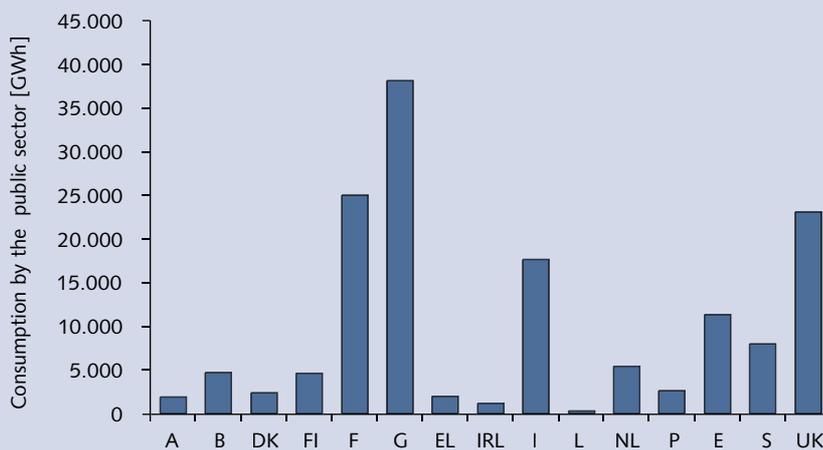
responsibility to ensure that they do not contribute to climate pollution. By choosing to switch to labelled green electricity, local authorities will contribute to promoting additional generation from clean sustainable energy sources.

Several local and national public authorities throughout Europe have already switched to labelled green electricity. For instance, this was done in the Eindhoven Region and the Utrecht Province of the Netherlands, in the county of Ebersberg in Germany, and at Sheffield Hallam University in the UK (see Box 5 to Box 8). In countries where there are tax benefits for renewables, there may not be any additional cost. This has been the case in the Dutch Eindhoven Region, where switching to green electricity has resulted in cost savings of over €600,000 (see Box 6). In other countries, the additional costs are likely to be only a small percentage of the total energy budget.

Local Authorities as energy producers

Local authorities are not only consumers of energy. In some countries they very often they also operate as an energy distributor and producer. This opens the door to a wide range of possible activities to save energy and to develop climate-friendly energy sources. In this case, they can offer their consumers labelled green electricity, which allows them to support additional growth of green energy over and above national-mandated markets. For instance in Germany, the Grüner Strom label primarily certifies green power products offered by municipal utilities.

Figure 8: Electricity consumption by public bodies in the EU (1999)



Source: RELIEF project, IFIP/ICLEI 2002

For B, F, IRL, LUX, Sp, S no national data is available, and the figures have been calculated on the basis of the average public share of other countries (6,2%). * In Greece the data is from 1997.

Box 6: Eindhoven Region in the Netherlands

Nearly all public buildings and street lighting in South-East Brabant in the Netherlands are powered by green electricity. In March 2002, 21 municipalities in the Eindhoven Co-operation Region signed a contract with NRE Energy to obtain green electricity for 75% of their consumption, representing approximately about 29 million kWh. The green electricity presently comes from wind farms in Flevoland. The municipalities banded together in order to negotiate better prices with the utility. As well as the environmental improvement, the negotiated contract offers a cost saving of 620,000 Euro over their previous contracts.

Local Authorities as awareness-raising actors

"Energy conservation is the major component of our drive to improve environmental performance. It is perhaps even more important to ensure that green supplies are used efficiently, for if this power is wasted, additional fossil fuels must be burned to make up for the shortfall. Renewable energy has to be purchased and used in a socially responsible manner if we are to enjoy the benefits."

Charles Morse, Energy Manager of Sheffield Hallam University.

Local authorities have an important role to play in informing the public about the climate impacts of power generation and

about green electricity as a climate solution. An increasing consumer demand for labelled green power will indeed stimulate electricity producers and distributors to offer such products and thus invest in new climate friendly generation.

Possible target groups could be environmental and social organisations, local environmental advisory boards, electricity producing and distributing companies, industry and other power consumers. Finally local authorities can also provide financial incentives to their consumers which decide to go green, by either switching to green power or by implementing cost-saving energy efficiency measures.

