

Workshop on

“Developments Regarding Use of Renewable Energy Sources (RES) in the Baltic States”

REPORT

TIME: 16-17 June, 2003
PLACE: Sigulda, Latvia
PARTICIPANTS: Representatives from state authorities (Ministries of Environment, Economy; Agencies), scientific institutes and universities, consultants, energy producing and distributing enterprises, energy associations from the Baltic States as well as experts from Austria, Germany, Sweden and Finland representing competent authorities, industry, environmental research institutes (in total 53 participants).

GOALS OF THE WORKSHOP:

- To exchange information on policy targets, current experiences, potentials and future plans to promote use of renewable energy sources (RES) for electricity and heat production in the Baltic States and EU Member States;
- To give an overview on policy targets and practical measures (e.g., fiscal incentives) how to promote the use of RES;
- To discuss implementation of the Directive 2001/77/EC on promotion of electricity from RES – main challenges and potential solutions;
- To discuss pros and cons for the use of various RES and their future perspectives;
- To exchange energy producers' point of view – experience, future plans, challenges and benefits with regard to energy production from RES.

PROCEEDINGS:

Monday, 16 June

Opening of the workshop, by Ms. Heidrun Fammler, BEF

Ms. Fammler opened the workshop pointing out that energy related issues are a new topic in BEF agenda. Previous events related to industry have been more focused on industrial pollution (e.g., IPPC, LCP, VOC). Ms. Fammler introduced to the main goals and discussion topics of the current event. Further, the agenda of the workshop was presented.

SESSION I. EU ENERGY POLICY AND TARGETS TO PROMOTE THE USE OF RES

General overview on EU energy policy with a focus on RES

by Mr. Veit Bürger, Öko-Institut, Germany

Mr. Bürger outlined that promotion of RES is having a high priority at the European Union. He introduced to the EU policy and legislation in this field particularly focusing on requirements of the EU Directive 2001/77/EC on the promotion of the electricity produced from RES in the internal electricity market. He described the indicative target set by the Directive to increase the share of RES in overall electricity consumption in the EU up to 22% in the year 2010 (comparing to 13.9% in 1997). In order to reach the overall target the respective national indicative targets have been set also for each MS.

Afterwards Mr. Bürger gave a brief overview on other related legislation e.g., draft Directive concerning common rules for the internal market in electricity (amending Directive 96/92/EC), draft directive on greenhouse gas emission trading and other policies with relevance to the promotion of RES and combined heat and power. He pointed out that the main challenges for EU Member States' energy policies are the following:

- To implement policy framework which stimulates a sustainable development and transition of the energy sector in the longer term;

- To implement consistent interaction of different policies;
- To identify trade-off between different policies and to implement sound solutions to overcome them;
- To support harmonization where necessary and helpful and to allow national policy approaches where beneficial due to national market characteristics.

Policies to promote the use of RES in EU Member States (Sweden, Germany, Austria, Finland)

Sweden, by Ms. Gudrun Knutsson, Energy Agency

Ms. Knutsson briefly introduced to the structure and responsibilities of the Swedish Energy Agency. Regarding the use of RES in energy production the main results achieved so far are the following:

- Around 50% of the district heating systems in Sweden are based on renewable fuels, mainly biomass (wood fuel);
- Production costs of wood fuel have been reduced by 40-50% during the last 10 years and prices on wood fuel have been quite stable;
- New competitive technologies and processes have been introduced on the market;
- Increased international co-operation and increased possibilities for Swedish companies.

Statistical data show that both nuclear power and hydro energy play an important role in electricity production in Sweden. Much attention is paid to phase out or reduce nuclear power and to increase the utilization of biofuel, solar, wind and other RES. Particular programs e.g., so called, new Climate bill (2001) and new Energy bill (2002) setting targets for reduction of GHG emissions, increase electricity from RES in Sweden have been developed. For example, the target is set to increase electricity production from wind energy up to 10 TWh/y by the year 2015.

Ms. Knutsson informed about the Swedish bilateral bioenergy activities in the Baltic region including NW Russia e.g., establishment of bioenergy association in Estonia, Latvia, Lithuania; Bioenergy information and training centre at St. Petersburg; various co-operation activities between Swedish and local consultants, etc. The established co-operation as well as research projects are planned to be continued.

