Freie Universität Berlin

Forschungszentrum für Umweltpolitik

The Project *Bioenergy Promotion* -

Objectives, activities and selected findings of the Work package „Policy“

Michael Krug

Berlin, July 2012

Forschungszentrum für Umweltpolitik
Freie Universität Berlin
Fachbereich Politik- und Sozialwissenschaften
Otto-Suhr-Institut für Politikwissenschaft

Inhaltsverzeichnis

1. *Bioenergy Promotion* in a nutshell

Bioenergy Promotion - one of the flagship projects under the EU Strategy for the Baltic Sea Region COM(2009) 248 was running from February 2009 until January 2012. The operation was co-financed by the European Union the INTERREG IVB Baltic Sea Programme and the Government of Norway with a total budget of 5.1 mln. EUR.

The project consortium comprised 33 partner organisations from 10 countries in the Baltic Sea Region incl. Norway and Belarus. Lead partner was the Swedish Energy Agency. The Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU) was responsible for the coordination of the work package "Policy" and commissioned FFU with the practical implementation.

The project aimed at strengthening the development towards a sustainable, competitive and territorially integrated Baltic Sea Region (BSR) in the field of sustainable production and use of bio-energy. The operation served as the major BSR wide platform for cross-sector and trans-national networking to facilitate information and knowledge exchange, coordinated policy development and design and application of promotional instruments, as well as regional development.

The project covered two cross-sectional work packages ("Management", "Communication") and three thematic ones: "Policy", "Regions" and "Business".

The main rationale of the Work Package **Policy** was to support the development of coherent national and (sub)regional policies promoting the sustainable production and consumption of bioenergy. The German Federal Ministry for the Environment, Nature Protection and Nuclear Safety (BMU) in cooperation with the Environmental Policy Research Centre (FFU) assumed responsibility for the overall work package leadership.

The Work package **Regions** was coordinated by the Norwegian Forest and Landscape Institute. It highlighted the sub-regional development dimension of increased bio-energy supplies, production and use (including trade possibilities). Activities included the of establishment of regional network points, the preparation of biomass potential analyses and business and industry analyses for the demo regions, a collection of pilot projects, and the elaboration of strategic concepts for each of the demo regions.

The overall objective of the Work package **Business** was to enhance investments and technology transfer through market actor collaboration. The Work package was coordinated by the Baltic Eco Energy Cluster (Poland). Information dissemination actions have been included to ensure meetings between market actors making business co-operation possible.

The deliverables include a virtual project/business brokerage platform, feasibility studies for investments and a survey of good practice business models.

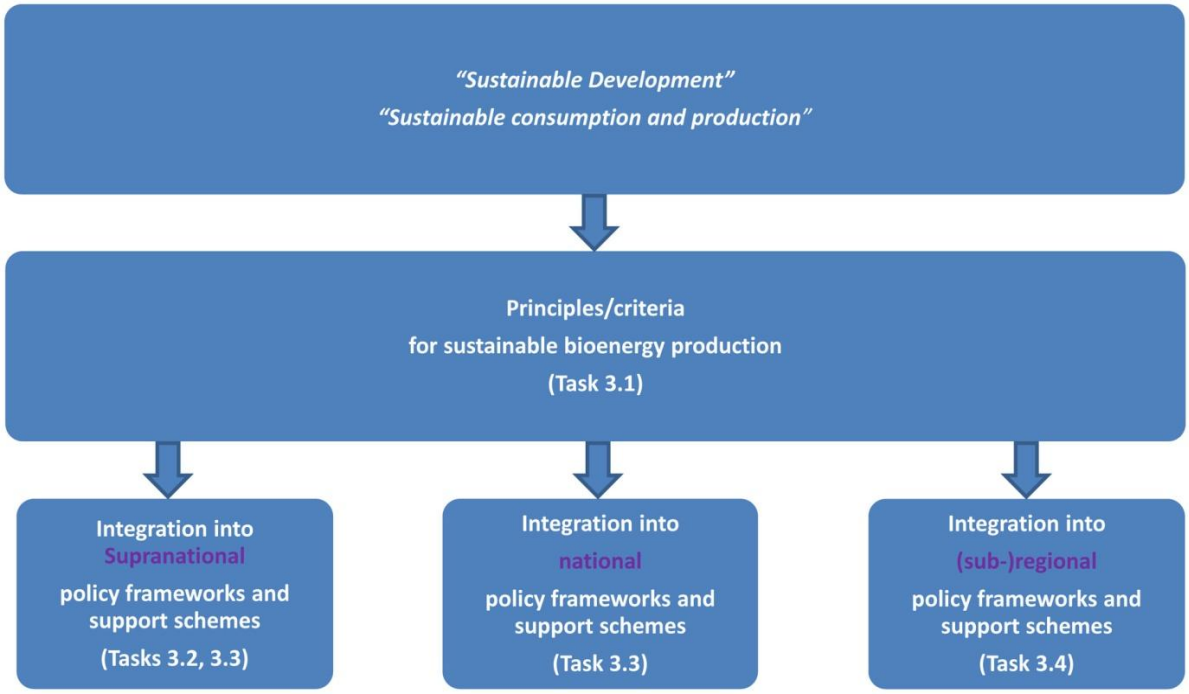
BP has been also acknowledged as one of the Lighthouse Projects under the Council of Baltic Sea States Strategy on Sustainable Development (Baltic 21).