Box 7: Sheffield Hallam University in the UK

At the beginning of 2002, 35 small properties of the Sheffield Hallam University were still on the standard electricity tariff (as opposed to the rest of the University that had already switched to a more competitive tariff). In order to benefit from the liberalised market and obtain a lower cost for their power, they looked for a new supplier to cover the remaining 5% of their electricity demand. They chose to tender for green electricity for this 1 GWh demand and awarded the contract to unit(e), a green electricity supplier. Although the unit(e) price for the green power product is higher than the one they would have paid for a conventional tariff, it was still below the cost of their standard tariff from which they were switching. The purchase of green energy has enabled the university to lower their carbon emissions by between 1.5% and 2%. Further energy efficiency measures will bring this figure to 3%, which is the target of the university.

Box 8: Province of Utrecht in the Netherlands

The government of the Province of Utrecht has adopted a zero emission policy for its offices. While the province already applies a number of energy efficiency measures, 60% of its electricity has come from green sources since the year 2000. This and other measures will make them climate neutral. In December 2000, the province received the prestigious "Energy Award" for this climate neutral policy, awarded by Novem, the Dutch Agency for Energy and the Environment. Along with green electricity procurement, the Province of Utrecht has also installed solar panels on the roof of its main office building, with an annual production of about approximately 9000 kWh. A display panel on the façade of the building aims at stimulating others to switching to green electricity.

HOW CAN BUSINESSES PROMOTE GREEN ELECTRICITY?

Box 9: The Millennium Pool on Corporate Social Responsibility

Interviews with over 2500 citizens across 23 countries on six continents reveal that in forming impressions of companies, people value corporate citizenship ahead of either brand reputation and financial factors. Two in three citizens want companies to go beyond their traditional role of making a profit, paying taxes, employing people and obeying all laws; they want companies to contribute to broader societal goals as well.

Actively contributing to charities and community projects does not satisfy people's expectations about corporate social responsibility. Half the population in the surveyed countries pay attention to the social behaviour of companies.

Over one in five consumers report either rewarding or punishing companies in the past year based on their perceived social performance and almost as many have considered doing so. Analysis of views expressed by opinion leaders indicates that public pressure on companies to play broader roles in society will likely increase significantly over the next few years.

Source: PriceWaterhouseCoopers (Enviro-nics International Ltd., 2000).

Companies are increasingly scrutinised to assess their impacts on climate change and their environmental policy. Society is beginning to demand higher accountability of the business sector. It expects businesses to act as responsible entities, which do not just watch their financial profits but also care about the future of the planet. Business is being called to play a leading role in developing green energy sources through its own internal actions. This is supported by the report "Millennium Pool on Corporate Social Responsibility" (see Box 9).

Businesses as consumers

Why should business switch to labelled green electricity?

"The first reason [for our switch to green electricity] was that we were convinced about our own responsibility for our future environment and that all of us, single persons as well as companies, can do something for it, to make it worth living for future generations. The switch was an ethical decision coming out of our Environmental Management System according to ISO 14001 established in our company".
Jörg Ertl from RICOSTA Schuhfabriken GmbH (Germany)

In 2000, electricity use in the industrial sector in Europe was approximately 950 Tera Watt hours. If industry purchased 10% of its electricity from renewable energy sources, this would lead to a reduction in emissions from the power

Box 10: RICOSTA, shoe industry

In August 2001, RICOSTA renewed its electricity supply contract with NaturEnergie Gold (labelled by OK Power) for approximately half a million kWh. Although the shoe company pays more for green electricity, they compensated for this by introducing energy efficiency measures to their factories. And of course, they also gained the satisfaction of promoting and supporting renewable energy in their region. Indeed, thanks to their contract NaturEnergie AG was able to initiate and build a solar plant in Bad Duerrheim. The shoe company also wins a better image through its green energy supply. RICOSTA's green image and pioneering role in supporting green electricity was publicised to its customers and the general public through a joint campaign with NaturEnergie Ag entitled "Make a step in the direction of clean energy".

sector of 38 million tonnes of CO₂ per year, or over 10% of the EU's Kyoto Protocol reduction target commitment. This would enable over 12 large coal power stations to be closed down. The challenge is clear. Switching to labelled green electricity is a concrete solution which can demonstrate that a corporation is taking climate change seriously and is committed to reducing its own polluting emissions.

Costs or benefits?

When a company switches to green labelled electricity, it buys more than just electrons. In particular, it secures a number of benefits which a company otherwise might have to pay for through other budgets. Box 12 outlines the key corporate benefits to be gained from switching to labelled green electricity.