Germany, by Mr. Daniel Becker, Energy Agency

Mr. Becker gave an overview about renewable energies in Germany – current state of the use, legal framework and perspectives. He introduced to the targets of Germany – by 2005 to achieve 25% reduction in CO₂ emissions compared to 1990; reduction of other GHG emissions by 21%, doubling the share of RES use by 2010, increase combined heat and power generations, etc.

In 2001 in the energy supply from RES the highest shares had biomass (54%), hydropower (25%) and wind energy (11%). Others RES e.g., solar, geothermal, photovoltaics currently play less significant role. Due to nature concerns no further promotion for electricity production from hydro energy is envisaged. In order to reach the indicative target 12.5% in 2010 (7% in 2001) more focus will be on increasing the use of biomass, geothermal, as well as wind and photovoltaics.

Austria, by Ms. Elvira Lutter, Energy Agency

Ms. Lutter introduced to the policy and targets to promote use of RES in Austria. She informed that currently the primary energy supply comprises of about 76% of fossil fuels, and of 24% of RES (12% hydropower). Similarly to Germany, due to nature conservation concerns, electricity production from hydropower will not be further promoted.

Due to availability of resources fuel wood plays another very important role in the energy balance. In Austria biomass is widely used for district heating and covers local heat demand. However further improvements (e.g., wider use of biofuels in co-generation plants, etc) are still necessary. According to the Directive 2001/77/EC Austria has a target to increase the share of RES to 78.1% in electricity consumption. Increasing use of biomass is considered to be the best tool to contribute reaching this target.

Finland, by Mr. Aimo Aalto, Ministry of Trade and Industry

Mr. Aalto introduced to the current situation in Finland with regard to RES but further on more focusing on peat. Various sources are used for energy production in Finland. Oil, wood fuels, nuclear power, coal and natural gas are the most important ones. However, also peat as a local energy source plays quite significant role in primary energy supply in Finland (6% in 2002). Although internationally being not counted as RES, experts in Finland supports defining of peat as “slowly renewable energy source” which can be used as an alternative source for energy production both in boiler houses as well as in co-generation plants.

Mr. Aalto pointed out that presently RES covers about 25% of total primary energy supply. Finland has set the target to increase energy produced from RES 1.3 times until year 2010. The highest increase is expected in using wind power and solar energy, which would support also reaching the target of the Directive 2001/77/EC – 31.5% of RES in gross electricity consumption in 2010 (compared to 27.1% in 2001).

SESSION II. STRATEGIES TO PROMOTE THE USE OF RES IN THE BALTIC STATES

Current state and perspectives in Estonia, Latvia and Lithuania

Latvia, by Mr. Didzis Cinovskis, Ministry of Economy

Mr. Cinovskis informed that in 2001 of total energy consumption the highest share comprised natural gas (29%), oil products (26%) and wood and peat (24%), the latter one - mainly used for district heating. He pointed out that regarding energy production from RES currently in Latvia wood based fuels and hydropower (particularly large scale) are the most significant. Already now wood based fuels are widely used for district heating outside Riga and it can be expected that its use will increase also in future. During recent years within the frame of state investment programs many projects have been implemented in order to increase the efficiency of the heat supply system and use of biomass (mainly wood based fuels) in boiler houses. The main risks for the supply of wood based fuels are related to increasing export of wood products and potential construction of pulp factory which would increase the price for this resource.

According to the Directive 2001/77/EC the indicative target for Latvia to be reached in 2010 is 49% of RES of gross electricity consumption (about 40% in 2001). The necessary increase is expected to be reached by use of more biomass in combined heat and power (CHP) plants. Mr. Cinovskis also pointed out that increasing use of hydropower may not be expected. Already now besides three large scale hydropower plants on the Daugava River, there is about 150 small-scale hydro plants (<10MW) constructed. The economically justified potential is not more than 5-10MW on small rivers and additionally 100MW on the Daugava River. Particularly due to nature conservation concerns, the Law on Rivers was adopted in 2002, setting the list of rivers where construction of new dams are prohibited.

Estonia, by Mr. Madis Laaniste, Ministry of Economy

Mr. Laaniste introduced to the energy policy setting a target to achieve and promote larger use of RES. It is forecasted to increase the share of RES and peat in primary energy supply up to 11% in 2005 and 13% in 2010.