In January 2012 12 partners from the consortium and FFU as a new partner started to continue the work in the framework of the "Extension stage" project *Bioenergy Promotion 2* running for two further years until January 2014.

2. The rationale of the Work package „Policy"

The Work package was structured into four core tasks which are coordinated by different task leaders. **Task 3.1** (Sustainability principles and criteria) had a cross-cutting function for the whole work package and the project itself. Under this task principles and criteria for sustainable bioenergy production and consumption in the BSR were commonly developed by the project partners taking into account other international, national and regional initiatives. **Tasks 3.2**, **3.3** and **3.4** assessed how these key principles and criteria are or might be effectively translated into trans-national, national and (sub-)regional policy frameworks and provide respective policy guidance.

The following figure illustrates the key logic of the work package:



Baltic Sea Region Programme 2007-2013

Part-financed by the European Union (European Regional Development Fund and European Neighbourhood and Partnership Instrument)

Bioenergy Promotion

Besides the core tasks described above a number of **supplementary, non-core activities** have been successfully performed.

3. Detailed description of activities and results

Task 3.1 - Development of criteria for sustainable production of bioenergy

The task was led by the Swedish Board of Agriculture. The main objective was to commonly develop principles and criteria for a sustainable production and consumption of bioenergy. To this purpose, two workshops and one cross-fertilization seminar were held in Sweden and Finland.

The criteria are formulated as to directly address identified threats generated by bioenergy production and the project also suggested indicators for evaluating whether or not objectives are reached.

The principles and criteria go partly beyond those for biofuels and bioliquids contained in the Renewable Energy Directive[1], as they **apply to all energy uses of biomass** (not only

[1] The Renewable Energy Directive (2009/28/EC) contains sustainability criteria for biofuels and bioliquids which are binding for all Member states. Biofuels and bioliquids which do not meet those criteria cannot be counted towards the EU's renewable energy targets and national renewable energy obligations or benefit from financial support. These criteria include minimum lifecycle GHG savings of 35 per cent (50-60 per cent from 2017/2018). Furthermore, the raw material shall not be obtained from land with high carbon stock and from land with high biodiversity value. Production of agricultural raw material cultivated in the European Community should comply with EU environmental requirements for agriculture and be in accordance with the minimum requirements for good agricultural and environmental condition.

In its Report on Sustainability Requirements for the Use of Solid and Gaseous Biomass Sources in Electricity, Heating and Cooling (COM(2010)11), the European Commission refrained from extending the binding sustainability criteria applying to biofuels and bioliquids to solid and gaseous biomass used in electricity, heating and cooling. Instead, the Commission recommended that Member states that either have or who introduce national sustainability schemes for solid and gaseous biomass used in electricity, heating and cooling, ensure that these in almost all respects are the same as those laid down in the Renewable Energy Directive for biofuels and bioliquids. Due to the characteristics of the production and use of solid and gaseous biomass, certain differences were considered appropriate by the Commission. It was recommended to develop an EU-wide harmonised GHG emissions calculation methodology to calculate lifecycle emissions. It was also recommended that the GHG performance criterion is not applied to wastes, but to the products for which default GHG emission values have been calculated as listed in the Annex II of the Commission's report. To stimulate higher energy conversion efficiency, Member states should in their support schemes for electricity, heating and cooling installations differentiate in favour of installations that achieve high energy conversion efficiencies, such as high efficiency cogeneration plants as defined under the Co-

biofuels and bioliquids) and include the following items: biodiversity, resource efficiency (including land use), energy efficiency, climate change mitigation efficiency, social well-being and economic prosperity.

The principles and criteria developed in the project remain mostly on a general level. However, in some cases quantitative criteria have been developed. For instance, for solid and gaseous biomass sources used in electricity, heating and cooling, the *Bioenergy Promotion* project partners recommend minimum lifecycle GHG savings of 80 per cent. This ambitious landmark favours the utilization of forest or agricultural residues and precludes pathways using tropical/sub-tropical feedstock, pathways using fossil process fuel, but also a certain pathways utilizing annual energy crops, like maize for biogas.