Switching to green electricity will give a competitive edge on the market. The PriceWaterhouseCoopers Millennium Poll on Corporate Social Responsibility and other studies have produced compelling results to show that consumer values are being translated into purchasing behaviour. Consumers are increasingly seeking to use

their purchasing power to reward or punish companies for their policies. This is not confined to the affluent West. The PriceWaterhouseCoopers survey shows that this is a growing trend globally. This is both a threat and an opportunity for business anywhere – a threat to companies which do not embrace social and environmental corporate responsibility, but an opportunity for those who do aim to win consumers' approval.

Consumer behaviour is significantly influenced by NGOs. Various studies have

shown that environmental organisations rank highest in public confidence for information on the environment. A study of "thought leaders" in the USA, France, Germany, UK and Australia by Edelmann PR (Dec. 2000) concluded that *"non-governmental organisations are more trusted than the media, the most respected corporations or governments"*. Clearly, switching to green electricity tariffs which meets EUGENE standards will guarantee companies international recognition for their contribution to climate and environmental protection.

Box 11: The Dutch Fair Trade Organisation

The Dutch Fair Trade Organisation handles an assortment of 2,700 products purchased from organisations of craftsmen and farmers in Africa, Asia and Latin America. The principle of ethical and sustainable purchasing was extended to the environment by the purchase of green electricity from Natuurstrom. Not only have they bought 190,000 kWh of electricity from wind, sun and hydro sources, thereby saving 100 tonnes of CO₂, but their headquarters also host a solar power plant built by Natuurstrom in April 2000. Twenty cubic meters of PV panels have been placed on the roof of the building producing between 1600 and 1800 kWh per year, providing approximately 1% of the electricity needs of the Fair Trade Organisation. As the cost of the electricity purchased from Natuurstrom is more expensive than that produced from fossil fuels, the organisation is implementing measures to reduce its energy consumption.

Box 12: Seven good reasons for switching to labelled green electricity

1. Demonstrate environmental corporate responsibility

By switching to labelled green electricity, a business can demonstrate its corporate leadership in meeting environment and climate protection challenges, whilst generating goodwill amongst its clients. By taking a proactive approach to addressing climate change, companies that use green electricity will be better positioned to gain EMAS or ISO 14000 environmental certification.

2. Provide a competitive edge and develop new markets

As consumers become increasingly more conscious of climate change, green electricity purchases provide an opportunity for business to build leadership and trust in the eyes of the public, whilst differentiating themselves from their competitors. This strategy can be particularly effective for companies that sell products directly to the public.

3. Valuing energy and achieving fuel savings

Switching to labelled green electricity is often a first step in a company's energy efficiency strategy to boost efficiency and cuts costs. Most industries and businesses still have significant cost-effective opportunities to reduce their energy bills. The money thus saved can cover the extra costs which may result from switching to green tariffs.

4. Hedging against present and future financial penalties

Several countries have adopted a carbon tax on fuels in proportion to their carbon content. This drives up the price of electricity from fossil fuel sources, and has a beneficial impact on carbon-free renewable sources, making green electricity cost-competitive with or even cheaper than conventional power. For example, in the UK, organisations are exempt from the climate change levy (0.43p/kWh) for the electricity generated from renewables.

5. Stabilise business energy costs

Power stations which utilise wind, small hydro and solar energy sources do not need to pay for their fuel. Consequently, ongoing payments for electricity from these sources are immune to fluctuations in fossil fuel prices. As such, green electricity can offer energy managers a means of diversifying their energy portfolios, ensuring some degree of cost stability in the face of future fuel price uncertainty.

6. Enhance relations with employees

Employees are important for all companies. By buying green electricity, a company demonstrates its concern for a broader set of values that may be important to its employees. Such steps can improve staff morale and help in attracting high calibre employees.

7. Strengthen relations with local communities

A commitment to labelled green energy can improve relations with the local community, presenting a company as a good community actor and strengthening its reputation. In some cases, where a company's green power purchase displaces existing or prospective conventional energy generation in the area, the local community could be a direct beneficiary of the avoided pollution.

THE WAY FORWARD

Climate protection will require a dramatic increase of the share of clean energy. Along with aggressive public support policies, the voluntary market can play a key role in developing additional green electricity generation and displacing polluting sources. This report has shown how public authority and business action in switching to labelled green electricity can make a difference.

The policy framework needed to promote labelled green electricity

Policy makers hold the responsibility to facilitate and promote the switch to labelled green power. To boost this voluntary market “pull”, governments should implement the following recommendations:

■ Disclose Information on Electricity.

