The Eastern Promise

Progress Report on the EU Renewable Electricity Directive in Accession Countries

January 2004

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Foreword

In 2001, as its first legal measure to reduce greenhouse gases under the Kyoto Protocol, the European Union adopted the Directive for the Promotion of Electricity from Renewable Energy Sources (RES), also known as the Renewables Directive. This European law aims to boost green power in the Union by setting minimum national targets for 2010 and mandating governments to address the financial and bureaucratic obstacles hindering renewable energy development.

WWF and its partner NGOs strongly support the implementation of the Renewables Directive because –aside from the environmentally benign nature of renewable energy– an increase in the use of renewable energy in Europe can bring real economic and social advantages to society in terms of job creation, rural development, technology innovation, and energy security.

The extension of the Renewables Directives to the Accession Countries is a challenge, yet with great opportunities. The countries that are set to join the European Union have a huge potential for biomass energy –a less known yet key green energy source. Accession to the EU will also be accompanied by accelerating pressure on the agriculture sector, which is still employing around 20% of the entire workforce in the Region, more than three times the level in the current Member States.

If developed properly, biomass-based energy can offer a new opportunity for sustainable developed in the region. It can provide a new income stream for farmers while ensuring a sustainable agriculture development path. Trade within the Enlarged Union could also mean the region becoming a net exporter of electricity produced from renewable sources.

This report is aimed at providing a first qualitative and concise assessment of the progress that has been made to date in developing favourable policy and regulatory frameworks for renewable energy across eight future Member States. In the region, there is a significant investment potential for new renewable energy capacity – estimated at between € 18-40 billion over the next 16 years. But to attract this investment flow, financial incentives for renewable power should be urgently refined in order to provide the predictability of return on investments that project developers need.

The next six months will be crucial to begin ensuring that the right incentives are adopted, while all barriers are removed. The formal accession of new Members is set for the 1st of May 2004 by which time the provisions of the Renewables Directive should be enacted into national law. A month later, Germany will host the Bonn International Renewable Energy Conference. These two occasions offer an historic opportunity for the enlarged Europe to show its global leadership on renewable energies.

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Summary

The Renewable Electricity Directive is a vital policy tool to assist the EU in the development of a sustainable energy sector[1]. In 2003 WWF published a progress report[2] on how far current Member States had developed policies and programmes to enable them to meet the national indicative targets of the Renewables Directive, namely that by 2010 renewable generators should provide 22% of electricity in the existing states of the EU.

On the eve of the enlargement of the EU to 25 Members, WWF, in co-operation with NGOs and independent institutes, have surveyed the progress made by continental accession countries in meeting the requirements of the Renewables Directive. Also in mid 2004 all Member States in an enlarged EU will have to have transposed the revised Directive on the electricity market[3]. This Directive has a number of requirements that will assist in the development of sustainable energy systems.

Currently the deployment of renewable energy in accession countries is not as advanced as those in current Member States and consequently the Directive has lower targets for new members: by 2010 an average of 11.1% of electricity demand must come from renewable electricity. However, given the current low level of deployment even this target will require a greater increase in the use of electricity from renewable sources than for existing Member States. Consequently, every effort must be made to facilitate this rapid increase if the individual targets are to be met:

- *Effective support schemes.* To enable the further deployment of renewables most continental Accession Countries have already or in the process of deploying feed-in tariffs. Experience in current Member States has shown that assuming an appropriate tariff is given, the feed-in tariffs can significantly enhance the use of renewables, as has been seen in Germany and Spain. Feed-in tariffs have been successful in developing the wider use of renewables as they can give additional financial security, however, for this to occur clear guidelines and relatively long – between 10-15 years – guarantees for prices need to be available.

- *Streamlined and fair rules.* It is clear that further policy reform is needed in accession countries to ensure that fair and transparent procedures are put in place to enable renewable generators to access the grid and ideally that priority is given for renewably generated electricity. In addition administrative procedures must be streamlined to enable new capacity to be introduced in a timely manner.

- *Power disclosure.* No accession country has yet introduced legislation requiring final consumers to be supplied with information on the generation mix of the suppliers and their resultant pollutants, at least the CO_2 and nuclear waste produced. Immediate efforts must be made by legislators and industrialists to meet the disclosure requirements of the revised electricity market Directive.

[1] Directive 2001/77/EC of the European Parliament and of the Council of 27 September 2001 on the Promotion of electricity produced from renewable energy sources in the internal electricity market. Official Journal of the European Communities, 27th October 2001, L283/33.
[2] WWF EPO, 2003, Progress Report on the Implementation of the European Renewables Directive, Brussels.
[3] Directive 2003/54/EC of the European Parliament and of the Council of 26 June 2003 concerning common rules for the internal market in electricity and repealing Directive 96/92/EC.

1. Introduction

The material for this report was collected and analysed by NGOs experts in each country reviewed. The material sourced is both from Government energy policy plans and independent reviews for the actual and potential deployment of renewable energy sources. This data was then compared and contrasted to produce a regional analysis of the mechanisms deployed to enable new Member of the EU to meet the requirements for the Renewables Directive.

