Competition at an Energy Open Market in the EU and its Consequences on the Renewable Energy Segment

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Abstract. The paper analyses the state of the different power generation segments of the European market , and the grade of protection offered by the different European governments to the 'national champion'.

The full paper will overview the subsidies ever received by the conventional power and compare them to the ones received by the renewables.

We will try to propose different ways of enforcing the consume of renewable energy through a fairer market with real competence conditions and protection of the new technologies.

Key words.

Effective Competition, Renewables, Power Market

1. Introduction

The Liberalization of the European Electricity and Gas Market is the last step of a long term European cooperation since the 50, reflected upon different Treaties such as the ECSC (European Coal and Steel Community, 1951) or the ET (Euratom Treaty, 1957), which aims between other goals, the environmental protection, the security of the supply and competitive energy systems.

The recent past in which electricity generation, distribution and selling were done by national monopolies with exclusive rights is making difficult this step to a real open market with real competition.

The fact that the old monopolies own most of the infrastructure, and profit of most of the subsidies so that they can sell their energy at prices lower than the real cost of its production (for example; atom energy) make the competition almost impossible. These companies promote competition on the renewable energy share, which account for the 4% of the electricity production (14% if including large hydro), and does not mean a harmful lost for the conventional power sector , which does not hold a dominant position in this segment.

Thus, it is very difficult to promote real competition in renewables because they remain closely related to the conventional power market which remains oligopolized in Europe.

The renewable energy market needs a share expansion, which could be achieved through real and fair market competition. The expansion of this market is an environmental need nowadays and to fulfil the Kyoto protocol.

But this effective competition can by no means be separated form the conventional power market whereabouts.

2. State of the European Power Markets

From the beginning of the co-operation between the European countries, Energy and the promotion of its sources has been one of its main worries. As we said before two out of the three founding treaties were related to it.

The European Union has tried to establish competition at two levels:

- Generation Market for conventional fuels
- Market for renewable energy

Still, both markets remain closely related, and their development will be paralell.

At national levels the markets are highly concentrated and the new incomers find important barriers to enter the market. The interconnection level between member states is also inadequate.

Euratom

The nuclear technology has its own treaty which protects it from international market rules. The loans given to nuclear plants does not have to be voted in the European Parliament. The Treaty is not time limited and its aim is to empower a nuclear industry. To achieve this financial support for certain activities is needed, for example:

- *Research and Development:* the funds given to nuclear research through the Framework programmes goes mainly to nuclear, fission and fusion and reamains constant whereas funds for conventional energy research are bieng reduced.

- *Special Loans:* 92 loans in seven different European countries have been given to nuclear power since 1977 all of which sum 3.2billion €. This loans doesnt have to be approved by the european parliament and are actually the only way of promoting nuclear industry which building costs and times make it unnatractive to private investement.

- *Waste Manage Funds:* almost all nuclear plants are not saving enough funds to pay the costs of managing the readioactive waste in the future. If this would be made it would mean that nuclear energy should be charged a 0.3€c/k.Wh more. The European comuinity agreed on the fact that decomissioning costs should be seen as a part of the production costs, but even though the nuclear plants are getting goubernamental funds for waste management.

- *Nuclear Insurance:* The Euratom treaty says that all Member states using nuclear power have to have insurances to cover nuclear risk. Even though the plants liability in case of nuclear accident is restricted. It it weren´t there would be no insurer who could take on such cost. Thus, the operator pays part of the insurance and the state takes care of the other part, but even together they culdn´t fully confront the full costs of it. In France, Europe´s most well equipped nuclear country, if the operator had to pay the full costs of the insurance, the price of nuclear generated energy would increase the cost in a 300%

On such terms we can hardly talk about competition between this an other energy sources.

Coal Subsidies

Some European Member States give considerable financial support to the coal mining, for example, between 1994 and 2002, €50 billion were given from the governments in France, Spain, U.K., Germany and Portugal. Funds have been given for production as well as to subsidise the closure of mines, on amounts of €70000 in Germany and €60000 in Spain (per worker).

For example in Germany, Government financial support means the 30% of all subsidies concede for industry and also for trade. State Aid is to the moment

For 2010 this subsides will stop and the given money will pass to other energy sources.

Other Subsidies

In the near past 13 billion euro were given in the 1991-02 period for energy research, of which 40% were given for nuclear fussion, 25% for nuclear fission, 28%, 3% for coal and the remaining 4% for oil and gas. As we can clearly see in this distribution, non-emitting energy sources took profit on it, especially nuclear power. The funds given to research and development in the last decade have suffered a big reduction. Because of this, the more mature technologies have especially profit from previous funding, whereas the younger ones, most of them renewables will suffer from this reduction.

