BioProm – BioEnergy Promotion

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Coordinator

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Wirtschaftsförderung
Region Stuttgart

Status of implementation by work package

A) Work Package 1 – Dissemination and Implementation

As shown in the List of Deliverables, there are some deliverables done, and some are still ongoing. Due to the fact, that german readers will not be interested in slovenian best practise examples, and vice versa, we decided on the meeting in Slovenia to collect the best practise examples (D 1.1.3) within the five regions along a template. All templates have been filled out by the partners, and all bio-energy plants are listed now and play a part of this Interim report. All files with the best practise examples are in the form of a "pdf", so we plan to integrate them into the project website www.bioprom.net. The acceptance of this website (D 1.1.1) is increasing very much. At the start of the website we had 10 to 15 visitors per day. In July 2006 we had 46 visitors per day who wants to in-form theirself about the project results and the newest information about bioenergy.

The external workshops "How to realize bioenergy projects" (D 1.1.6) are on-going and will be realized within the next six to nine months. The initiation of two bioenergy projects per region (D 1.1.7) is ongoing and will be facilitated by some regional infrastructures which are working right now already. The bro-schure of RAEE on relavance of using wood energy (D 1.1.8) is finished and spreadened to social housing managers.

The Project fact sheet and the summary slides (WP 1.2) have both been updated and belong to this Interim Report.

B) Work Package 2 – Situation inventory/Questionnaire

This work package is nearly finished. The detailed report is part of this Interim Report. The main results have been reported already in the last progress report in January 2006.

C) Work Package 3 – Economic factors

The economic factors analysed in this report are defined as to include capital investment factors and production costs.

The investment will include at the same time the project construction costs:

- The initial costs incurred in project development (feasibility studies, permitting, legal/administrative costs of securing power sales and other agreements)
- Financing costs (loan initiation costs and interest during construction)
- Construction costs through final change orders
- Initial funding of operating costs until the revenues are generated

The production costs comprise different kinds of costs like fuel costs, costs for the payback of credits, maintenance costs and others. The proceeds are related to the market prices of the energy market. When the plant is operating the produced energy should at least cover the production costs. If so the plant is operating economically.

Usually the cost of bioenergy equipment, for example, biomass fired boilers are characterised by significantly higher investment costs and lower running costs than equivalent fossil fuel based systems.

In this report the economic factors will be described comprising the overall market situation for energy generated from biomass and will be analysed to show how the production of bioenergy is situated from the point of view of economics.

Suggestions to overcome economic barriers

The required economic and financing measures to promote bioenergy projects can be categorise as follows:

- Subsidies to the investment
- Subsidies to the interest rate for credits
- Adequate incentive to the price for the production of electricity from biomass
- Tax incentives
- Tax exemptions
- Subsidies to energy crops
- Direct subsidy to the biofuel price

The cost of biomass conversion technologies varies according to a range of factors including the types of biomass and conversion process and the scale of operation. The competitiveness of bioenergy will also depend on the availability of alternative energy options, relative costs and prices, and regulatory frameworks. It is expected that as the policy environment around the Kyoto protocol develops, the trade in "carbon credits" will impact positively on the economics of bioenergy projects. By pricing the greenhouse gas emissions, especially CO_2, environmental benefits become part of business planning on the revenue side.

Only a small part of biomass plants are used for CHP. Electricity production increases the plant utilisation rate in comparison to the "heat only" option improving in this way the plant economics.

EU Directives with clear targets like those for renewable electricity and biofuels, provide a useful framework and incentive for governmental action, as they keep coming up as a reference to the public in the appraisal of progress in most member States. Extending this approach to renewable heat could be a good point. Small capacity Biomass CHP systems (< 2 MW) are characterised by relatively low electric efficiency so only heat controlled operation is economically meaningful. Maybe with the unique exception of the processes involving gasification of bio-mass.

The specific capital costs per unit of capacity increase with decreasing plant capacity ("economy of scale"). Subsidies should differentiate between the different biomass plant sizes that face different types of problems.

The biomass CHP plants are usually design for base load coverage in district heating systems. These plants only seem to be reasonable if acceptable feed-in rates are secured for long terms guaranteed over a time period of at least 10 years. The different countries seem to move in that direction.