Mr. Laaniste informed that it can be expected that share of RES in total electricity consumption will reach 0.8% in 2003: 20 hydropower stations (0.4%), 5 wind turbines (0.2%), 1 station fueled with black liquor (0.1%) and 1 landfill gas CHP (0.1%). According to the Directive 2001/77/EC the indicative 5.1% of RES in total electricity consumption. Further increase of RES in electricity production is expected by increasing use of biomass in CHP plants and wind energy. In further promotion of RES various legislative measures in nature conservation (e.g., Planning Act, Shores and Banks Protection Act, Protected Natural Objects Act, etc) are taken into account. Promotion of RES shall be achieved by various supportive measures – feed-in tariffs, tax incentives, etc.

Lithuania, by Mr. Romualdas Jarmokas, Energy Agency

Mr. Jarmokas informed that the National Energy Strategy of Lithuania has been established to seek for reaching a strategic goal of the national energy sector aiming at 12% share of RES in the total primary energy balance in 2010. Following the Directive 2001/77/EC the share of RES shall increase to 7% of the total electricity consumption (in comparison to 3% in 2001). It is expected that targets shall be

reached by focusing more on wind, biomass and hydro resources. In order to promote the further use of RES in electricity production, the relevant economic instruments have been set by the national legislation. According to the Law on Electricity purchase procedure of electricity from RES and having capacity less than 20 MW have been defined. Higher average purchase prices for electricity from RES and waste energy sources comparing to conventional fuels have been established.

Discussion on pros and contras for use of RES (wind, hydro, biomass, waste) for energy production in the Baltic States

Participants identified and later discussed both positive and negative aspects related to the use of wind energy, hydropower, biomass, waste. The main pros and cotras are presented in the table below.

| Resource | Positive aspects | Negative aspects |
|----------------------|--|---|
| Wind energy | <ul style="list-style-type: none"> • “Green energy”, no emissions • Non-exhaustible resource • No fuel costs • Low operational costs • Creation of new jobs • High efficiency of electricity production | <ul style="list-style-type: none"> • Disturbance of migrating birds • More expensive technologies than for electricity production from conventional fuels • Can increase electricity price for customers • Not stable, unpredictable, therefore wind energy can only have an auxiliary function • Uneven distribution |
| Hydropower | <ul style="list-style-type: none"> • No emissions • Cheap local energy source • Low maintenance and service costs • Creation of new jobs • High efficiency if precipitation conditions are favourable | <ul style="list-style-type: none"> • Impacts on nature: <ul style="list-style-type: none"> ○ Disturbance of fish migration ○ Change of biodiversity ○ Loss of habitats and breeding sites due to flooding ○ Damage to natural banks of rivers ○ Damage to certain tree species due to fluctuations in water level • Loss of land area due to flooding • High investment costs for technologies • Fluctuations in through-flow of water due to variations in precipitation. In extreme cases the dry-up of rivers is possible. |
| Biomass | <ul style="list-style-type: none"> • Do not increase CO₂, SO₂ or NO_x emissions • Promotes appropriate utilization of forest residues • Domestic renewable energy source • High efficiency • Low price and operational costs • Creation of job opportunities for local inhabitants | <ul style="list-style-type: none"> • Potential for non-sustainable use (e.g., over-exploitation) of forests • High investment costs especially for establishment of infrastructure • Unfavourable market prices for energy production from wood • Export of wood and wood by-products is becoming more profitable |
| Bio-degradable waste | <ul style="list-style-type: none"> • Reduction of greenhouse effects of methane emissions to air • Prevention of methane leakage into water • Sustainable waste management • Good potential in principle (large amounts of resources available) | <ul style="list-style-type: none"> • High investment costs for technologies |

Tuesday, 17 June

SESSION III. PRACTICAL SUPPORT MECHANISMS FOR USE OF RES

General overview on different RES support instruments used in EU Member States

by Mr. Veit Bürger, Öko-Institut, Germany

Mr. Bürger briefly explained the EU and MS policy framework motivating support of use of RES e.g., Directive 2001/77/EC, Kyoto targets, enhancement of security of supply by decreasing import dependencies of fossil and nuclear fuels as well as developments in RE industries which can increasingly contribute to economical growth (employment). He mentioned and explained the main

barriers for exploitation of RES: economical, administrative, structural and institutional, information deficits.