2. Benefits of Renewable Energy

Energy demand in accession countries is expected to increase over the next twenty years, as economic development and income levels grow. Meeting energy and in particular electricity demand in a economically and environmentally sustainable manner will be a challenge for many accession countries because of the current over-capacity in electricity production, high dependence on fossil fuels imports and inefficient end use of energy.

In this context, renewable energy sources (RES) can play a crucial role in future energy supply by providing the following benefits:

- *Create employment and support rural development*. The renewable energy industry is one of the EU's fastest growing sectors. Renewable energy technologies in general are more labour intensive than conventional energy technologies, in delivering the same amount of energy output. For instance, in Germany the renewable energy sector already employs 130,000 people. An EU-funded study has forecasted that such figure could reach over 900,000 new jobs by 2020 in the EU 15, with the vast majority of employment created in bioenergy technologies, together with biomass fuel provision[4]. Given the large biomass potential found in Central and Eastern Europe, accession countries could benefits significantly from renewable energy markets. For instance, in Poland it is forecast that the Renewable Energy Strategy will create an additional 30 – 40,000 jobs while in the Czech Republic around 60,000 additional jobs will come from green energy.

- *Attract investment to modernise obsolete production facilities*. There is a significant investment potential for new renewable capacity in the eight countries studied, as shown in the Table 1. If the technical potential for renewable energy were met it would require investment of between € 18-40 billion ($23-50 billion) by 2020. However, a predictable legislative framework is needed to realise this investment potential.

- *Reducing import dependence and increasing energy security*. Accession countries, as with current Member States are increasing their dependency on imported energy, in particular natural gas from Russia. An accelerated program to introduce renewables electricity generators can counter this trend. Renewable electricity generators are not dependent on imported fuel and thus aid energy security.

- *Improving the quality of the local environment and fight climate change*. Unlike fossil fuel power plants renewable electricity generators produce no local or global atmospheric pollutants and therefore assist in reducing CO_2 emissions and meeting Kyoto targets. It has been calculated that the full implementation of the Renewables Directive by the current 15 Member States would result in a 6% cut of total EU CO_2 emissions in 2010.

Table 1: Investment Potential in Continental Accession Countries by 2020

Renewables Energy Sources	Technical Potential 2020 (MW)	Capital Cost ($/kW)	Investment Potential (million $)
Wind	8600	1000-1400	8,600-12,400
Geothermal	10	2500-3500	25-35
Biomass	7261	1400-2500	10,165-18,153
Hydro	3424	1250-6000	4,280-20,544
Total			**23,070-51,132**

Source: EBRD, Black and Veatch[5]

[4] ECOTEC (1998) The Impact of Renewables on Employment and Economic Growth, Report for the Altener Programme, Brussels.

[5] Strategic Assessment of the Potential for Renewable Energies in EBRD Countries of Operation, Black and Veatch, April 2003, tables 1-4 and 4-12 http://projects.bv.com/ebrd/pub.htm

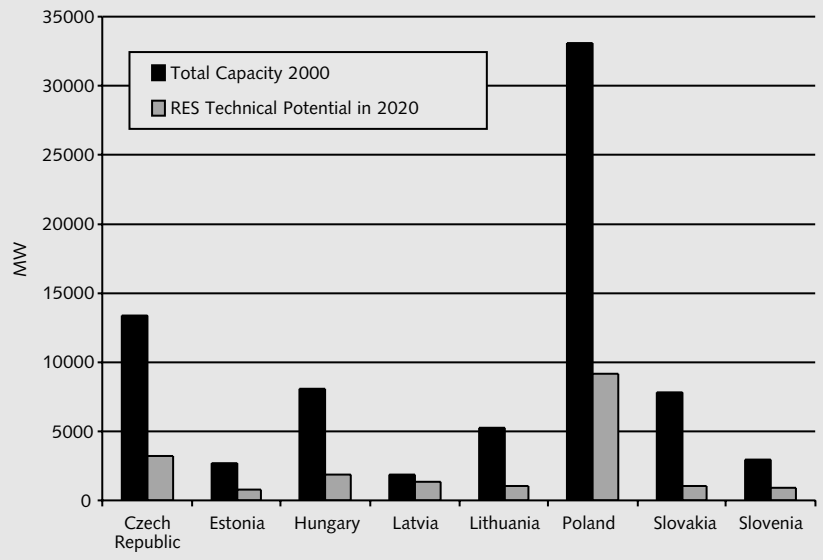
3. Potentials in the Region

There is considerable renewable energy potential in Central and Eastern Europe. The region is reach in agriculture land and covered with forests: the potential for biomass is well documented and quite large. Significant wind resources can be found along the Baltic and Black seas, and the mountainous areas in Central Europe. And there is also a good potential for refurbishing existing small hydro plants and building new ones.

A study commissioned by the European Bank for Reconstruction and Development (EBRD) concluded that if the technical potential of the eight continental accession countries was reached by 2020 the installed capacity could increase by 50% over current levels. This would enable renewables to play a significant role in electricity generation as can be seen in Figure 1 –which compares the total installed power capacity (i.e. conventional and renewables) in 2000 with the potential for renewable power in 2020.

