
Analyze of Green Market Certificate, Case Study Romania

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According with the assessment of numerous international bodies energy needs of industrialized countries will increase by approximately 60% by 2030, the same estimates show that oil demand will be more than 115 million barrels in 2020. On the other hand oil and gas reserves are unevenly distributed around the globe, and the largest reserves are situated in politically or economically insecure regions, therefore due to increasing consumption of energy is necessary orientation to use non-conventional forms of energy, beside to ensure a share of renewable in the energy consumption by at least 20% by 2020, European Union setting national targets for each Member State. Despite of advantages offer by green energy for environment, the cost of operating are still high, leading to the increasing of electricity price to the final consumptions. Therefore in order to stimulate the green energy the governments support the production of green energy thought a range of incentives, the paper aim is to analyze the market of green certificate as well as the actual context that offer real premises for development of this.

Keywords: energy, certificate, market, renewable resources

Fulfilling the immediate and medium-term energy demand, at a cost as low, represent the overall strategic objective of the energy sector. Due to increasing consumption of energy is necessary orientation to use non-conventional forms of energy. It is estimated that demand for energy

worldwide to grow by around 60% by 2030.¹ World consumption of oil has already increased by 20% in 1994, while worldwide demand for oil is expected to grow by 1.6% per year, while the known oil reserves can sustain the current level of consumption only until 2040, and the natural gas until 2070. Another major problem is increasing of oil and gas prices; they have nearly doubled in the EU over the past two years, with electricity prices following.

Intensification of energy use from renewable sources constitutes an important component of the package of measures needed to reduce emissions of greenhouse gases and to comply with the Kyoto Protocol as well as other commitments made at European level in order to reduce the greenhouse emissions in the perspective of 2012. At present only a small proportion of the world's energy needs come from alternative and renewable energy sources.

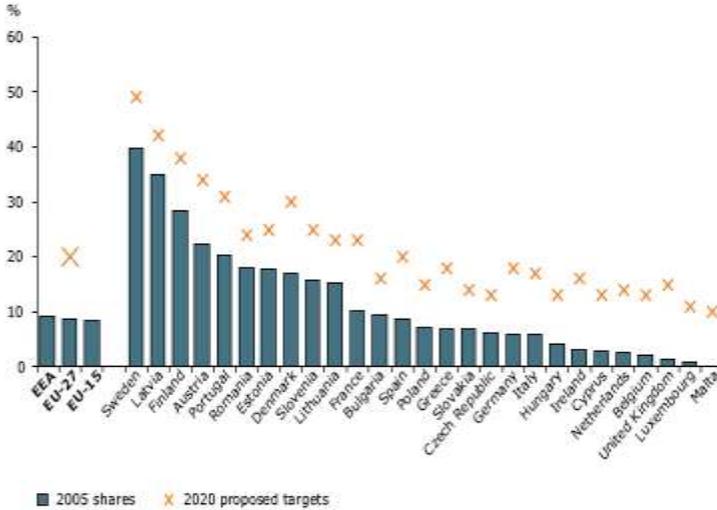
Table 1: The Renewable Energy Resource Base (exajoules per year)

| Type of resources | Current use | Theoretical potential |
|--------------------------|---------------|-----------------------|
| Hydropower | 9 | 147 |
| Biomass energy | 50 | 2,900 |
| Wind energy | 0.12 | 6,000 |
| Solar energy | 0.1 | 3,900,000 |
| Geothermal energy | 0.6 | -- |
| Ocean energy | not estimated | 7,400 |
| Total | 60 | >4,000,000 |

About 13 percent of primary energy comes from renewable, with most of this coming from traditional biomass like wood-burning. Hydropower is the next largest source, providing 2-3%, and modern

¹ Green Paper, A European Strategy for Sustainable, Competitive and Secure Energy, Brussels, COM(2006)

technologies like geothermal, wind, solar, and marine energy together produce less than 1% of total world energy demand.²



Source: EEA

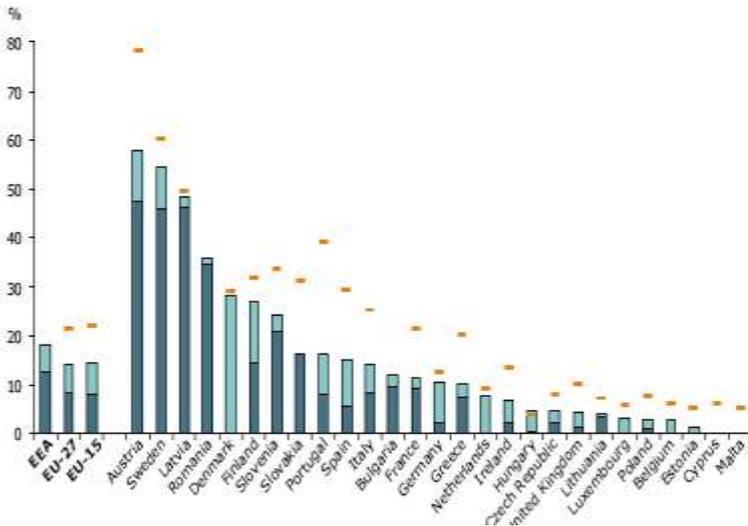
Figure 1: Renewable as a % of final energy consumption by Member State