The principles, criteria and indicators have been compiled in a guidance document (cf. Lena Niemi Hjulfors and Karin Hjerpe: Sustainable Bioenergy Production – Defining Principles and Criteria, 2010). This guidance document has served as an important input for several other work packages and for the project as a whole and it can also be used by stakeholders within bioenergy production for the development of ecological and socioeconomic sustainable activities. It also aims at supporting public decision makers when developing strategies for sustainable production and consumption of bioenergy and optimizing their policy frameworks and support schemes. The report can be found at http://www.bioenergypromotion.net/

Task 3.1 Supplementary activity: Analyzing the environmental influences of small-scale use of fuel wood in Finland

In addition to the core activities under Task 3.1 described above, an exemplary lifecycle analysis has been prepared investigating the GHG effects of using fuel wood in Finland.

---

generation Directive (2004/8EC). The Commission also recommended that sustainability schemes apply only to larger energy producers of 1 MW thermal or 1MW electrical capacity or above. The Commission committed itself to report by 31 December 2011 on whether national schemes have sufficiently and appropriately addressed the sustainability related to the use of biomass from inside and outside the EU, whether these schemes have led to barriers to trade and barriers to the development of the bio-energy sector. It will, *inter alia*, consider if additional measures such as common sustainability criteria at EU level would be appropriate. However, by writing of this report (beginning of July 2012) the corresponding report was still pending.

The respective report *" Environmental influences of small-scale use of fuel wood in Finland - Preliminary life cycle observations"* was prepared by the Finnish Forest Research Institute under the work plan of the Forestry Development Centre Tapio being one of the 33 project partners. The report takes into account proposals and recommendations of other committed project partners of *Bioenergy Promotion*.

The study is based on a preliminary Life Cycle Assessment methodology and demonstrates its applicability in this field of research. It has a focus on lifecycle GHG emissions. The findings, however, provide only rough guidance how to approach the question because of the limited data availability.

The **main findings** of this supplementary activity are as follows:

- When fuel wood is treated as CO_2-neutral, greenhouse gas emissions (GHG) from fuel wood heating in agricultural buildings total only 3–5%, and in residential buildings only 10–14% of the emissions from light fuel oil or electricity heating. In these figures, the quite low energy conversion efficiency of small-scale combustion has been taken into consideration.
- In old or inefficient equipment, emissions of particulate matter, carbon monoxide and non-methane volatile organic compounds can also be significantly high. It is advisable to use high-quality fuel wood, good operation practices and modern technology in combustion in order to achieve the best efficiency and avoid air quality problems caused by high emission levels.
- Forest owners and consumers are increasingly interested in the sustainability of their life and choices, which includes interest in the environmental impacts of fuel wood, too.
- There is much information available concerning e.g. the quality of fuel wood and good operational practice. However, the environmental effects of the upstream processes are known insufficiently to produce clear recommendations for the entire life cycle of fuel wood.
- There is clear need for the creation of some kind of "fuel wood carbon footprint counter" in which the user can fill in relevant information concerning his/her acquisition procedures and working methods. The main justification for this counter is that consumers and forest owners are increasingly interested in the sustainability of their life and choices, also with reference to the use of energy.

The supplementary report is a valuable contribution to monitor the effects of biomass use on the areas of origin and to monitor small-scale biomass use through surveys to improve

the availability and quality of data (as recommended by the EU Commission's Biomass Sustainability Report COM(2010)11 (cf. FN 1).

The report *"Environmental influences of small-scale use of fuel wood in Finland- Preliminary life cycle observations"* is available both on the *Bioenergy Promotion* website http://www.bioenergypromotion.net/ and on Tapios website http://www.tapio.fi/files/tapio/englanti/Environment_influences_of_fuelwood_in_Finland_final_report_eo_tw_26_10_10.pdf

Task 3.2 – Sustainability certification

This task was led by the German Agency of Renewable Resources (Fachagentur Nachwachsende Rohstoffe e.V. - FNR) and followed basically a three step approach:

The first step includes the identification of 11 sustainability initiatives and certification systems for bioenergy used in the BSR. As a second step the underlying criteria covered by those initiatives and certification systems were compared to those criteria developed in the frame of *Bioenergy Promotion* for the BSR (Task 3.1) and the main differences were identified.

Key findings of those activities have been published in two project reports "*Sustainable bioenergy production: Identification and description of sustainability initiatives and certification systems in the BSR*" and "*Sustainable bioenergy production - Comparative analysis of sustainability initiatives and certification systems*".

Finally, recommendations have been formulated how to improve existing sustainability schemes and certification systems.

Questions related to the transposition and implementation of the mandatory sustainability criteria for biofuels contained in the Renewable Energy Directive (RED) were discussed during a trans-national stakeholder workshop, organised in Berlin in March 2010 in cooperation with the sister project 4Biomass. National strategies and practical examples of the implementation were presented and the workshop provided a platform for an in-depth exchange of opinion and good practices from 15 different countries.

The **main findings** can be summarized as follows:

- Today there are several organisations and initiatives which have developed guidelines and criteria for sustainable bioenergy production and their scope, geographical range and supply chain coverage of the criteria differ widely.
- Through the Renewable Energy Directive (cf. FN 1) the development of sustainability criteria particularly for biofuels was accelerated in the last years.