For urban areas it seems that the best option are biomass pellets. This is the biomass fuel that seems to be less problematic from the point of view of space available and logistics. For urban areas it will be important to make the public aware about the benefits of using biomass that surpass the problems that can cause a wood combustion facility close to home. This will have beneficial economic implications.

Specific solutions for some regions can be also concluded. For example for the region of Rhône-Alpes (France):

Biogas:

- Increase the buyback price of electricity generated from biogas. There is a clear political will for this at national level, and the relevant authority is to set the new rates in the medium term.

Wood energy:

- Confirm the reduction of VAT on the purchase of wood and charges to heating networks.
- Develop the market to produce more competition between equipment suppliers.
- Anticipate ex-urbanisation by creating zones for the installation of collective facilities for energy production. Greater involvement in energy issues by the authorities responsible for urban development.

- Develop heating networks or retain existing wood-fired networks in order in certain cases to establish the boiler plant in a less densely populated area. But heating networks at what cost?

In the Catalonian region it has been observed that the successful projects have required the involvement of all the implicated agents in the project:

- Biomass supplier
- Plant technology provider
- Plant operator
- Regional / national government
- among others ...

and also it has required the implication of different kinds of economic resources (public, at al levels even European and of course, private investment). Another important point should be the promotion of waste wood from the forestry management that so far is underused for energy production.

D) Work Package 4

For the realisation of a bioenergy project investments must be executed. Therefore the operator normally has to raise a credit from a money institute. In some countries financial support is given to bioenergy plant operators by state-run institutions in form of low interest credits or allowances. To get the plant built and running the operator has to develop an investment plan about how he will get the money and from whom and how the pay back will be realised. In the questionnaire the financial factors comprise all the factors related to the situation of acquisition of money and the different concepts. Furthermore the financial factors describe the situation how the credit institutes deal with bioenergy investors and how state-run institutions design their financial support.
The report describes, analyses and proposes measures to overcome the financial barriers for bioenergy plants identified in this project.

Suggestions to overcome financial barriers

So far it has been presented a summary of initiatives for financing projects in the different European regions participating in this project. These measures covers almost all the commonly known financial measures to promote bioenergy projects and can be categorise as follows:

- Subsidies to the investment
- Subsidies to the interest rate for credits
- Adequate incentive to the price for the production of electricity from biomass
- Tax incentives. Require less administrative work than other instruments. You get the money back just presenting the bill.
- Tax exemptions
- Subsidies to energy crops
- Direct subsidy to the biofuel price

The financial instruments that could be implemented for the correct development of bioenergy projects should include some of following:

- funding for execution of feasibility & market studies
- investment subsidy scheme
- soft loan schemes for bioenergy projects
- fiscal measures
- green tariffs for power and/or heat from bioenergy plants
- utilisation of internationally available funds for the reduction of greenhouse gases
- utilisation of EU-funds simultaneously to other more close funding sources

One of the lessons learnt is that low size projects can in some cases experience more difficulties to find the correct financing instruments than more ambitious projects for which some financing mechanisms can be available. Nevertheless in some of the regions studied this situation has started to change with loans especially focused in medium to small size biomass heating systems.

E) Work Package 5 – Legal factors

The relative importance of legal issues as a barrier for bioenergy projects in urban areas in the partners countries was assessed with a questionnaire elaborated in the WP2 of this project and distributed among experts on the bioenergy field. The detailed results shows key points regarding the implementation of bioenergy projects:

- Urban development leads to more constraints (transports, implantation…);
- Environmental protection regulations are seen as a constraint (level of emissions, procedures for authorisation request…);
- Legal barriers can be strong enough to completely stop a project or delay it for a very long time.
- Permitting difficulties have for consequence schedule delays and their associated cost escalation.

The negative as well as positive fallouts of the applied regulations have been put forward through examples and good practices. The chosen method was the sector approach, this means environment, urban planning, electricity production, energy market and taxation.

The most important points are the following:

1. In the opinion of the wood energy professionals, the regulatory aspects are not an obstacle to installing wood-fired boiler plants. What they did highlight was the fairly long and onerous administrative procedures involved.
2. The environmental impacts of a biomass plant should be determined in advance and a lot of different departments of public administration are involved in the process. The "polluting" emissions (PAH's and VOC's and also dust) and data regarding the quantities emitted by each category of project - individual, small and medium output and large output – can represent an important legal barrier.