The study forecast that the longer term potential is immense and in the region as a whole – including Russia and other Eastern European countries. For wind power alone, according to the EBRD study, a total capacity across accession and eastern European countries of 3500 GW could be achieved, compared to current installed capacity for all electricity sources of 440 GW.

Figure 1. Total Installed Power Capacity vs RES Technical Potential in 2020 (MW)



Source: EBRD, European Commission[6]

[6] Ibid, European Commission, European Energy and Transport Trends to 2030, January 2003, appendix 2.

4. Summary of Country Profile Reports

Table 2 provides a qualitative assessment of the current progress made by the eight studied Accession Countries in implementing the provisions of the Renewable Electricity Directive. It shows that considerable progress is still to be made throughout the region to develop a secure and favourable policy and regulatory environment for renewable energy investments. Below the key features in each country are summarised.

Czech Republic

The average renewable power share in the Czech Republic is around 3.5%, with more than 98% of this share coming from large and small hydropower plants. The annual yield greatly depends on precipitation levels for a given year and fluctuates around 2 GWh. Installed capacity of wind generators is no more than 10 MW, against an economic potential estimated at 2,2000 MW (IEA 2003). The share of other renewable technologies is negligible. As expressed in the EU Accession Treaty, the Czech Republic has a national target of 8% renewable electricity by 2010. The potential is seen mainly in biomass, wind and increased capacity of small hydroelectric plants. According to the Environment Ministry, renewables production could increase to 15.4% in 2020 and 19.5% in 2030. This would create additional 59,000 jobs by 2030. Thus renewables would employ more than 71% of the workforce in the whole energy sector.

In January 2002 a system of feed-in tariffs was introduced. Though the tariffs

are considered relatively high, only few new renewables installations have been developed because of their short-term guaranty and administrative barriers for independent power producers. A proposal for a new mechanism, which can be described as a mix of quota system and feed-in tariffs, is currently before the Parliament and is expected to be adopted in late spring 2004. According to the new proposal, utilities will have to fulfil a certain quota of renewable electricity each year. The quota is established by monetary value, rather than energy units. The minimum prices of tradable green certificates should be differentiated by technology, guaranteed for 15 years and set in a way that the pay-back time is less than 15 years. Sources up to 0.2 MW of installed capacity and all solar electricity would not be included under the new scheme but instead be eligible for feed-in tariffs.

Given its present formulation, the act will not boost the use of renewables. The act needs to provide producers with clear long-term guaranty of production revenues on a level that ensures reasonable pay-back time and profit. Compulsory annual targets, clear and favourable conditions for green certificates prices and monetary quotas setting and sound penalties are all key to success. Finally, administrative procedures have to be streamlined, while keeping safeguards for nature conservation.

Estonia

The main Estonian energy resources include oil shale, peat and wood fuels. The oil shale resource in already opened mines is sufficient to cover the present consumption level at least for the next 30 years. The target for renewable electricity, as negotiated in the Accession Treaty, is 5.1% of renewable electricity by 2010, against a share of 0.2% in 1999. The technical wind power potential is very high, followed by biomass energy. The feed-in tariff applied to the prices of the major producer, Narva Power was 0.76 EEK/kWh, i.e. 0.0486 EUR in 2003 (the same tariff is applied to all capacities and types of installation). The renewable tariffs should amount to at least 1 EEK/kWh in order to be sufficient to guarantee investors' security. On paper, the Electricity Market Act grants independent power producers free access to the network. In practice, however, grid access for independent power is rather limited in certain areas due to the shortage of grid capacity.

The main barrier to renewable energy is the lack of financial incentives for developers. Today's support schemes for renewables do not ensure that investors get their investments paid back in less than ten years, which makes financing of renewables projects difficult. For wind power developers, another obstacle is the fact that the grid does not extend to the most suitable areas for wind-projects – the western coast and islands. In addition these areas are mostly valuable sites for nature protection and/or recreation, thus creating conflicts between different interests. Concerning biomass combined heat and power (CHP), there are not enough district-heating customers in small cities to make it economically feasible.

Hungary

In 2003, the share of renewables in the total primary energy supply was 3,6%. According to the government's Strategy for Energy Conservation and Improving Energy Efficiency, the share of renewables should be doubled to at least 5% by 2010. However, against a 0,5% share of renewable power in 2003, the Accession Treaty sets a low target of 3,6% by 2010. This is the equivalent of approx. 1400 GWh – which is expected to be supplied by 186 GWh of hydropower, 700 GWh of biomass, 400 GWh of waste incineration, 50 GWh of sewage treatment, and a about 50 GWh produced wind energy. Although there is not national assessment of Hungary's wind energy potential, the largest wind power Austrian park is being built just across the border.

