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NEW MARKETS FOR GREEN ELECTRICITY

Renewable energy technologies are a lot friendlier to the environment than conventional energy technologies, which rely on fossil fuels. Renewable energy technologies can produce heat and electricity with little or no carbon dioxide emissions, and, therefore, are an important option in reducing the greenhouse gas emissions of our energy systems. They will also play a role in fulfilling the commitments of the Kyoto Protocol. Yet, in the past, most 'green' technologies have been too costly. How, therefore, can they fit in an electricity marketplace that is becoming more and more competitive ?

The answer might be that price is not the only thing that matters. Customer choice allows consumer preferences for cleaner energy sources to be reflected in market transactions. In survey after survey, regardless of the country, customers have expressed their willingness to pay more for 'green' electricity.[1]

Green electricity has in fact been one of the first products to be marketed in the newly liberalised markets. Australia, Canada, Finland, Germany, Norway, the Netherlands, Sweden, Switzerland, the United Kingdom, and the United States are some of the countries in which green pricing activity is on the increase.[2] However, green power marketing –the business of selling electricity products or services based in part on their environmental values– is still in the early stages of development. Few of the green pricing programmes have been on the market for more than three years.

The idea of green pricing programmes is that participating customers pay a premium on their electric bill to cover the incremental cost of power generated in a renewable energy plant. It seems to be an interesting product for every type of power utility as the utility can improve its image, build customer loyalty and expand business lines and expertise by fostering renewable energy options through voluntary extra payments from its customers. The lack of such an offer might be an unacceptable risk in terms of losing customers compared to the small expenditure required.

To date, more than 50 utilities have either implemented or announced plans to offer a green pricing option in the US.[3] In Germany, the number of companies involved in marketing green

[1] The term 'green' electricity is used to define power generated from renewable energy sources, such as wind and solar power, geothermal, hydropower and various forms of biomass.
[2] Check http://www.oekostrom.eawag.ch/ for updated information and international links.
[3] Visit the web site of The Green Power Network at http://www.eren.doe.gov/greenpower/. It provides up-to-date information on green power providers, product offerings, consumer issues, and policies affecting green power markets.

power rose from about 10 before the official market opening in 1998 to around 70 at the beginning of the new millennium. Up to the fall of 1999, month after month, new green energy products and services were launched into the German headlines. Many German municipal utilities regard the supply of environmentally friendly services as an important pillar in their competitive survival. The ASEW –an umbrella organisation of about 200 municipal utilities– has created the trademarks "energreen" and "etagreen", under which its member companies can pool and sell their green power offers.[4] Moreover, new companies have managed to enter the green power market in those countries and states where liberalisation is already much advanced. These are companies with an exclusive focus on green energy services and products, some of them with generation capacities of their own, others only trading and marketing green electricity.

The number of companies operating a green electricity product may sound encouraging. In most regions, green pricing has not, however, turned into a success story so far. In analysing participation rates –customers signing up in relation to a company's total customers– one should better not quote the German numbers. Participation rates are often below 0.2 % with only few exceptions. Expressed as a share of overall electricity generation, the average percentage is even lower; consumers often choose to cover only a fraction of their total power consumption with green kilowatt hours.

The picture in the Netherlands looks somewhat better. More than 140,000 households out of ca. 6.5 million have contracted green energy products; during a campaign of the WWF Netherlands, the number of customers increased by 40,000 from September 1999 to mid January 2000. Participation rates are as high as 6 %, but are also as low as 0.5 % for some electricity utilities.

In the Netherlands, it is not only households, but also large energy users, like industrial and commercial companies, schools, hospitals, and governments that are buying green power. In Germany, on the other hand, non-residential demand has been rather low.[5] In the US, green pricing programs have existed since 1993. Typically, 1 - 2 % of the customers subscribe, but participation rates have been as high as 4 %. California leads the pack with 95,000 green energy customers, followed by Pennsylvania with 85,000 consumers. In addition, green electricity companies in California have been successful in winning several high-profile businesses, institutional customers and cities for their programmes.[6]

In Europe, the majority of companies have been selling green electricity for an extra charge of 3 to 4 EuroCents per kilowatt hour. Actual or proposed price premiums for energy-based green pricing offerings range from 0.4 c/kWh to 5 c/kWh with a mean of about 2 c/kWh in the US. Most suppliers invoice the additional price for renewable generated electricity separately. Brands which have entered the market are usually based on a mix of energy sources, including wind, biomass, and hydropower. In the 'voluntary' German market, photovoltaics (PV) plays a particularly strong role; it is attractive to a certain group of consumers, even though it makes the product much more expensive. Green power products based on PV only can cost up to 1 Euro per kWh.