During 2005 an study accounting the direct and indirect subsidies given by Member states and Institutions for 2001; out of €29.2 billion 23.9 billion were for fossil fuels and nuclear and the remainding €5.3 billion were for renewables.

TABLE I. RD&D Budgets in IES Countries by Technology[5]

	Budget by Technology 1987-2002 (million US$)	**Shares in energy 1987-2002**
Nuclear Fission	52 663	39,7%
Fossil Fuels	16284	12,3%
Nuclear Fusion	14 615	11%
Other Technologies	18 613	14%
Renwable energy	10 234	7,7%
Solar Heating&Cooling	885	0,7%
Solar Phot-Electric	3 636	2,7%
Solar Thermal Energy	666	0,5%
Wind	1 465	1,1%
Ocean	128	0,1%
Biomass	2 083	1,6%
Geothermal	1 221	0,9%
Large Hydro(>10MW)	93	0,1%
Small Hydro(<10MW)	49	0%
Conservation	14 872	11,2%
Power&storage technology	5500	4,1%
Total All Energy	132 781	100%

3. Development of the market opening

The market opening has contributed to increase the efficiency, although there is still a long way to go, as 18 Member States have not completely implemented the last directives (Directives 2003/54 and 2003/55). The implementation of these directives is necessary because the previous (Directives 96/92,98/30) didn´t achieve an effective competition, and because electricity generation in almost every european country remains in the hands of the three most powerful operators. After five years of competition less than a 50% of the users have switched to a new supplier and most of them are not satisfied with the service they get. In addition the number of penetration of foreign suppliers in the local markets makes less than a 20% of the market share.

Table II. Implementation of the Electricity Directive[3]

Country	Declared Market Opening (%)	Unbundling: Transmission system operator/owner	Unbundling: Distribution system Operator	Regulator	Balancing conditions favorable to entry	Biggest generator capacity (%)	Biggest 3 generators capacity (%)
Austria	100	Legal	Accounts	ex-ante	Favourable	67	33
Belgium	80	Legal	Legal	ex-ante	Unfavourable	59	66
Denmark	100	Legal	Legal	ex-ante	Favourable	0	25
Finland	100	Ownership	Accounts	ex-post	Favourable	11	29
France	37	Management	Accounts	ex-ante	Moderate	78	86
Germany	100	Legal	Accounts	planned	Unfavourable	23	61
Greece	34	Legal\Mgmt	Accounts	ex-ante	Unfavourable	85	87
Ireland	56	Legal\Mgmt	Management	ex-ante	Moderate	80	90
Italy	66	Own\Legal	Legal	ex-ante	Moderate	43	72
Lux	57	Accounts	Accounts	ex-ante	Unfavourable	0	0
Neth	63	Ownership	*Legal*	ex-ante	Favourable	n.k	33
Portugal	45	Ownership	Management	ex-ante	Moderate	59	74
Spain	100	Ownership	Legal	ex-ante	Favourable	37	79
Sweden	100	Ownership	Legal	ex-post	Favourable	16	50
UK	100	Ownership	Legal	ex-ante	Favourable	16	37
Norway	100	Ownership	Accounts	ex-ante	Favourable	12	24
Estonia	10	Accounts	Accounts	ex-ante	Unfavourable	15	21
Latvia	11	Legal	Legal	ex-ante	n.k.	0	0
Lithuania	17	Legal	Legal	ex-ante	Moderate	0	29
Poland	51	Management	Accounts	ex-ante	Moderate	4	25
Czech R	30	Legal		ex-ante	Unfavourable	43	53
Slovakia	41	Legal	Legal	ex-ante	Moderate	29	40
Hungary	30	Accounts	Accounts	n.k	. moderate	5	41
Slovenia	64	Legal	Accounts	ex-ante	unfavourable	16	43
Cyprus	0	Management	None	ex-ante	not decided	100	100
Malta	0	Derogation	None	n.k.	not decided	100	100

Since 1995 the electricity prices have been decreasing but the last two years they have seen a considerable growth partly because the prices of primary and fuel energy sources has increased. This situation doesn´t favor the switching from customers to the new market players, as long as they don´t have any negotiating capability and no real capability of choosing a different kind of service.

One of the main problems is the failure to integrate the national energy system into a whole european market. This new market is wider and opens interesting possibilities to the operators but the integration will only be possible if we improve the crossborder infrastructure that connects the transport networks of the different

countries, or at least that the existing infrastructure would be used at its maximum.

Besides, the unbundling of network operators has been quite succesful and new players had have access, but the same has not happen in distribution and transport were the former operators are not fully independent from the suplly companies. This is necessary to make sure that a fair access to the network is granted to each operator.