The new Electricity Act came into force on 1 January 2003, implementing a feed-in tariff system and a preferential grid access for renewable energy producers. However, the current system may end-up promoting too few renewables projects. In 2003, the feed-in tariff was on average 17.41 HUF/kWh (6.6 € cents/kWh). This single price support scheme is favourable only for wind power, while it proves not to be enough to support other renewable technologies. According to the Electricity Act, renewable energy systems are only allowed to connect to the grid using preferential rights if their capacity is greater than 0.1 MW capacity. This prevents many small power plants from gaining access to the grid. Furthermore, projects are hindered by complicated and lengthy administrative procedures – which unnecessarily slow down the process of development.

Latvia

The total installed generating capacity of electrical power plants in Latvia at the end of 2002 was 2,057.5 MW. In 2003, the share of renewable energy (mainly hydro) in the total energy production in the country was about 75%. This however is valid for only about 4 months per year, when conditions are all good for utilization of hydropower. For the rest of the year, Latvia imports electricity from Lithuania and Estonia in order to balance the electricity demand. Latvia has a renewable power target of 49.3% by 2010, compared to 42.4% in 1999. The future increase in green power will result mainly from more use of biomass in CHP plants (325 MWe to 2020). Every year, the Cabinet of Ministers defines the maximum volumes for renewable energy generation. For example, in the year 2002 the total volume for the installation of capacities was limited by the government to 30 MW, including 10 MW of small hydro-power (≤ 2 MW); 10 megawatts of energy from biomass, forestry or peat; and 10 MW of waste to energy and biogas. By the year 2005, the government ruled that the increase of the average electricity sales tariff, due to the introduction of new renewable energy sources, should not exceed 5%, corresponding to approximately 6% of renewable electricity (large hydro power plants excluded). In January 2003, the revision of the renewable energy regulations lowered the feed-in tariffs and made them subject to approval by the Regulator.

The development of renewable energy project is limited by a number of administrative barriers. To start a project the investor must have a permit within a yearly quota of renewable electricity, which is issued by the Ministry of Economy. In recent years, the quotas defined have been very small (e.g. 30 MW in 2020) and even these were not used to their complete potential because of the prohibitive conditions for grid connections and de facto exclusion of large projects. The administrative procedures for the use of land, environmental requirements, and connection to the grid are complex. Finally, the constant changes in the legislation, e.g. quotas being restricted and feed-in tariffs lowered, do not guarantee a stable environment for investors.

Lithuania

Total installed power capacity exceeds the present domestic consumption by almost three times, which is the reason why Lithuania exports power to other countries. In 2001, the largest power plant in Lithuania generated 11.36 TWh, equal to 77% of the total electricity generation (around 15 TWh). The Lithuanian electricity market is expected to go through great changes in the coming years. According to the Lithuanian National Energy Strategy, it has been decided to close down Unit 1 of Ignalina nuclear power plant by the end of 2004 and Unit 2 by 2009.

According to the Accession Treaty, Lithuania has a renewable power target of 7% by 2010. It is expected that targets shall be reached by harnessing the national wind, biomass and hydropower resources. For instance, current wind capacity is about 23 MW, but the potential capacity is estimated to be 550 MW. Small hydro offers a significant potential as well, especially in the area of reconstructing and renovating existing plants and adding small hydropower plants to water management projects. The utilisation of renewable energy sources has been identified as a priority in many policy documents. Electricity produced in RES installations is granted grid priority and relatively high Feed-in Tariffs. Generally renewables installations producing electricity in Lithuania are given preferential prices. The feed-in tariffs are guaranteed for 10 years of plant's operation. The suppliers are obliged to buy electricity produced from renewable and waste energy sources by generators connected to the transmission network and to sell it to their customers. The definition of renewable energy sources –which includes municipal solid waste and peat – is not in compliance with the EU Renewables Directive and should be amended.

Poland

Coal-fired power and combined heat and power (CHP) plants dominate electricity generation in Poland, as shown by the fact that in 2001 the share of coal in electricity generation was 96.26 %. The share of renewable electricity in 2002 was 2.61%, with large hydro (<10MW capacity) making the biggest contribution, equal to 53.5%, followed by small hydro with 24%, biomass with 17%, biogas with for 5%, and wind with a small 0.5%. If one excludes big hydro from the share, small hydro would account for 51.5%, biomass for 36.5%, wind power for 1%, and biogas for 11%. In 2001, green power production accounted for 2.6 TWh. According to the European Safire energy model for electricity production in 2010, biomass will make the greatest contribution, with wood and straw accounting for 46% and 9% respectively, followed by wind (29%), large hydro (8%), small hydro (4%) and biogas (4%).

Poland has adopted the national renewable energy strategy and is harmonising its environmental and energy policy with those of the EU. Although targets set for the development of renewable energy sources are ambitious, Poland is not on the way to meet them, as neither the existing obligation mechanism nor the current proposal for a Renewable Energy Act seems effective in promoting new projects. There is a need to strength the existing Quota Obligation System by defining penalties and by introducing a Green Certificates System, and to create a dedicated renewable energy fund. The regulations concerning connection to the grid should also be urgently reviewed. Finally, to facilitate the siting renewable energy projects, there is a need to develop planning guidance at national and regional level and reserve land for renewable energy projects in local and regional spatial planning documents.