Comparative analysis shows that the success of a product only moderately depends on the

[4] Refer to http://www.asew.de or http://www.energreen.de for more information on their programmes.
[5] Information on green energy in the Netherlands and Germany can for example be drawn from a new web site at http://www.greenprices.com.
[6] see Information Briefs on Green Power Marketing by Blair Swezey and Lori Bird, National Renewable Energy Laboratory, Golden, CO, available at http://www.eren.doe.gov/greenpower/

price level. Well-directed and credible marketing activities of the company launching the trademark is more important. 'Moral' support of, and ad campaigns on part of the government, as well as non-governmental organisations can help tremendously, as the example of the Netherlands shows. Thus, selling green electricity is also about educating and informing customers on environmentally preferable competitive market choices. In addition, decisions on power purchase and customer switching is also a result of the general regulatory framework.

For example, the rules on grid access, transmission and distribution charges for electricity generated from renewable sources of energy have for a long time been hindering customer switching in the German marketplace –even though all customers have officially been able to choose their suppliers since May 1998. Byrne (2000) comes to the conclusion that California's unfavourable market rules have created a negative feedback loop in which the inability of energy service providers to offer substantial value above default service provided by utility incumbents results in adverse media coverage and poor public perceptions regarding customer choice. Accordingly, less consumers are actively shopping for power in California.[7]

Limited experience with green pricing has highlighted another decisive market need, that is, verifying green power claims. A buyer of green electricity cannot see how their electricity is being been produced, but is asked to pay a premium for what is called green electricity. Therefore, a potential consumer would like to make sure that there really is an added (environmental) benefit their extra payment.

Ongoing concerns about the credibility and the environmental value of green power products have prompted a call for disclosure and seals of approval in all countries where green power has been marketed. Activities are underway to help address product credibility and to categorise the products. In California, for instance, the Green Power Board, consisting of individuals from various stakeholders, together with the non-profit Center for Resource Solutions, has developed the Green-E Programme. This renewable energy branding scheme allows products to use the Green-e logo if they meet a set of requirements. The product has to contain at least 50% renewables, and the fossil portion must have relatively low air pollutant emissions. Other labels implemented or discussed differentiate between new and old plants, include the existence of state subsidy schemes in their evaluation, or use the company philosophy as one criterion.[8]

Clearly, it will take time for the green markets to mature. Therefore, a final conclusion on the performance of the voluntary markets for green electricity cannot yet be drawn. But it already seems obvious that voluntary demand will not be high enough to set our energy systems on a sustainable path.

The European Union is determined to set a regulatory framework which takes account of the environmental and climate change costs caused by existing energy systems and for which all polluters have to pay. In most EU Member States, special market penetration targets have been formulated for renewable electricity generation. Several countries are about to introduce tradable 'green' certificates, representing the environmental benefits of the energy source used and allowing separate trade of service and commodity –'greenness' and physical power. This separation ensures that renewable generation takes place at the most economically viable sites and guarantees a level playing field to traditional market players and newcomers alike.

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[7] Byrne, Warren (2000): Green Power in California: First Year Review from a Business Perspective. Foresight Energy Company. Full Report is available at http://www.cleanpower.org.

[8] Visit http://www.oekostrom.eawag.ch/ for an overview on all the initiatives and schemes.

Certification of origin also seems to be a precondition for international trade in 'green' electricity, as certification monitors production, facilitates trade and lowers the transaction costs for market actors. The European Commission is acknowledging the importance of this type of certification, i.e. declaration and accreditation; the draft proposals for a directive on 'the promotion of electricity from renewable energy sources in the internal electricity market' first of all require EU Member States to implement certification systems in the next few years. For that purpose, parties involved in the green electricity market in Europe have already formed a platform called Renewable Energy Certificates System (RECS). The RECS group wants to stimulate an internationally harmonised market for renewable energy certificates. Its members include major electricity sector companies, government departments, industry associations and consultants.[9]

A regulatory system of tradable green certificates will definitely create a strong momentum behind European renewables growth –if the basic rules can be harmonised.

There could be a huge market for green electricity in the near future. Business with renewable sources of energy is promising in the medium run, almost certainly in the European Union and its Member States.

[9] Visit the RECS web site at http://www.recs.org for further information.