- In the BSR wood is the most important bioenergy source in most of the countries and forest certification systems have been used for many years with good results.
- Some sustainability issues, particularly energy efficiency and climate mitigation efficiency are not fully covered in the analysed certification systems.
- The analysed initiatives also contain criteria, which are not covered by the criteria developed in the project (e.g. legality and human rights)
- Biodiversity is the only criterion, which is considered in all of the analysed initiatives and certification systems.
- The requirement of energy efficiency can be found only in five of the initiatives, RSB, ISCC, RSPO, Swan biofuels and BSI. The availability of biomass for energy production is not unlimited, and the more efficient the bioenergy production and use, the more fossil fuels can be replaced with the saved bioenergy and the more GHG emissions can be reduced.
- GHG emissions are an issue in all initiatives except Swan pellets and FSC.
- Since wood is the most important bioenergy source in the BSR, it would be appreciated if the forest certification systems, whose scope is wood energy and are used in our region, would consider the reduction of GHG emissions in their criteria.
- Social aspects and economic issues are not covered by Swan certifications, SEKAB and the RED. Other certification systems include these criteria in their sustainability requirements.
- The certification systems and initiatives should pay particular attention to the criteria on energy efficiency and GHG reduction. These two issues were only weakly represented under the analysed criteria. Especially the certification systems for woody biomass should consider including these issues as well.

Task 3.2 Supplementary activity: Inquiry of forest owners in Finland on bioenergy certification

A supplementary activity was carried out by the University of Eastern Finland and the Finnish Forestry Development Centre TAPIO. The main objectives of the corresponding study were to find out the opinions of Finnish non-industry private forest owners (NIPFs) towards energy wood market and bioenergy certification issues in Finland and to provide policy level information to the *Bioenergy Promotion* project in its efforts to promote sustainable bioenergy production in the Baltic Sea Region countries.

The data for the study are based on a mail survey conducted in May 2010 among 400 NIPFs owning forests in North and South Karelia in Finland. Two hundred NIPFs were randomly se-

lected from each of the two regions through a mailing list provided by the regional forestry centres in the two regions. The mail survey yielded 79 complete responses amounting to a 20% response rate.

The results revealed that the majority of the NIPFs considered the present competition between energy wood and pulp wood at a low level. Similarly, the NIPFs did not consider the price of the energy wood as attractive in Finland while almost 90% of them informed that price of energy wood was the most important factor while selling energy wood from their forest estates. Only 6% of the NIPFs were willing to increase harvesting and selling of energy wood from their forest estates in the presence of a stable market for such products in Finland. However, the majority of them (73%) expressed their unwillingness to increase harvesting and selling of energy wood even if there would be a stable market in the future. About 53% of the NIPFs indicated the present low price of energy wood as the most important obstacle in the trade of energy wood. A technical problem such as logistics was indicated by 36% of the NIPFs followed by 2% who considered the legal and administrative problems as the main obstacle.

About 83% of the NIPFs reported their lack of awareness of the *Criterion 5* in the PEFC forest certification scheme in Finland, which provided guidelines for harvesting of biomass from forests for bioenergy production. The NIPFs were also asked to select from a list of three options indicating the most appropriate quality of a bioenergy certification scheme should be. About 45% of the NIPFs informed that such scheme should be practical and easy to follow by them; another 38% of the NIPFs suggested that it should improve the market of energy wood; whereas only 17% considered that such scheme should contribute toward protecting biodiversity in the forests. The majority of the NIPFs agreed that bioenergy certification could improve environmental friendly forest management practices (59%) and marketing possibilities of energy wood in Finland (53%). About 68% of the NIPFs expressed their preferences toward the regional private forest owners' associations to be responsible for providing information on bioenergy certification. Such preferences for the regional forestry centres and research organizations were much lower at 12% and 11% respectively. However, it was the forest industry that was the least preferred by the NIPFs (5%) to disseminate information on bioenergy certification. Personal information letters delivered by private forest owners' associations emerged as the most preferred method of disseminating information on bioenergy certification to the NIPFs (51%) followed by newspapers and magazines (24%), television (9%), internet (9%) and radio (3%).

The findings from this study could provide important policy information on sustainable bioenergy development in Finland and internationally. Private forestry in Europe and in the BSR countries varies greatly. Nordic countries such as Finland, Sweden, and Norway have long traditions in private forestry where NIPFs play an important role in supplying wood for

the forest-based industries. On the other hand, in countries such as Estonia, Lithuania, and Latvia private forestry is in the transition phase from public to private. Nevertheless, bioenergy from forests will play an important role to meet many of these countries' targets under the EU-RED to increase the share of renewables in the total primary energy mix by 2020. Therefore, it will be important to understand the perceptions and attitudes of the NIPFs in Finland and in BSR countries related to supply of energy wood, obstacles they are experiencing in mobilizing energy wood from their forests, and importantly their expectations from bioenergy certification instruments.