Slovakia

Electricity in Slovakia is mainly produced from nuclear, gas and coal power plants. The share of renewable energy sources was 16 % in 2001 – almost all from large hydropower plants. The installed capacity of other renewable sources is negligible (biomass) or zero for wind and solar. The Slovak Energy Policy produced by the Ministry of Economy does not send any message in terms of specific renewable electricity targets. In general it says that under good financial conditions it could be possible to double the share of renewables (total heat + electricity) by 2010. Nevertheless clear targets and timetables are missing. Biomass is considered as the most promising source of energy for heating. Regarding electricity, the Energy Policy defines the technical potential of power production from renewables. The Accession Treaty mandates a renewable power target of 31% y 2010, up from 17.9% in 1999.

Since April 2003, a new support scheme has been introduced whereby construction or reconstruction of renewable energy projects is eligible for support up to € 100.000. The amount of support depends on the site where the renewable energy facility is placed and can cover up to 100 % of bank interest rates, up to 75 % of investment costs or up to 25 % not-investment costs of the facility. Projects in regions with the lower GDP per capita receive higher support. This programme could be quite attractive for renewable energy operators but it is not clear yet what is the total budget allocated and if all eligible applicants will receive the support. On the other hand, the feed-in tariffs set by the distributing companies are extremely low – recently at the level of 3 EUR cents/kWh for all kinds of renewables. As a result, most of the potential projects will have long payback periods what is usually not acceptable for the domestic banks to finance such a project.

Slovenia

In 2001 the share of renewables in gross electricity production was 27.9 % of which almost 99 % was hydropower, and remaining 1 % biomass (mostly CHP based on wood, landfill gas and water treatment gas). The renewable power is produced as follows: 25.5 % by large-scale hydropower (> 10 MW), 2.0 % by small-scale hydropower (< 10 MW), and 0.37 % is estimated to be biomass. Slovenia has a target of 33.6 % renewable power by 2010, compared to a share of 29.9 in 1999.

Presently, a feed-in tariff is the main policy instrument for the support of electricity production from renewables. Whereas all small power plants (up to 10 MW) have been supported by feed-in tariffs since the mid-80's, from early 2002 a new system of feed-in tariffs has been in operation based on priority dispatch of qualified production. The difference between the market price and the feed-in tariff is covered by network charges, paid by all electricity customers. Network operators are obliged to conclude long-term feed-in contracts with renewable power producers also called qualified producers (QPs). Feed-in tariffs are relatively advantageous for wind power, but not for other technologies including PV. The main obstacles for the flow of investments to the renewables sector is the unclear and complex administrative procedure for getting the status of Qualified Producers, a precondition for eligibility to the feed-in system.

Table 2: Accession Countries Progress on Renewable Electricity						
COUNTRY INDICATOR	**TARGET**	**DEFINITION OF RENEWABLE SOURCES**	**FINANCIAL SUPPORT**	**GRID ACCESS**	**ADMINISTRATIVE PROCEDURES**	**OVERALL SCORE**
Lithuania	2/4*	1/4 Not- EU compliant, as it includes municipal solid waste and peat	4/4 Feed-in Tariffs	3/4 Priority Access	3/4 Appropriate	**13/20**
Czech Republic	3/4 Quite ambitious though not binding only indicative	4/4 EU compliant Exclusion of mixed waste incineration	2/4 Current scheme: Feed-in-Tariff, but only short-term guarantee. Proposed scheme: Quota System with guaranteed and differentiated prices of green certificates	3/4 Priority Access, RES operators pays all new connection costs, grid operator pays for strengthening of grid where needed.	1/4 Complicated	**13/20**
Poland	3/4 National target smaller than EU target, but the letter is ambitious	4/4 EU compliant Municipal waste incineration excluded	2/4 Quota System High quotas but lack of effective and motivating sanctions for non compliance and stable revenues	1/4 No priority access Generators pay 25% for grid extension and strengthening if the investment is within the framework of 'Principles for the community plan of heat, electricity and gas supply'. However not all energy utilities apply this regulation	1/4 Complicated up to 11 procedures for new renewable deployment	**11/20**
Slovakia	1/4 No national targets for renewable power No compliance with EU Directive	3/4 EU compliant No mention of biogas	2/4 Feed-in-Tariffs Low tariffs and no differentiation between technologies, attractive scheme for direct investment support	3/4 Distributor obliged to buy renewable energy Producers responsible for connection costs	1/4 Complicated	**10/20**
Estonia	1/4 No legally binding target	3/4 EU compliant	2/4 Feed-in Tariff Low tariffs	1/4 No priority access: Generation pay for grid extensions and strengthening	3/4 Appropriate	**10/20**
Hungary	1/4 Targets are not ambitious enough	4/4 EU compliant Exclusion of waste incineration	2/4 Low Feed-in Tariff No differentiation between technologies	2/4 No priority access: Electricity suppliers are legally obliged to buy RES electricity if the application meets technical requirements. However, these are unclear except for the 100kW minimum	1/4 Complicated up to 28 procedures for new renewable deployment	**10/20**
Latvia	1/4 Annual quota (targets) are too low	3/4 EU compliant	2/4 Feed-in Tariffs Too low	3/4 Priority for cogeneration power plants	1/4 Complicated	**10/20**
Slovenia	2/4 Targets are not ambitious enough	1/4 Waste incineration is included in the feed-in tariff: however, it is not included in the definition of renewables	3/4 Feed-in Tariffs are high enough for wind, but not for solar, but in general do not enable RES to compete with conventional sources.	1/4 No priority access Generators pay for grid extension and strengthening	1/4 Complicated: up to 15 procedures for new renewable development	**8/20**