Mr. Bürger introduced to the RES support instruments most frequently applied in the EU Member States:

- Monetary (subsidies, tax incentives, feed-in tariffs, obligation schemes, etc.)
- Administrative (fair regulations to grid access, facilitation of licensing procedure, etc.)
- “Soft” (education, awareness raising, training, etc.)

He also pointed out the evaluation criteria for choosing one or another instrument. For feed-in tariffs and RES obligation schemes both pros and contras were presented. Concluding Mr. Bürger stressed that EU policy framework (indicative targets) forces MS and Candidate countries to implement RES support instruments. Several different support instruments are available and already in place. Decisions on which instrument to implement should be taken with regard to the existing national policy framework, current RES development (technologies, potentials and current share). Support instruments have to be well designed and regularly evaluated.

Practical experience (examples) in use of different support mechanisms in EU Member States

Feed in tariffs for electricity production- by Mr. Daniel Becker, Energy Agency, Germany

Mr. Becker gave a brief overview on existing renewable energy supporting mechanisms, particularly focussing on the feed-in tariffs established according to the Law on Renewable Energy (1998). He pointed out that since introduction of this tariff the amount of renewable energy of total electricity consumption has risen from 4.7% (in 1999) to 8% (in 2002). He also pointed out that additional costs for private households are low (0.2 Euro cent/kWh) i.e. 7 Euro per household per year. About 130 000 people are employed in renewable energy business (twice as much as in 1998). Besides that more than 30 million tons of CO₂ emissions per year are avoided.

Feed in tariffs for use of biomass in CHP- by Ms. Elvira Lutter, Energy Agency, Austria

Ms. Lutter introduced to feed-in tariff system in Austria established according to the Decree of the Ministry of Economic Affairs. She explained more in details the feed-in tariffs applied for energy production from biomass. The feed in tariffs are guaranteed for 13 years and are given depending on fuel quality. The highest tariffs (16 Euro cents/kWh) for plants using wood chips and having capacity up to 2 MW. Ms. Lutter pointed out that additional drivers for successful projects on use of biomass for energy production are on site heat demand, year round operation, little demand on heat quality, switching of fossil fired CHP to use of biomass in cogeneration, potential for revenues from CO₂ emission trading.

Electricity certificates- by Ms. Gudrun Knutsson, Energy Agency, Sweden

Ms. Knutsson informed that a new support system for electricity production from RES based on tradable electricity certificates has been introduced in Sweden since 1 May 2003. According to the Electricity Certificate Law all eligible producers can obtain certificates from the Government. It sets obligation for suppliers and end-users to acquire certificates (quota obligation) in proportion to supplied or consumed electricity. Electricity certificate system shall increase competition between various production technologies (hydro, wind power, biomass, etc.) and support technologies being not yet commercially viable.

Ms. Knutsson informed that about 6 million certificates should be issued during one-year period (i.e. >6TWh electricity produced in eligible plants using RES). Issued electricity certificates are valid for unlimited period of time, they may be banked and may be transformed into voluntary international system for “green certificates” – renewable energy certificate system (RECS) but not vice versa.

Tax incentives, by Mr. Aimo Aalto, Ministry of Trade and Industry, Finland

Mr. Aalto informed about the proposals of the working group elaborating measures for increasing the energy efficiency and promotion of renewable energies in Finland. He informed that already now an effective tool for promotion of RES is the applied tax incentive system. Mr Aalto introduced to the developments of energy taxation in Finland. Energy taxes applied to fuels as fuel oils, coal have been increased substantially during the last decade whether energy tax both for natural gas and peat are remarkable lower.

Mr. Aalto also pointed out the necessity to evaluate very carefully all positive and negative aspects of different support systems particularly potential economical costs and benefits for the country.

Discussion on support mechanisms in the Baltic States

Mr. Laaniste, Estonia explained in details how different support instruments (feed-in tariffs, tax incentives, state aids) have been functioning in Estonia. For example, according to Electricity Market Act network operator is obliged to buy the electricity produced from RES with a price which constitutes 1.8 multiplied by maximum allowable production price of the major electricity producer. This feed in tariff is available for plants utilising hydro power and biomass for 7 year, for other RES – 12 years, although not after 2015. Besides that according to Pollution Charge Act CO₂ charge is not imposed on enterprises with installed combustion equipment capacity of 50 MW or less. Combustion of bio fuel, peat and waste is exempted from CO₂ charge totally. Additionally state aid has been given to build new power plants that utilise RES (100 000Euro). However, in order to further promote the use of RES additional measures will be necessary.