3. the legislation in the matter of town planning is of great importance for bioenergy projects, especially if implemented in urban areas because it can allow or restricts the implementation of bigger plants by dedicating certain areas only to "green land utilisation" for example..
4. The financing of operations play an important role in the implementation of bioenergy projects: fixed price for the electricity producer, feed-in tariffs, bonus and incentives (see WP 3 and 4).
5. The energy market can increase the commitment of economic players to energy savings. Also the introduction of CO_2-emission-licences for industrial processes in 2005 in Europe creates a possible economic advantage for bioenergy projects and can help to push forward the development of bioenergy projects. The trade of the licences can help to improve the economic performance of bioenergy plants and production sites.

F) Work Package 6

The objective of the analysis is the evaluation of the characteristics of socio-economic factors including barriers, best practice solutions to overcome these barriers and remaining limitations for the use of all observed bioenergy applications (biogas- , wood chip-, and pellet facilities).
Socio-economic aspects of utilization of bioenergy is large and it is subject of different research and studies like IEA bioenergy project (IEA Bioenergy Task 29). The socio-economic impact analysis are used to evaluate the local, regional and/ or national implications of implementing particular development decisions.

In the mentioned research (IEA Bioenergy), the socio-economic implication are measured in terms of economic indices, such as employment and monetary gains, but in effect the analysis related to number of aspects which include social, cultural, in environmental issue.

The socio-economic impacts on local level are diverse according to such factors: technologies, local economic structures, social profiles and production processes.

A summary of some of the benefits associated with local bioenergy production is:.

1. Social Aspects:
    - Increased Standard of Living:
        - environment
        - health
        - education
    - Social Cohesion and Stability
        - migration effects (mitigating rural depopulation)
        - regional development
        - rural diversification
2. Macro Level:
    - Security of Supply /Risk Diversification
        - regional growth
        - reduced regional trade balance
        - export potential
3. Supply Side:
    - Increased Productivity
        - enhanced competitiveness
        - labour and population mobility (induced effects)
        - improved infrastructure
4. Demand Side:
    - Employment
        - income and wealth creation
        - induced investment
        - support of related industries

The focal point of the majority of socio-economic impact is the Demand side effects and they are primarily quoted in terms of employment and regional income. They can be categorised accordingly into:

- direct effects
- indirect effects
- induced effects
- displacement effects

The impacts of socio-economic on the implementation of bioenergy project in urban area are in general mainly depended of the used technologies, location of the plant, energy prices, and the financial structure of the investment. The acceptance of the project and environmental impacts have negative influence on the decision-making in case of location is nearly housing area (less impact in case the location is in industrial area).

Some conclusion of the socio-economic impacts/aspects due to the use of bioenergy in urban area are:

- direct employment in the conversion plants is not big, but other (direct and indirect) employment is more important (bio-fuel preparation, transporting of bioenergy fuels, construction and operation of plants,..),
- reduction of CO_2 emissions and increasing of energy security on local level,
- increasing of investment,
- increasing awareness of local authorities and people,
- lack of information of distorted information from persons or organisms which have economical interests,
- public acceptance through adequate politics of communication,
- public money is the most important specific influence on financing concepts of urban biomass projects,
- specific barriers are: the location of the plant and the emissions (pollutants and noise) which are mentioned in all regions.

G) Work Package 7

Lack of information is a main barrier for the implementation of biomass projects in urban areas. We tried to identify the main information deficits, which are a barrier for the increased use of biomass in urban areas, and the report shows how these deficits can be overcome.

Provision of information and information deficits in the range of "bio-energy projects in urban areas - which pieces of information are needed?

Fundamental questions appear during the planning and implementation of bio-mass-projects. Some basic problems arise irrespective of the type or position of the projected installation:

- Which ways to finance bio-energy projects do exist? Are there any subsidies offered?
- Which laws and regulations must be fulfilled? (emission of limited pollutants, storage of fuel, fire protection requirements, etc.)
- Which fuel is applicable (e.g. pellets, wood chips or other forms of biomass)?
- Who delivers the fuel? (What about supply guarantee?)
- How expensive is the fuel? What is known about future price development?
- How is the fuel stored? How much space is required?
- Which firms and companies are adept at the construction of biomass-installations?
- Which plant capacity is advisable?
- Which technology, which type of boiler can be recommended?
- Do any reference plants exist? Where are they?
- Can biomass technologies be combined with technologies using other sources of energy?