* NOTE:
Each indicator (target, definition, support scheme, grid access, administrative measures) have been given a score between 1 and 4, with 4 being the best and 1 the worst. Evaluations are qualitative and do not take into account renewable electricity potentials in the studied countries. Elaboration by the authors, based on national reports.

5. Definition of Renewable Energy Sources

The types of fuel or generators that can be included under the definition of renewables are fundamental to the development of truly sustainable energy systems. The RES Directive states in Article 2 that renewables include: *Renewable non-fossil energy sources (wind, solar, geothermal, wave, tidal, hydro-power, biomass, landfill gas, sewage treatment plant gas and biogases); 'biomass 'shall mean the biodegradable fraction of products, waste and residues from agriculture (including vegetal and animal substances), forestry and related industries, as well as the biodegradable fraction of industrial and municipal waste.*

Electricity produced in hybrid plants (those that use different fuels) can be included only when fuelled by renewable energy sources. Furthermore, the Directive excludes electricity produced from storage systems i.e. electricity from pump storage systems cannot be included unless the original electricity is produced from renewable sources.

The most contentious issue is that of waste incineration. As the Directive points out only the biodegradable proportion of any waste stream can be counted as renewable. Not all existing Member States are conforming to this requirement, notably in Spain and Italy where non-biodegradable waste has been included in accounting for renewables electricity production. However, the regimes in most accession countries, for example in Czech Republic, Estonia, Hungary, Slovakia and Slovenia, only allow waste from organic sources to be included in the definitions. In Lithuania, the definition of renewable energy sources "which includes municipal solid waste and peat" is not in compliance with the EU Renewables Directive and should be amended.

Table 3: EU accession country renewable electricity production in 1999 and % targets for 2010

Country	Renewable electricity production 1999 (TWh)	1999 %	2010 %
Czech Republic	2.36	3.8	8.0
Estonia	0.02	0.2	5.1
Hungary	0.22	0.7	3.6
Latvia	2.76	42.4	49.3
Lithuania	0.33	3.3	7.0
Malta	0.00	0.0	5.0
Poland	2.35	1.6	7.5
Slovakia	5.09	17.9	31.0
Slovenia	3.66	29.9	33.6
Total	**16.8**	**5.4**	**11.1**
EU 25	**355.2**	**12.9**	**21.0**

Source: EC

Box 1. Feed-in-Tariff Systems

Feed-in systems consist of an obligation for energy utilities to purchase renewably generated electricity and to pay a minimum tariff per kWh, varying with the technology used. Usually the feed-in tariff differs between various technologies, depending on the different production costs. The amount of renewable generation is determined by the payment but there is no explicit quota. When carefully developed, major advantages of a feed-in system include: a) they are relatively fast to establish; b) they are easy to implement and can be revised for new capacities according technological developments; c) they have low administrative costs.

6. Targets

The RES Directive provides indicative targets for current Member States for electricity from renewables sources by 2010. The overall requirement was that by 2010, 22 % of electricity used should come from renewable sources and 12% of the total energy consumption. New Members to the EU have to implement the Directive by the time that they join in May 2004. The targets for new members were included in the Accession Treaties[7] and are shown in the table below. The Directive requires accession countries to double the contribution of renewable energy to electricity generation in seven years (from the time of signing the Accession Treaty). As a consequence the share of renewables in the electricity supply mix will have to increase much faster in accession countries than in existing Member States if the targets of the Directive are to be met.

7. Support Mechanisms

To facilitate an accelerated RES program Governments have a range of policy options at their disposal. This support can either be targeted at production or investment costs. The most widely adopted support mechanism within Member States is that of feed-in tariffs, which give

[7] Treaty to Accession of the European Union in 2003 Annex II, Part 12, page EN1802

Box 2. Quota Systems

Under the quota system, governments can set a quota to source a given percentage of renewable electricity for renewable electricity. The requirement to meet this target can be imposed on a variety of market actors, such as producers, suppliers or consumers. At the end of the given year, the market actor must demonstrate its compliance with the obligation, by submitting the required number of certificates, often issued as units representing 1 MWh of renewable power, to the authorities. The certificates represent the market value of the renewable quality of electricity and therefore function as an incentive per kWh of produced electricity. This mechanism is currently applied in the UK, Italy, Belgium and in Sweden.