Mr. Valdis Kregers from the Latvian development Agency, Energy department commented that in Latvia previously established the double average electricity sales tariff was a big economic incentive for developments particularly in the small-scale hydro power plants sector. Mostly due to nature concerns and potential to increase the price for customers this incentive has been revised. Double tariff will receive old plants for 8 years from commissioning. No double tariff for new plants constructed after 1 July 2003 is paid. Besides that a quota system has been established in Latvia for each type of RES used for electricity production.

Mr. Jarmokas, Lithuania pointed out that also in Lithuania the State Prices and Energy Control Commission established the average purchase prices for electric power produced from the renewal and waste energy resources, which may be differentiated by mutual agreement and their application conditions: for the hydro-power plants and the power plants which produce electric power using bio-fuel - 20 Litas cents/kWh (0.058 Euro/kWh); the wind power plants - 22 Litas cents/kWh (0.062 Euro/kWh).

SESSION IV. USE OF RES – POINT OF VIEW FROM ENERGY PRODUCERS IN THE BALTIC STATES

Energy producers from RES from all three Baltic States admitted that for further developments in the energy production from RES appropriate economic incentives and measures are necessary in order to increase the interest of enterprises in RES use. Currently energy producers are also facing many barriers for that. Additional state support for launching new projects would be necessary.

SESSION V. INTERNATIONAL CO-OPERATION FOR THE PROMOTION OF USE OF RES

International activities and foreseen co-operation in the Baltic Sea region

by Ms. Gudrun Knutsson, Energy Agency, Sweden

Ms. Knutsson introduced to the carried out and planned activities of the Baltic Sea Region Energy Co-operation (BASREC) project in the Baltic Sea Region and NW Russia. She informed that an ad hoc working group on bioenergy has been established by the Nordic Council of Ministers as a Steering group for preparation of proposals for joint regional activities in this area. Activities shall focus on further increase and sustainable use of bioenergy basing on experiences gained during implemented and ongoing co-operation activities in different projects in energy, environmental, forestry, agriculture and industry sectors. Ms. Knuttson informed that the next BASREC meeting is planned in September 2003 having participants from all involved countries to present the activities and discuss the implementation procedures.

*Report by Daina Indriksone
Baltic Environmental Forum*

Indicative targets and current renewable energy contribution to gross electricity consumption in 2001, %

| | Austria | Germany | Finland | Sweden | Estonia | Latvia | Lithuania |
|---|----------------------|---|---------|--------|---|--------|-----------|
| Gross renewable electricity generation as a % of gross electricity consumption: | 71% | 7 % (2001) today >8% | 27.1* | 55.41 | 0.1 in 2001 0.76% (estimate for 2003) | ~ 43% | 3.0 |
| <u>Out of which:</u> - Large hydropower (>10MW) | 70% (total hydro) | 4.4% total hydro | 14.6 | 49.95 | 0.0% | ~ 38% | 2.8 |
| - Other renewables: | 0.86% | 2.6 | 12.5 | 2.57 | 0.76% | ~ 5% | 0.2 |
| Out of which: small hydro | | | 1.4 | 0.3 | 0.30% | ~ 1% | |
| wind | 0.40% | | 0.1 | 2.3 | 0.11% | ~ 2% | |
| wood | 0.22% | | 11.0 | 0.06 | | ~ 2% | |
| other biomass | 0.08 | | | | | | |
| Photovoltaic | 0.004 | | 0.002 | | | | |
| black liquor | | | | | 0.23% | | |
| landfill gas | 0.15 | | | | 0.12% | | |
| biogas | | | | 0.2 | | | |
| geothermal | 0.006% | | | | | | |
| Others | | | | | | | |
| Indicative target for 2010 | 78.1 | 12.5 | 31.5 * | 60.0 | 5.1 | 49.3 | 7 |
| Target without large hydro power | 4% (till 2008) | no further construction of large hydro expected | 18.2* | | 5.1 | ~ 11% | 4.2 |

* These figures do not include peat. The share of electricity generation from peat in is 6,8% of gross electricity consumption in Finland.