Other questions often depend on the type of the designed plant. For example for planning a biomass district heating network it is essential to know the estimated grid length and the expected number of connections. When designing bio-energy projects in urban areas it is decisive that citizens accept or even support the project. Citizens perhaps worry about increased air pollution, noise exposure and volume of traffic. It is necessary to inform the local population right from the design or planning stage to avoid opposition against the bio-energy project.

The example of the project "biomass plant Berlin-Gropiusstadt" shows how important information can be to reach acceptance among the local population. In the year 2003, a biomass-CHP-plant with a power of 20 MW_{el} and 64 MW_{th} was put into operation. But the project was complicated by a major opposition among the local population. The inhabitants of Gropiusstadt feared an increased volume of traffic because of the transport of fuel and an additional air pollution e.g. because of the combustion of contaminated wood. Thus about 30 informative meetings were organised, which gave citizens the possibility to voice their objections. Politicians and the operators of the projected plant discussed these issues with citizens and so most doubts and reservations against the installation could be dispelled. This shows again, that bio-energy plants especially in urban areas can obtain acceptance among the citizens, if the population is informed right from the planning state.

In many countries in rural areas, the number of buildings heated with wood is traditionally higher than in towns. The inhabitants have been used to the usage of wood for energy purposes since they were children. These persons are able to utilise detailed information on wood heating installations or the storage of firewood. Inhabitants of urban areas usually lack these information. In addition rural population has a more positive attitude towards the use of biomass for energy purposes. In these areas buildings completely or partly heated by wood are common, but in urban areas they are still exceptional and unusual. That is why the urban population needs additional information on the usage of wood and biomass for heating and hot water provision.

The Sources of information, with Austria as an example, can be seen in the report on work package 7. A number of studies and research papers show clearly that information deficits still exist despite the information overload on biomass that is offered especially on the internet. Read for example the results about the survey, done by the Johannes Kepler University Linz, where 108 Upper Austrian plumbers on behalf of the "Ökoenergie Cluster" have been interviewed, in the report on work package 7.

All mentioned research reports show clearly that information deficits are an essential barrier for the implementation of biomass projects. It must be admitted that especially the information level of users of prefabricated houses was increased by intensive awareness raising campaigns in recent years.

Consequently in Upper Austria about 2.000 new pellets central heating systems were installed - so that all in all about 9.500 pellets heating systems are in operation. Sustained success was also achieved in the field of biomass major projects. Until now more than 280 biomass large scale plants have been put into operation, most of them are small district heating networks.

Nevertheless especially **in urban areas** a lot is still to be done. Biomass is often considered as a "rural" energy source. Nevertheless, modern biomass technologies like pellets heating systems or automatic wood chips heating installations are – also in urban areas - a cost-effective and environmentally friendly alternative – in particular if there is no possibility for a connection to a district heating system. In this regard it is important to provide information on fuel supply, supply guarantee and price development.

Housing associations, building promoters, building service engineers and planners still require detailed high quality information on modern biomass heating systems in order to increase the amount of biomass-heated multiple dwellings. Biomass heating systems are sometimes regarded as an additional risk. In some respect the enormous lack of information in fact creates risks, which is shown by significant faulty designs and design errors. In this respect it is especially important to show by means of exemplary projects, that biomass heated multiple dwellings are efficient, environmentally friendly and cost saving alternatives and that biomass heating installations do not stand for a higher risk than conventional heating systems. By compact information brochures and well documented exemplary installations potential sources of error can be identified and suggestions for improvement can be presented. That is a quick and uncomplicated way to provide relevant persons with information required. In addition an increased presence on fairs will significantly improve the level of information among plumbers.

For the implementation of large-scale biomass projects, e.g. biomass CHP plants or biomass district heating networks, detailed and specific information is needed, which cannot be provided by information brochures or leaflets. However these brochures are able to create an increased awareness for environmental friendly and climate protective alternatives, which are cost effective, too. Opposition against large-scale biomass projects in urban areas is often caused by a lack of information or even misinformation. Therefore it is important to involve the local population right from the design or planning stage to avoid resistance against the project.

In recent years the level of information on biomass and its applications for energy purposes was certainly increased. This was reached by targeted information campaigns and by the rising oil prices that aroused public interest for renewable energy sources. So it may be stated, that despite the achievements of recent years, the removal of information deficits concerning biomass projects – especially projects in urban areas – remains an important challenge for the future in order to increase the share of renewable energy.