Table 4: Summary of Feed-in Tariffs in Accession Countries (€ cents/kWh)

Country	Wind	Biomass	Hydro-Power
Czech Republic	8.5-9.4	7.9	4.9 (max 10 MW)
Estonia	4.86	4.86	4.86
Latvia	10.1	5.05	5.05-10.1 (max 2 MW)
Lithuania	7.5	6.9	6.9
Hungary	5.78-9.26	5.78-9.26	5.78-9.26
Slovakia	3.03 – 3.51	3.03 – 3.51	3.03 – 3.51
Slovenia	6.11-6.33	6.76-6.98	5.89-6.11 (max 10 MW)

Source: Author own calculation

generators a guaranteed price for their electricity (see Box 1). Currently eleven Member States have at least a partial feed-in tariff scheme (Austria, Belgium, Denmark, France, Germany, Greece, Ireland, Luxembourg, the Netherlands, Portugal and Spain). Other production support schemes include renewable obligations on producers or purchasers or green certificates to stimulate the market (see Box 2).

Most accession countries have adopted feed-in tariffs, including **Estonia, Latvia, Lithuania, Hungary, Slovakia** and **Slovenia**. However, the mechanics of these schemes vary considerably. The prices proposed vary from country to country and locality-to-locality this can be seen in the table below. The different tariffs adopted depend on a variety of issues including:

- Date of Start-up: In **Latvia** hydro plants started prior to 2003 receive double the level of funding of newer facilities and the new level is probably insufficient for investment. In the **Czech Republic** windmills erected after 1st January 2004 get a 10% lower rate than those constructed before. In **Slovenia** for plants in operation for 5 or more years the price or bonus is reduced by 5 %, for plants in operation for 10 or more years the price or bonus is reduced by 10 %,
- Source of Electricity: Only **Estonia** and **Slovakia** have a fixed price for all renewables, while others vary dependent on the generation type, i.e. wind or biomass.
- Size of Facility: In **Latvia** and **Slovenia**, larger facilities (hydro and/or biomass) have a lower fixed tariff.
- Time of Generation: In some countries the time of day and/or whether the electricity is produced in peak or low demand time affects the rate of tariff, this occurs in **Hungary** and **Slovenia**.

The main issues facing feed in schemes are that the price does not adequately cover costs and the length of time that the feed in tariffs will be in place. For new investors, medium term – 10-15 years – price security is needed to ensure an adequate rate of return on investments. In the region counties have adopted different time-scales: In **Latvia –**some feed-in tariffs are guaranteed for 8 years, in **Lithuania** up to 10 years, in **Estonia**– with up to 12 years guaranteed for renewables other than biomass (which has a 7 years guarantee). In the **Czech Republic** prices are set each year by the energy regulator and although they have remained the same for the last three years there is no long-term guarantee. The new Renewable Energy Act suggests a 15-year guarantee should be adopted.

8. Access to the Grid

Obviously unless renewable energy generators have access to the grid network then the subsequent electricity produced cannot be distributed and sold. However, in the long term as important as the physical connection is the price paid for and availability of access to the distribution system. Renewable generators are usually classified as distributed generators, selling electricity directly onto the distribution system – and thus avoiding the need for the high voltage transmission sector. As such the delivery costs for electricity from these distributed generators will be lower than conventional power sources. These and other economic advantages of renewable energy sources must be taken into consideration when setting the grid tariffs. The revised electricity market Directive, due to be transposed into national law in current and future Member States of the EU by July 2004 calls for[8]:

The terms, conditions and tariffs for connecting new producers of electricity to guarantee that these are objective, transparent and non-discriminatory, in

[8] Directive 2003/54/EC Of The European Parliament And Of The Council of 26 June 2003 concerning common rules for the internal market in electricity and repealing Directive 96/92/EC, Article 23.1.F

particular taking full account of the costs and benefits of the various renewable energy sources technologies, distributed generation and combined heat and power.

The revised Directive also calls for Member States to allow distribution system operators to give priority to electricity from renewable energy sources (Article 14.4). However, in general experience in accession countries suggests that grid access for renewable energy generators is not even guaranteed – never mind given priority – nor non-discriminatory. The exception to this is in **Czech Republic** and **Slovakia** where distribution system operators are obliged by law to transport renewable electricity. In **Hungary** the Electricity Act requires renewable suppliers access to the grid if the capacity is above 0.1 M and if the technical requirements of the grid operator are met. In **Lithuania** the Transmission System Operator is required to give preferential treatment to renewably generated electricity.

In most accession countries the transmission system operator remains in state control, as do many large incumbent generators. This can create difficulties for grid access for independent power producers. In **Hungary** it is expected that renewable electricity producers will in the future have to conform to a specific Grid Accession Plan, thus increasing the technical requirements for access. In **Czech Republic**, **Estonia, Poland** and **Slovenia** independent renewable generators are responsible for the costs of extending and/or strengthening the grid for new connections.