The percentage of renewable in the final energy consumption varied between countries: from almost 40 % in the case of Sweden — to almost zero at the bottom end of the scale. However, this overview masks the notable progress made across the Member States from 1991 onwards. For instance, over this period, Latvia, Lithuania, Romania and Estonia — all of them increased their absolute share by over 10 %. Ten Member States doubled their share in the final energy consumption, with Bulgaria, Czech Republic, Slovakia, Cyprus and Lithuania increasing their share by over a factor of four, albeit starting from a relatively low base. However, from 1991 to 2005, the shares in a small number of Member States actually declined — due, primarily, to a combination of the rapidly rising final energy consumption and fluctuations in the production of hydropower due to lower rainfall.³

² Guvernul Romaniei "Foaia de parcurs a Romaniei in domeniul energiei"

³ EEA Report no 6/2008 Energy and environment report 2008

Large hydropower (> 10 MW) continues to dominate renewable electricity production in most Member States, accounting, in 2005, for approximately two thirds across the EU-27. This compares to 17 % from biomass and waste, 15 % from wind and the rest from geothermal (1.2 %), and solar (0.3 %). There are significant differences in the share of renewable between the EU-27 Member States. Amongst the EU-27 in 2005, Austria, Sweden and Latvia had the greatest shares of renewable electricity in their gross electricity consumption, including large hydropower. Denmark shows the largest share of renewable electricity when large hydropower is excluded.



Source: EEA

Figure 2: Renewable electricity as % of gross electricity consumption

Sustainable development requires that among with exhaustible resources consumption is necessary to have an increasing amount of renewable resources. In this context, the development of renewable energy sources as a significant energy resource is one of the main objectives of energy policy, renewable sources would be the only way to supply electricity

to more than 800 million people in developing countries, but all potential beneficiaries of renewable amounted is about of 2 billion inhabitants of the planet.

Mainly as a local resource, developing of renewable energy sources contribute to the creation of new business, decreasing unemployment and encouraging economic and social cohesion in poor areas. Besides the advantages of renewable energy, according to specialists in the field, maintenance costs make energy more expensive, eg without operating at a nominal wind speed is reducing significantly the power installed. Wind plants produce only 20 % of power that could produce an annual report on installed capacity, while 6 percent of energy is produced at over 75% of installed power.⁴ Also, there are costs that the investor does not take into account when implementing such a project, for example, need to provide a reserve capacity.

Thus, in order to support green energy each Member State has established a subsidy system composed of preferential prices, competitive offers or obligations associated with a range of subsidies and mechanisms.

Table 2: Subsidy for renewable energy well established in the EU

| Country | Fixed | Subsidezi | Certificat | Competiti | Fiscal |
|------------------|--------------|------------------|-------------------|------------------|---------------|
| Austria | x | x | H | | x |
| Belgium | x | x | x | | x |
| Danmark | H | x | | | x |
| Finland | x | | | | x |
| France | x | x | | x | x |
| Germany | x | x | | | x |
| Greece | x | x | | | x |
| Ireland | x | | | x | x |
| Italy | x | H | x | | x |
| Luxembou | x | x | | | |
| Netherlan | x | x | x | | x |

⁴ INI (2007/2090) Foaie de parcurs pentru energia regenerabila in Europa, Rezolutia Parlamentului European din 25 septembrie 2007 privind foaia de parcurs pentru energia regenerabila in Europa

| | | | | | |
|----------------------|---|---|---|---|---|
| Portugal | x | x | | | x |
| Spain | x | x | | | x |
| Sweden | x | | x | | x |
| United Kindom | x | | x | H | x |

Note: X – actual mebhansims, H – tratditiional strategy, changed

Source: EEA, report

One method of subsidy to green energy is green certificates, which represents documents received by producers from the operator of energy transport when the supplied the network. In turn, electricity suppliers are obliged to acquire the state green certificates depending on the amount of energy that it sold, to encourage production of energy "clean".

Green certificates benefit producers of renewable electricity and are issued according to the amount of renewable electricity produced or sold into the grid. Demand for green certificates can come from several sources. There may be voluntary demand from consumers who wish to purchase 'green electricity'.⁵ The government can also stimulate demand by stipulating that suppliers should provide their consumers with an increasing proportion of their power from renewable sources. The value of the certificates can assume a separate market value through trading between electricity suppliers. Trading in green certificates is being developed in a number of Member States and at a European-wide level.

According to legal regulations the producers of electricity from renewable resources get one green certificate for each 1 MWh delivered in electrical network, the producers of electricity in hydroelectric plants with an installed power below 10 MW receive a green certificate for each MWh delivered 2 network and producers of electricity resulting from the use of solar energy received three green certificates for 1 MWh delivered to the network you will be able to export in 2010, to be traded in the European market. Also, in 2010, energy suppliers will be able to achieve rates and

⁵ EEA Briefing, No 2/2004 Agenția Europeană de Mediu Subvenționări ale energiei electrice și energia regenerabilă

compulsory licenses by purchasing green on both domestic as well as imports from the European market for green certificates.