Some more information is given in the Case study "Upper Austria" – Measures to remove information deficits in "bio-energy projects in urban areas", which is a part of the report to work package 7 too.

H) Work Package 8

In the mentioned period, from the project start up to now, there have been three project meetings (D 8.5):

- KickOff in Stuttgart, Germany, April 2005
- Project meeting in Lyon, France, end of September 2005
- Project meeting in Ljubljana, Slovenia, April 2006

The minutes of the respective meetings were given to the project officer already. The intermediate financial report will be finished within the next days (D 8.1).The next progress report will be finished in January 2007.

I) Overview on the current status of deliverables

	partner	month
WP 1.1. Dissemination and Implementation		
D 1.1.1: Set-up of project internet portal with general project information and links to the regional websites in English language (selected information will be translated)	WRS, IER	4 **done** ✓
D 1.1.2: Internet websites of the regional partners in the national languages linked to the general project website	all partners	6 **done** ✓
D 1.1.3: Flyers on selected "Best practice" examples, at least 20 in national languages; for project developers and stakeholders We decided to inform via Internet, see Best Practise – pdf, mailed on 31st, July 2006	all partners; template by WRS	18 **done** ✓
D 1.1.4: Online information and communication platform (extranet) in English language	WRS	12 **done** ✓
D 1.1.5: Interim report "Overcoming of non-technical barriers" for project developers and the EU commission	WRS, with support from all partners	18 **done** ✓
D 1.1.6: 5 External workshops with project developers "How to realize bioenergy projects" one per region (networking)	all partners	7 – 30 ongoing
D 1.1.7: Initiation of ten bioenergy projects – two per region	all partners	end of 30 ongoing
D 1.1.8 : Brochure of RAEE (on relevance of using wood energy). Target Group: Social housing organisations	RAEE	12 **done** ✓
WP 1.2. Common dissemination activities		
1.2.1: Abstracts including regular updates	WRS	1 – 30 ongoing
1.2.2: Project presentations including slide packages, presentations, written abstracts, posters, dissemination material etc.	WRS, with support of all partners	1 – 30 ongoing
1.2.3: Presentational material including abstracts, visuals including photographic material, interviews.	WRS, with support of all partners	1 – 30 ongoing
WP 2: Situation inventory		
D 2.1: Questionnaire template for the situation inventory in English language, (partners need to translate in national languages)	IER, support from WRS	1,5 **done** ✓
D 2.2: Regional specific analysis of the questionnaires and compilation of the translated and transferred results on an integrated project level (for internal use only)	all partners	6-10 **done** ✓
D 2.3: Exposé on the situation inventory of non-technical barriers in and across all partner regions (in English, first edition: 200 copies for experts in each region).	WRS, IER, support by all partners	10 **done** ✓

WP 3-7: Non-technical barriers		
D 3.1. Report on economic factors in all observed regions including Best Practice solutions with regional impact	CREVER, with support of all partners	17 **done** ✓
D 4.1. Report on integrated financial factors in all observed regions including Best Practice solutions with regional impact.	CREVER, with support of all partners	17 **done** ✓
D 5.1. Report on integrated legal factors in all observed regions including Best Practice solutions with regional impact.	RAEE, with support of all partners	17 **done** ✓
D 6.1. Report on integrated socio-economic factors in all observed regions including Best Practice solutions with regional impact.	JSI, with support of all partners	17 **done** ✓
D 7.1. Report on integrated information deficits in all observed regions including Best Practice solutions with regional impact.	ESV, with support of all partners	17 **done** ✓
WP 8: Coordination and management activities		
D 8.1. Financial reports and organisation of payments and financial partner reports	WRS	1-2 (advance p.) 18 (intermediate) **done** ✓ 30 (final) ongoing
D 8.2. Six-month progress reports	WRS, with support from all partners	6 **done** ✓ 12 **done** ✓ 24 ongoing
D 8.3. Intermediate technical report	WRS, with support from all partners	18 **done** ✓
D 8.4. Final technical report and guideline "how to overcome non-technical barriers"	WRS, with support from all partners	30 ongoing
D 8.5. Organisation of three internal project meetings "Kick-off"; "Overcoming non-technical barriers" and "Review on dissem. and implementation"	WRS	2 **done** ✓ 17 **done** ✓ 29 ongoing