9. Administrative Procedures

Most renewables electricity facilities tend to be far smaller than conventional power plants. However, in many countries the planning regulations and requirements on the applicant are enforced regardless of type or size of facility. In some cases RES are subject to greater planning and administrative processes than other larger or similar conventional generators. The revised electricity market Directive tries to address this imbalance by calling for *'Member States shall ensure that authorisation procedures for small and/or distributed generation take into account their limited size and potential impact.'* Similarly, the Renewables Directive calls for '*streamlining and expediting procedures at the appropriate administrative level'*. The implementations of such rulings are needed in most accession countries.

For example in **Hungary** up to 28 separate procedures are needed to authorise the operation of renewable energy production facilities, in **Slovenia** approval of about 15 separate authorities is required. Other problems seen across the region is the lack of national guidelines for the authorisation procedures, as occurs in **Poland**. The lack of unified processes makes it more difficult to renewable power producers to reduce the risks associated with their investments.

Overall, there is a need to increase the knowledge of regulators about the specific characteristics of renewable energies and how to support their development. Action aimed at raising awareness, sharing information and supporting policy makers and regulators in this area –such as the REEEP-backed Regulators Network– should be implemented without delay.

10. Power Disclosure

The revised electricity market Directive calls for electricity retailers to provide information to the final customers of the contribution of the various energy sources in the fuel mix over the proceeding year along with information on their environmental impact, particularly Co2 emissions and nuclear waste produced, resulting from this electricity production. As competition between suppliers is gradually increased across the enlarged EU, with a requirement for full market opening – allowing domestic consumers to choose their supplier – by July 2007, it is fundamental that consumers are given more information about the mechanisms and impact of electricity production.

The 2002 Eurobarometer Energy Survey (Eurobarometer 2002) found that 88% of respondents in the EU felt that global warming and climate change are a serious issue and 47% of respondents would like to be consulted on the choice of energy sources for the future. More recently, a EU-financed survey for consumers and small and medium businesses, including in Hungary, has found public support for full electricity disclosure information, i.e. on the fuel mix and environmental impacts. The survey found that this information should be sent out with the electricity bills, rather than via a website, which only 50% of the target group could easily access (SEI 2003)[9].

The requirements for disclosure are a fundamental tool in allowing consumers to make an informed choice on their electricity suppliers. Currently, only a few Member States, e.g. Austria and the Netherlands, require consumers to be given this information and to date no accession countries have implemented this requirement. However, with the adoption of the revised electricity market Directive, the obligation on power companies to supply information on the fuel mix to all final consumers by July 2004 will have to be applied by all Members of the Enlarged Europe.

[9] Stockholm Environment Institute et al (2003), Consumer Attitude to Electricity Disclosure in Europe, Report prepared as part of the ALTENER project "Consumer Choice and Carbon Consciousness for Electricity (4CE)".

11. Policy Recommendations

In order to meet the targets of the RES Directive and to support the rapid introduction of renewable energy, Governments in accession country must urgently put the following measures in place:

- Renewable policies: when implementing the Renewables Directive, accession countries should elaborate a separate legislation dedicated only to renewable energy development.

- Binding Targets: The RES Directive proposes only indicative targets for the use of renewables in 2010. To ensure a stable investment framework new legally binding targets need to be put in place for 2015 and 2020, with a view to setting a EU-25 goal of 25% of renewables energy share of primary energy by 2020. Binding targets also need to be urgently introduced for heat generated by renewables sources.

- Support Schemes: Most accession countries have deployed feed in tariffs to support the further development of renewable generators. However, it is as important to have the correct feed-in tariffs as its establishment itself. First and foremost the correct price to cover costs must be establish and also medium term guarantees for prices must be imposed, giving 10-15 year price guarantees for new renewables. Where quota systems are applied, such as in Poland, they must be accompanied by a working green certificate market and an effective penalty system. Quota systems must also have progressively increasing requirements with long-term objectives.

- Grid Access: The revised electricity liberalisation Directive enables distribution system operators to give priority to renewable generators when dispatching electricity. This should be mandatory in all national laws. Furthermore the cost of grid use should take into consideration the economic advantages – lack of use of high voltage transmission – of embedded generation.

- Administrative Procedures: In most accession countries the administrative procedures for the deployment of renewables are complicated and a disincentive for investors. In general all administrative procedures must be streamlined but for RES specific procedures must comply with the requirements of the RES Directive and guidelines should be developed on a national level to reduce local or regional planning differences and to ensure environmental protection.

- Disclosure of Electricity Sources: By July 2004 all current and new Member States of the EU must ensure that electricity suppliers provide final customers with details of the mix of sources used and their environmental impact. It is clear that in all accession countries urgent efforts must be taken on the policy and industrial level to enable this requirement to be met.

- Review of Policies: A review of the support schemes and other aspects of the RES Directive should be undertaken by October 2004 and published by the European Commission.

- Energy Efficiency: Accession countries have lower energy efficiency levels that the EU average. Transformation of the household sector is expected to increase electricity and energy demand. To counter this predicted increase, to improve the economic efficiency of the industrial sector and to help countries met their targets for the RES Directive, a rapid programme of energy efficiency must be implemented. This must be treated as a priority across all sectors.

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