Task 3.3 - Policy assessment and strategy development

Task 3.3 was led by the Work package leader, the German Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU), in cooperation with the Environmental Policy Research Centre, Berlin (FFU). The main activities included assessments of EU and national policy frameworks and the development of policy recommendations addressing decision makers on EU level, national and regional governments, and the Council of Baltic Sea States (CBSS) Expert Group Baltic 21.

Corresponding **policy guidance documents** contain trans-national and country specific policy recommendations referring to the formulation and implementation of the National Renewable Energy Action Plans. Based on those guidance documents, committed project partners in Finland, Estonia, Poland and Latvia prepared targeted input for national policy makers and policy advisory organizations in the frame of the formulation of the **National Renewable Energy Action Plans (NREAPs)**.

Eight **country policy assessment reports** have been prepared by the project partners describing to what extent national policy frameworks and support schemes consider and integrate principles and criteria of *sustainable* bioenergy production and consumption. The reports provide valuable insights for national and (sub-) regional governments, but also to the EU Commission which is currently monitoring respective policy developments and analysing the need for additional measures at EU level.

The partners were engaged in a continuous **dialogue with policy makers** from the EU Commission (DG ENER, DG Agri), and national policy and regional policy makers from the BSR addressing actual policy issues, e.g. National Renewable Energy Action Plans, binding sustainability criteria for biofuels and bio liquids, development of sustainability schemes and sustainability criteria for solid and gaseous biomass. A series of three **Capacity Development workshops** for policy makers, support scheme managers and policy consulting organisations were organised in Berlin (March 2010) Gdańsk (September 2011) and Poznań (November 2011).

Selected findings of this task can be summarized as follows:

- Among the BSR countries **Germany, Sweden** and **Denmark** are most advanced regarding the transposition/ implementation of the binding EU sustainability criteria for biofuels and bioliquids (cf. FN 1).
- Most BSR countries have rather effective forest and environmental legislation in place ensuring sustainable forest management and provide good showcases for sustainable forest management certification. Voluntary forest certification systems like the *Forest Stewardship Council* (FSC) and the *Programme for Endorsement of Forest Certification* (PEFC) cover comparatively high shares of the forest area in the BSR, also compared to the EU average. National PEFC or FSC standards occasionally address critical sustainability issues related to wood fuel harvesting (e.g. removal of logging residues, removal of dead wood, stump harvesting), even though not always in a systematic and consistent manner. Furthermore, the sustainability requirements of corresponding national systems show considerable variations.
- To ensure the sustainable production and use of solid and gaseous biomass, most governments in the BSR rely on **sector legislation** (e.g. forest legislation, nature protection legislation, cross compliance rules in agriculture). However, *Bioenergy Promotion* also illustrated that those regulations are not always and automatically sufficient to prevent undesirable and unsustainable developments due to implementation gaps and lack of enforcement.
- **None of the governments** in the BSR has introduced or is presently planning to introduce any binding sustainability scheme for solid and gaseous biomass sources used in electricity, heating and cooling following the recommendations of the EU Commission contained in the Biomass Sustainability Report of 2010 (cf. FN 1).
- In most BSR countries the integration of sustainability principles and criteria into support schemes still plays a marginal role or is in an embryonic stage. Several BSR countries started or plan to integrate sustainability principles into their support schemes for bioenergy. In **Germany** sustainability principles and criteria have been increasingly considered to amend the support schemes for electricity and heat from biogas (e.g. promoting energy conversion efficiency, resource efficiency and biodiversity).
- The project identified a number of promising policy approaches supporting sustainable bioenergy production and consumption in the BSR including
    - Environmental quality objectives in Sweden for forestry and agriculture;
    - Effective carbon and energy taxation in Sweden, Denmark and Norway;

- Wood energy harvesting guidelines in Finland and Sweden;
- Integration of sustainability considerations in (sub-)regional policy frameworks (e.g. agreement on sustainable biomass procurement between *Vattenfall Europe* and the Senate of Berlin);
- Integration of sustainability considerations into regional support schemes (e.g. in the federal state of *Schleswig-Holstein* in Germany);
- Integration of sustainability considerations into national support schemes (Germany, Finland, Latvia, Lithuania)
- Institutional support for (sustainable) bioenergy production (e.g. Biogas Secretariat in Denmark).