Another obstacle are the regulated end user prices for electricity, which are necessary to control the intial phase of the opening, but that could in the long run "stifle competition, constrain investment and confuse and contradict unbundling measures"[1].

TABLE III Summary of main obstacles to competition[3]

		Customer switching: Large Users
a. No major issues	SE, FI, DK, NO, UK,	>50%
b.Unbundling \ Regulation	LU, AT, DE	range 10% (LU) -35% (DE)
c. Market Structure or Lack of Integration	FR, BE, GR, IE, ES, NL, LT, IT, SI, CZ, SK, LV	range 0%(GR) - 35%(NL)
d. Long term PPAs\ Regulated end-user prices	PT, EE, PL, HU	range 0% (EE) - 25% (HU)

It seems that only countries that have an adecuate number of players which creates a good market structure have achieve a competitive market. Other markets where long term power purchase agreements are characteristical have difficulties promoting competition because these long term agreements make impossible an effective operator switching.

To increase the competition the interconnection between member states have to grow significantly and in this direction the Regulation 1228/03 will bring some improvement. Some countries as Spain and Portugal in the Iberian Peninsula and Ireland being more isolated have developed project to ensure their electrical supplies co-operating with neighbour states.

Another point to achieve is the convergence of prices in the whole european market. Excluding Italy in 2004 the price was around €30/MWh in bilateral markets and standardised power exchanges.

Nevertheless the pricing for end users include transport and delivery costs are significantly different and vary from€40/MWh in Latvia to €80/MWh in Italy for large customers and from €60/MWh to over €120/MWh. for households and small ones

4. External Costs

The energy generation has an additional cost that the end customer don´t normally pay but which affects the society and the environment. These hidden costs of production are the so called external costs.

The external cost are paid by third parties or will be paid by future generations. The European Comission sees the need to include these costs in the energy pricing in order to change the energy policy and profit the renewable energies.

For examples if external costs would be taken on account the cost of producing energy out of oil and coal would double and doing it out of gas would increase on a 30%

To study the externalities derived from the energy generation The EU and the USA created a project called EXTERNE.

EXTERNE is a EU funded reseach study that was launched in 1991 and it has proved that the costs of the electricity produced by coal, oil and gas would grow extremely if the damage that it causes to health and environment should be taken in account. In fact, it would cost up to the 1-2% of the European Union´s Gross Domestic Product, and that not having in account the global warming

The project takes the external costs in account through two different ways. The first is to charge it´s costs to the end customer and the second to add its costs and invert them in funding for renewables.

Following the report from the EXTERNE project we learn that nuclear power involves relatively low external costs due to its low influence on global warming and its low probability of accidents in the EU power plants. This has been critisized as the report doesn´t take in account serious aspects of nuclear policies, such as decomissioning and waste management costs, insurance and the limited life time of the plants. It has also been criticised because it doesn´t take in account the full impact of climate change. Wind and hydro energy have the lowest external costs.

To calculate the external cost a methodology called the impact pathway methodology has been used. This methodology measures emissions the dispersion of pollutants in the environment and the increase in ambient concentrations. Impact on other subjects is also taken in account, for example; crop yield and health. The methodology makes an approachment of the final cost taking all these factors in account.

We can say that the environmental costs of energy are higher than the support given to the renewable energy. The renewable energy installed in Europe from 2000 to

2010 would save us more than 320 billion euros. Most of the external costs, unluckily, can not be paid back.

4. Conclusion

Under the given circumstances, although the liberalisation of the power market in Europe, this remains in the hand of a few companies which instead of decreasing its market share have increased it the last years due to a series of mergers of minor companies.

Thus, there is almost no de facto competition in the national power markets, so that the customers can not really choose what kind of energy they want to consume, which results on a handicap for the renewable energy market and a considerable environmental damage.
The last directives 2003/54 and 2003/55 have taken effective measures to promote competition but eighteen Member States have not implemented them yet.

The succesfull unbundling in the conventional energies would lead to a major competence and under this influence the renewable energy market would revitalize, and fill an important gap in the european energy market, thus achieving two of the objectives of the energy comission; to become energetically independent of third countries out of the Union and to have an environmentally acceptable and sustainable energy supply. The market competition would guarantee a quality supply at good prices for the consumer thus fulfilling the objectives set.

This is unthinkable without an active funding policy of renewables specially in the field of research and development, in order to promote new technologies that will be able to equal the effectivity of the renewables and the conventional sources. If as much State Aid had been given to renewables as it has been to nuclear technology, we would have a completely different energy landscape at the moment, more satisfactory for the needs of the Union in the long run.

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