The promotion system of energy produced from renewable sources is applied for a period of 12 years for electricity produced in new central power and for 6 years for the wind energy produced in imported second-hand central, in hydro power modernized after 1 January 2004, in the central put in function before 1 January 2004 and olds groups.

The Green Certificates Value is determined by means of the market mechanisms:

- Bilateral contracts negotiated between producers and suppliers
- On a Centralized Market organized and administrated by OPCOM

The price of Green Certificates varies in a range established by Government Decision, [P min ÷ P max]. The minimum price is imposed in order to protect the producers and the maximum price to protect the consumers.

For the period 2008-2014 the trading value of Green Certificates ranges between a minimum value of 27 euro/certificate and a maximum value of 55 euro/certificate. The value in Romanian Currency (Lei) will be calculated at the exchange rate determined by Romanian National Bank as the average exchange rate for the month of December of the previous year.

Energy suppliers are obliged to purchase an annual number of green certificates equal to the value of fixed rate and required quantity of electricity supplied annually to customers. The value of mandatory annual is 2.47% in 2007, 5.26% in 2008, 6.28% in 2009, 8.3% during 2010-2012. For the period 2008-2014, the trading of green certificates market in ranked within 27 euro and 55 euro/certificate.

Table 3: The value of annually mandatory quota

| An | The value of annually |
|-----------|-----------------------|
| 2007 | 2,47% |
| 2008 | 5,26% |
| 2009 | 6,28% |
| 2010-2012 | 8,3% |
| 2013 | 9% |
| 2014 | 10% |
| 2015 | 10,8% |

| | |
|-------------|-------|
| 2016 | 12% |
| 2017 | 13,2% |
| 2018 | 14,4% |
| 2019 | 15,6% |
| 2020 | 16,8% |

Suppliers which don't realize the annual quota imposed pay the value of non bought green certificate to an amount double the maximum amount of trading certificates.

Price of green certificates varies in a interval determined by the Government. Minimum price required to protect the producers and the maximum price for the consumer for the period 2008-2012, the price of green certificates trading is limited between a minimum of 27 Euro / certificate and a maximum of 47 Euro / certificate, calculated in lei at the average rate exchange established by the National Bank of Romania for October from the previous year.

In Romania, the proportion of renewable recourses in total consumption of primary resources, will have a level of about 11%, and in 2015 of 11.2%. At present electricity from renewable sources occurs only in micro hydro power, this production represents less than 0.5% of the total.

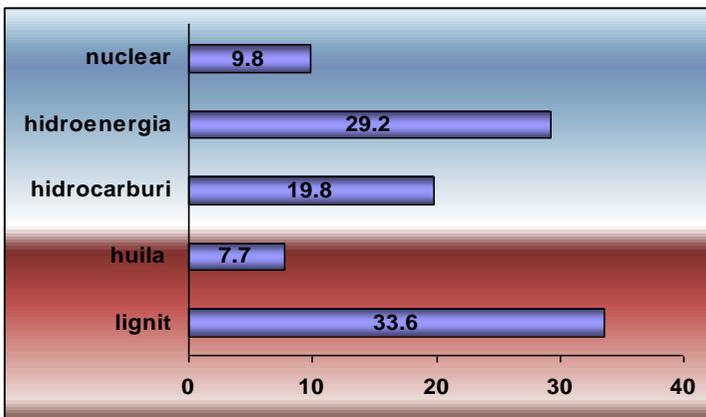


Figure 4: Energy production on resources

In order to promote renewable energy the European Commission has proposed to Member States to ensure a share of renewable in the energy consumption of European Union by at least 20% by 2020 global setting national targets for each Member State. ⁶

Three sectors are covered by renewable energy: electricity, heating and cooling and transport. The method applied globally gave to Member States individual option regarding the contribution of these sectors to achieve their national goal. However, it is proposed that each Member State to reach a weight of at least 10% renewable energy in the transport sector until 2020. The proposal is based on the following grounds: ⁷

- the transport sector register the fastest growing emissions of greenhouse gases from all sectors of the economy;
- bio fuels stopped the oil dependency of the transport sector, which represents one of the most serious problems of insecurity of energy supply in EU;
- the production of bio fuels is currently more expensive than producing other forms of renewable energy, which could mean they cannot be developed without a specific request.

Final consumption of energy from renewable sources in each member state shall be calculated as the following:

- final consumption of electricity from renewable energy sources;
- final energy consumption from renewable sources for heating and cooling;
- the renewable energy consumed in transports.

Taking in consideration the European Union target of 20% of the total electricity consumed as electricity produced from renewable resources, Romania needs to intensify its actions to exploit renewable resources.

⁶ Green Paper, A European Strategy for Sustainable, Competitive and Secure Energy, Brussels, COM(2006)

⁷ Guvernul Romaniei " Strategia pentru resurse regenerabile"