- Although the BSR can be regarded a showcase for sustainable bioenergy development, there are certain environmental sustainability risks associated with increasing energy uses of biomass from forestry and agriculture, particularly related to the removal of logging residues like tops and branches, whole tree harvesting, dead wood removal or the production of dedicated energy crops which should be appropriately addressed by legislation and existing certification systems also in the future.
- There is already intensive biomass trade among the countries of the BSR (e.g. wood pellet exports from the Baltic countries to Sweden or Denmark). Taking into account information provided in the National Renewable Energy Action Plans, biomass imports are likely to further increase in a number of BSR countries, particularly in Denmark, Germany, and Sweden. It can also be assumed that **biomass imports from third countries outside the European Union**, particularly the Russian Federation, Belarus, Ukraine and other European non-EU countries, but also from North America and other continents can be expected to grow. In this context, solid biomass imports from countries in Central Africa, South America, or Asia, but also from other non-EU countries might raise significant sustainability concerns due to lacking or insufficient safeguards addressing deforestation and forest degradation or ensuring sustainable forest management.
- **Diverging government positions** exist concerning the introduction of binding sustainability criteria for solid and gaseous biomass used in electricity, heating and cooling: The **Swedish government** in liaison with the governments of **Finland** and the three **Baltic countries** expressed concerns in view of a binding sustainability

scheme for solid and gaseous biomass[2], whereas the **German**, **Danish** and **Polish** governments favour the extension of the binding EU criteria to cover all bioenergy carriers.

- In the absence of a binding sustainability scheme at EU level there is a risk of having a **patchwork** of potentially diverging sustainability regimes across Europe which might cause insecurity for investors, a potential obstacle to biomass trade, and a **'race to the bottom'**. Project partners also pointed out to the **inconsistencies** of the current EU policy framework where, for instance, biogas used as a transport fuel is subject to sustainability criteria, but not, if used for electricity or heating and cooling.
- Several large power companies in the BSR like DONG, FORTUM, Vattenfall, E.ON and corresponding associations (EURELECTRIC) have been advocating in favour of binding EU criteria for solid biomass favouring a consistent approach. A number of utilities have developed voluntary biomass sustainability standards in the frame of their corporate social responsibility policies. In 2010, the companies mentioned above have launched the *Initiative Wood Pellets Buyers*, a joint business co-operation to facilitate trade between utilities through uniform contracting and a common sustainability approach.

[2] In view of the European commission's forthcoming Biomass Sustainability Report (cf. FN 1), the Swedish delegation supported by the Austrian, Finnish, Slovenian, Latvian, Lithuanian and Estonian delegations in an information note (*10724/11)* addressing the Council of the European Union dated 1 June 2011, presented common points and concerns about detailed and harmonised sustainability criteria for biomass. These delegations emphasized that any Commission proposal on this topic must take into account the diversity in forestry and that detailed criteria could be defined at national level.

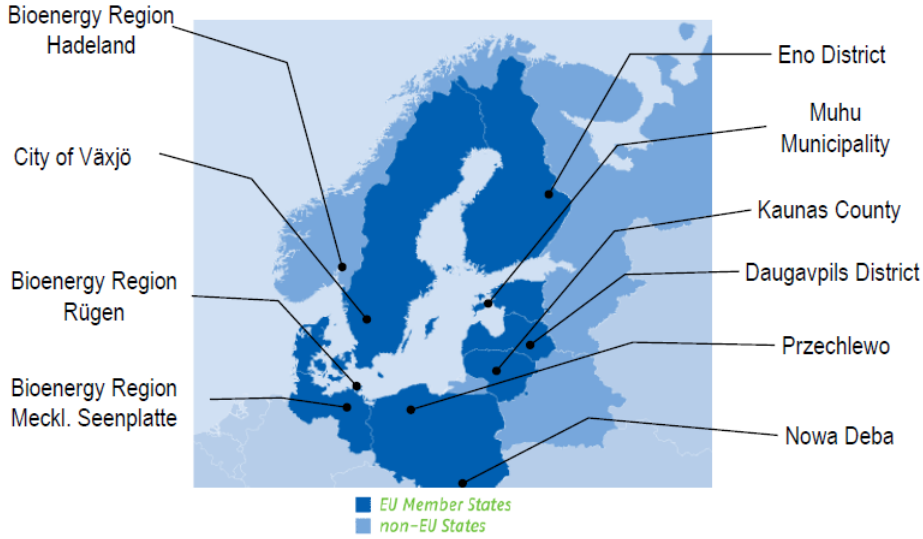
Task 3.3 Supplementary activities: Assistance paper for project partners in the frame of a EU Commission's Public Stakeholder Consultation on biomass sustainability and policy paper for the CBSS Expert Group for Sustainable Development "Baltic 21"

The coordinators put much effort into the continuous synchronization of project outputs with ongoing policy formulation and implementation processes at EU and national government levels. To this purpose a number of supplementary activities were performed including

- an **assistance paper** providing background information and support to those project partners (organisations and individuals) which planned to participate in the EU Commission's Public Stakeholder Consultation concerning sustainability criteria for energy uses of biomass other than biofuels and bioliquids (March 2011). This paper followed the structure of the EU Commission's online questionnaire and provided references from completed and ongoing work in WP 3 Policy (e.g. report on sustainability criteria, policy guidance paper, EU policy assessment, draft country policy assessments;
- **a policy paper** containing recommendations for the Council of Baltic Sea States (CBSS) Expert Group Baltic21 to be considered for initiatives related to Rio 20+ and other initiatives during the German CBSS presidency (2011/2012).