As European energy markets are being liberalised, consumers must be able to properly distinguish between the products they are being offered. Comprehensive and clear information on the sources used to generate electricity, and the associated environmental implications, will enable consumers to make informed choices. It would also be instrumental for raising awareness among consumers and helping to create a ‘carbon conscious’ society. This would influence the mix of energy sources used to

generate electricity, and encourage electricity suppliers to reduce the environmental impact of their power generation, encouraging them to offer green electricity options. As part of the proposed European Directive on the liberalisation of energy markets, European Energy Ministers should require that energy suppliers disclose the way in which electricity is produced and the related environmental impacts.

■ Promote Environmentally Sound Public Procurement.

Governments should adopt public procurement guidelines that are favourable for those local authorities wishing to switch to green energy. Criteria that can be used for awarding a tender should include social and environmental aspects, and not only focus on the least-cost approach. Therefore, the environmental provisions in the EU public procurement regulations must be strengthened. The assessment of any public procurement offer should consider: first, the environmental and health impact – including that of production methods, and the tender’s equal opportunities policy; and second, the external costs: that is, the tender has to benefit the public at large and not exclusively the contracting authority.

■ Incentivise Labelled Green Electricity.

In tune with the “polluter pays” principle, activities which damage the

environment should be penalised in order to internalise the cost placed on society. Since renewable energy offers a much lighter burden on society, labelled green electricity offerings should be exempted from energy taxes. This exemption would enable these sources of energy to compete on a fairer basis in the market. A comparison can be made with the switch from leaded to unleaded petrol that occurred over the 1990s as fiscal policies ensured that unleaded petrol was priced slightly lower than leaded.

MORE INFORMATION

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RELATED WEBSITES

EUGENE: www.greenelectricitynetwork.org

WWF International: www.panda.org

Global warming early signs: www.climatehotmap.org

Green energy in Europe: www.greenprices.org

International Panel on Climate Change: www.ipcc.ch

United Nations Framework Convention on Climate Change:
www.unfccc.int

Climate Network Europe: www.climnet.org

Business for Climate: www.emission55.com

International Council for Local Environmental Initiatives:
www.iclei.org

European Sustainable Cities and Towns Campaign:
www.sustainable-cities.org

Energie-Cités: www.energie-cites.org

RELATED PUBLICATIONS

- Bird L. and Wüstenhagen R., 2002, "*Green Power Marketing Abroad: Recent Experience and Trends*", NREL, www.eren.doe.gov/greenpower/home.shtml
- Breeze P., 2001, "*The Green Energy Outlook*", Reuters Business Insight
- Datamonitor, 2000, "*Marketing Green Energy in Europe*", DMEN 0082.
- European Commission, 2001, "*Green Paper, Towards a European Strategy for the Security of Energy Supply*", www.europa.eu.int
- European Environment Agency, 2002, "*Energy and Environment in the European Union*", Environmental report No 31, www.eea.dk
- EUGENE, European Green Electricity Network, 2002, "*Standard for Green Electricity Labelling*", www.greenelectricitynetwork.org
- IPCC, 2001, "*Climate change 2001: impacts, adaptation, and vulnerability*", www.ipcc.ch
- Faber T. et al. 2001, "*Promotion Strategies for Electricity from Renewable Energy Sources in EU Countries*", Vienna University of Technology Report.
- Huber C. et al., 2001, "*Action Plan for a Green European Electricity Market*", ElGreen Project Report for the European Commission.
- Jay R. Malcolm, Canran Liu, Laurie B. Miller, Tom Allnutt, Lara Hansen, 2002, "*Global Warming and Species Loss in Globally Significant Terrestrial Ecosystems at risk*", WWF, www.panda.org/climate
- Stefan Norris, Lynn Rosentrater and Pål Martin Eid, 2002, "*Polar Bear at Risk*", WWF Status Report, www.panda.org/polarbears/

WWF Climate Change Programme

Global warming and climate change pose serious threats to the survival of many species and to the well-being of people around the world.

WWF's Programme has three main aims:

- to ensure that industrialised nations make substantial reductions in their domestic emissions of carbon dioxide - the main global warming gas - by 2010
- to promote the use of clean renewable energy in the developing world
- to reduce the vulnerability of nature and economies to the impacts of climate change

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WWF's mission is to stop the degradation of the planet's natural environment and to build a future in which humans can live in harmony with nature, by:

- conserving the world's biological diversity
- ensuring that the use of renewable resources is sustainable
- promoting the reduction of pollution and wasteful consumption.