Task 3.4 - Sub-regional policy showcases

Task 3.4 was led by the University of Rostock. The main activities in this task include the selection of policy showcases from eight BSR countries illustrating how sustainability principles and criteria can be integrated into regional and municipal policy frameworks. Below a map which illustrates the different showcases.



Based on the findings of the policy showcases, a policy guidance paper was commonly elaborated titled *Promoting Sustainable Bioenergy Production and Consumption on a Local Level - Good Practice Policy Showcases and Policy Lessons Learned*. It provides findings from the policy showcases on how bioenergy production and consumption can be promoted on a local level in a largely sustainable way. Special emphasis is given to the integration of sustainability criteria for bioenergy production into regional and municipal activities and recommendations for the planning and implementation of future bioenergy promotional policies and projects. In this task a joint workshop with Work Package "Regions" was held in November 2010.

Supplementary activity: Wood biomass for bioenergy assessment methodology

A specific subtask only formally linked to Task 3.4 was coordinated by the Swedish Forest Agency and aimed at investigating pathways to improve national statistics on wood energy production in Sweden, especially concerning such biomass that is harvested with the primary aims to produce energy or to clear or thin the land area for site-related reasons where the biomass removed is used for energy production. For example, such site-related purposes could be to improving growth in valuable stems (cleaning, thinning), preserving rare species, restoring landscape values, improving sight and avoiding moisture along roads or avoiding problems from storm-felled trees. Most of the bioenergy used today in Sweden

is produced from residual products from stems primarily harvested for delivery to pulp mills and sawmills (bark, sawdust, low-quality wood pieces, lignin in black liquor, etc.). Also imported roundwood contributes to such residual product bioenergy.

For several years, an annual investigation has been performed in cooperation with *Svenska trädbränsleföreningen* (the Swedish wood fuel association), reaching almost all deliverers of chipped and not-yet chipped fuels extracted from Swedish forests and agriculture land. Moreover, annual enquiries are made addressing forests owners concerning, inter alia, how much energy-wood they sell. All large forest owners are questioned (companies, the company managing the state-owned forest, the church, communities, large-scale private owners, etc) as well as an estate-size-weighted sample of smaller private owners. However, according to numbers received from forest owners, the amount of biomass harvested/extracted for direct energy production is less than half of the estimation gained from the collection of data from delivering companies/entities (when double-counting because of internal selling/buying has been subtracted). There are several possible reasons for this discrepancy. Two major reasons could be that 1) forest owners forget they sold certain quantities, especially those for which they get no specific quantity information afterwards, and 2) certain quantities end up as energy although they were sold as pulpwood. The significance of those and other reasons for the discrepancy has been investigated further in the frame of Bioenergy Promotion.

Concerning annual harvest/extraction of biomass from agriculture land for energy production, statistics are currently being developed by the Swedish Board of Agriculture.

The hypothesis that significant quantities of fuels originate from other land types than forest or agriculture has also been investigated in the subtask. So far, it can be concluded that parks (separated from forest by the definition that the field vegetation is being managed) cover less than 10,000 ha in the country and its contribution can therefore not be significant. After the great storm-felling in 2005, the authority managing the railway has performed a project in which trees are being removed from (and forest land are bought) within tree length distance from the rail. The wood fuels generated here, as well as the annual potential from this and from road-side clearings shall be estimated further on. Moreover, there are questions related to import and export that need answers.

Finally, this subtask shall suggest ways to improve the present data gathering for production of wood energy statistics. Hence, it can be considered a valuable contribution to comply with the EU Commission's recommendation that Member States shall keep records of the origin of biomass used in electricity, heating and cooling installations of 1MW or above, helping to improve statistics on biomass use and monitor the effects of biomass use on the areas of origin (cf. EU Commission's Report on sustainability requirements for the use of solid and gaseous biomass sources in electricity, heating and cooling COM(2010)11).

4. Survey of project reports prepared in the frame of the Work package „Policy“

Task 3.1 (Sustainability criteria for the Baltic Sea Region)

Niemi Hjulfors, L.; Hjerpe, K. (2010): Sustainable bioenergy production. Defining principles and criteria. Published online. http://www.bioenergypromotion.net/project/publications/task-3.1.-final-report-on-sustainable-production-of-bioenergy

Torvelainen, J. (2011): Environmental influences of small-scale use of fuel wood in Finland. Preliminary life cycle observations. Published online. http://www.bioenergypromotion.net/project/publications/environmental-influences-of-small-scale-use-of-fuelwood-in-finland-report

Task 3.2 (Sustainability certification)

Martikainen, A. (2011): Sustainable bioenergy production: Identification and description of sustainability initiatives and certification systems in the BSR. Published online. http://www.bioenergypromotion.net/extranet-1/publications/sustainable-bioenergy-production-identification-and-description-of-sustainability-initiatives-and-certification-systems-in-the-bsr

Martikainen, A. (2011): Sustainable bioenergy production: Comparative analysis of sustainability initiatives and certification systems. Published online. http://www.bioenergypromotion.net/extranet-1/publications/sustainable-bioenergy-production-comparative-analysis-of-sustainability-initiatives-and-certification-systems

Martikainen, A. (2012): Policy recommendations from *Bioenergy Promotion* Task 3.2. To be published online http://www.bioenergypromotion.net/project/publications

Task 3.3 (Policy assessment and strategy development)

Bui, A. (2012): Country policy assessment report on bioenergy: Belarus. To be published online http://www.bioenergypromotion.net/project/publications

Clarke, N. et al. (2011): Country policy assessment report on bioenergy: Norway. Published online. http://www.bioenergypromotion.net/extranet-1/publications/country-policy-assessment-report-on-bioenergy-from-norway

Eriksson, H. et al (2011): Country policy assessment report on bioenergy: Sweden. Published online. http://www.bioenergypromotion.net/project/publications/country-policy-assessment-report-from-sweden

Krug, M. (2011): EU policy assessment Part 1. Summary of key EU legislation relevant for bioenergy. Published online. http://www.bioenergypromotion.net/project/publications/eu-policy-assessment-part-1

Krug, M. (2011): EU policy assessment Part 2. Overview and assessment of the Renewable Energy Directive 2009/28/EC with regard to its sustainability requirements for biofuels, bioliquids and other energy uses of biomass. Published online. http://www.bioenergypromotion.net/project/publications/eu-policy-assessment-part-2

Krug, M. (2011): Policy guidance paper - Promoting sustainable bioenergy production and consumption in the frame of the National Renewable Energy Action Plans and beyond. Published online. http://www.bioenergypromotion.net/project/publications/policy-guidance-paper

Krug, M. (2011): Annex to the Policy guidance paper - Promoting sustainable bioenergy production and consumption in the frame of the National Renewable Energy Action Plans and beyond. Published online. http://www.bioenergypromotion.net/project/publications/annex-to-the-policy-guidance-paper

Krug, M., Martikainen, A. (2012): Country policy assessment report on bioenergy: Germany. To be published online http://www.bioenergypromotion.net/project/publications

Krug, M. (2012): Synthesis report based on the *Bioenergy Promotion* country policy assessments. To be published online http://www.bioenergypromotion.net/project/publications

Krug, M. et al. (2012): Policy guidelines - Implementing bioenergy targets and strategies for increased sustainability –Conclusions and recommendations from *Bioenergy Promotion*. To be published online http://www.bioenergypromotion.net/project/publications

Neimane, I. et al. (2012): Country policy assessment report on bioenergy: Latvia. Published online in March 2012. http://www.bioenergypromotion.net/project/publications

Pedišius, N. et al. (2011): Country policy assessment report on bioenergy: Lithuania. Published online. http://www.bioenergypromotion.net/project/publications/country-policy-assessment-report-from-lithuania

Roos, I., Soosaar, S. (2011): Country policy assessment report on bioenergy: Estonia. Published online. http://www.bioenergypromotion.net/extranet-1/overview/estonian-country-policy-assessment-report

Weckroth, T. et al (2011): Country policy assessment report on bioenergy: Finland. Published online.http://www.bioenergypromotion.net/project/publications/country-policy-assessment-report-from-finland

Task 3.4 (Sub-regional policy showcases)

Bachmann, S. (2011): Policy guidance paper. Promoting Sustainable Bioenergy Production and Consumption on a Sub-Regional Level Good Practice Policy Showcases and Policy Lessons Learned. Published online. http://www.bioenergypromotion.net/project/publications/promoting-sustainable-bioenergy-production-and-consumption-on-a-sub-regional-level-2013-good-practice-policy-showcases-and-policy-lessons-learned/?searchterm=guidance%20paper

Bachmann, S. (2011): Annex to the Policy guidance paper. Promoting Sustainable Bioenergy Production and Consumption on a Sub-Regional Level Good Practice Policy Showcases and Policy Lessons Learned. Published online. http://www.bioenergypromotion.net/project/publications/annex-to-the-policy-guidance-paper-task-3.4

University of Rostock (2011): Description sheets of policy showcases. Published online. http://www.bioenergypromotion.net/project/publications/description-sheets-of-the-showcases-task-3.4

Sub-Task 3.4B (Methodology for assessing wood biomass use in Sweden)

Eriksson, H. (2012): Conclusions from Subtask 3.4B: Methodology for assessing wood biomass use for bioenergy. To be published online http://www.bioenergypromotion.net/project/publications

Michael Krug

Freie Universität Berlin

Environmental Policy Research Centre

mikru@zedat.fu-berlin.de