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Regional Networks for the development of a Sustainable Market for Bioenergy in Europe

Biomass Trading Centre Applicability in the target regions

Report summarising the activities and conclusions of the trading centre applicability analyses in the five target regions (Deliverable 3.5)

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This report has been produced as part of the project BioRegions. The logos of the partners cooperating in this project are shown below and more information about them and the project is available on www.bioregions.eu

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Executive summary

Structure of this report

This report lists the methods applied and the conclusions obtained in task WP 3.4 of the BioRegions project. The three sections of this chapter provide a short introduction to the task, along with summarized results for each target region. In the subsequent chapter the general methodology how to generate defined applicability results is explained in more detail. Afterwards, in chapter three, the reports of the target region visits by representatives of Biomassehof Achental (BAT) are provided, yielding insight into how the conclusions for each individual region were drawn.

Aim of the research and analysis work

The aim of WP 3.4 is to assess the applicability of Biomass Trading Centres (BTC) in the five target regions in Bulgaria, the Czech Republic, France, Ireland and Latvia. To have a common base for the analysis, the idea and scope of such a trading centre needs to be defined first. This structure entails the requirements of such a business in general. Testing the fulfilment of these necessities is performed along a structured master plan by which the applicability of a BTC in an individual region can usually be answered with yes or no. In the case that it is not yet possible to state a clear result, further steps are suggested to reach a conclusion. In the other case, if the applicability is answered positively, suggestions for the ensuing implementation measures are provided.

Profile of Biomass Trading Centres (BTC)

A BTC in general is designed for trading biomass. Biomass can be any form of renewable resource or residue stemming from agriculture, forestry, land care or related processes; mechanical treatment (e.g. in a saw mill) does not alter this status. The trading centre can be involved in collection, refinement, logistics and/or sale of biomass, where each of these sectors is optional. Depending on the scope of its actions, a BTC can for example be a pure marketing and sales platform, only managing the trading of biomass without any physical infrastructure. But it could also own or manage a logistics system with trucks and storage boxes, or organize the collection of raw biomass at its origin, or even have own production facilities that refine and modify the biomass into different types of biofuels (usually of higher quality). Biofuels within this scope are defined as every product from biomass resources that can be used for energetic purposes, either heat or electricity. Examples include wood chips, log wood, pellets and also biogas.

Along with the trading structure, a BTC can also assume the role of a market opener for biofuels both by facilitating the access to them for interested persons and by fostering the usage of renewable resources for energy production. Usually connected with this task is the support of regional development, as an increased utilization of bio-energy (instead of imported fossil fuels) ensures to keep the energy spendings within the region and thus secures regional employment. Additionally, a BTC can operate as a service provider, including for example a district heating net, energy consultation, business diversification for local farmers, organisation of and support with funding opportunities related to renewable energies, or information campaigns about environmental and climate topics. Altogether, a BTC can play a decisive role in the context of environmental and energy issues, especially if there is no such organisation in the region yet (which is the case in all target regions except France), and its benefits can be split into three realms: economy, local employment and ecology.

Due to the various forms a BTC can adopt, an equivalent amount of possible business structures exists. A centre could, for example, be operated in a public-private partnership (PPP), or by a consortium of private shareholders and investors or by a public authority directed by the municipality. The core managing network can be supplemented with partners and stakeholders from different sectors who have an interest in a strong local economy and the usage of biomass, for example craftsmen, forest owners, farmers, machine owners or saw mills. Common to all structures is the necessity for a start-up investment, its height depending on the equipment and scope of the planned centre. As the investment cost for a trading centre of moderate size with few machines and logistics infrastructure can quite easily reach one million Euro, foreign capital is usually required. This can either be acquired by a bank loan or a group of private investors providing venture capital. Considering the current economic situation in most European countries and the rather new idea of BTCs, a bank credit is normally available only with a sufficient security in case of default. Another possible source to alleviate the financial obstacles in the beginning of a BTC establishment could be public funding. There are several funds on European level, and in many countries also on national or regional level, that deal with research and innovations, renewable energy or tackling of unemployment.

Summary of the conclusions for each target region

In this section the results for each target region are shortly summarized and the main aspects listed. For a detailed analysis of each region, please refer to chapter three where the reports of BAT's visits to the target regions are provided.

Bulgaria: Plovdiv region

The applicability of a BTC in the Bulgarian target region can be answered with a clear "yes, if". On the one hand there are positive aspects that strongly support the establishment of a BTC, while on the other hand few possibly critical problems could impede it. One major advantage is

the existence of a business driving person (the anchorman) with biofuel market experience. He already owns a wood chipper and a tractor, which could serve as a start-up machine stock. Together with the EAP and a private network of entrepreneurs a rather detailed business plan was compiled, which is an explicit signal of the group's dedicated business intents. Additionally, the intended supply contracts with the regional Chekeritza forests could secure the future delivery of cheap raw material. The general support of political institutions (national ministry for agriculture and forestry, municipalities) is surely valuable, although none of them is willing or able to provide financial support.

Despite these strengths, the financing of the venture is not yet clarified although the business plan contains several possible sources of seed capital. A further refinement of the business plan might be very helpful for the acquisition of capital. The dependence on mainly one large customer, as currently intended, might also be a marked problem. A consumer diversification (municipalities, private businesses or households) might reduce this dependence. Some organisational issues should also be tackled: transparent contracts with both supply and demand partners, delivery of a finely elaborated business plan to the aspired fund and the planning of the necessary logistics and storage infrastructure. Once these drawbacks are eliminated, the other factors clearly favour the establishment of a BTC.

Please note that a small BTC was already operational in the region from autumn 2010 till summer 2011, but had to close down after unexpectedly high facility rent increases.

Czech Republic: Slavicin and Brumov-Bilnice region

Referring to the question of BTC applicability in the Czech target region, a general "yes" cannot be stated yet. Although several factors clearly favor the establishment of a BTC, few limiting circumstances exist as well. On the positive side are the large potential of unutilized waste wood, the low price of biomass in comparison to the dominant fuel natural gas, the will for cooperation of the Kloboucka lesni company, the existence of an anchor organization and person, the positive atmosphere between the responsible politicians, and the support both by the municipalities and by EAZK.

Factors that could hamper the establishment of a BTC are the unclear demand for the BTC products, the unaddressed financing of larger investments, the co-firing of biomass in large plants and the seemingly unclear legal and political situation concerning bioenergy. Additionally, the possibly volatile attitude of Kloboucka lesni could seriously affect the success of any biomass business in the region. These negative influences could be overcome by a fostering of private boiler exchanges to biomass, the acquisition of funding opportunities (if necessary), the promotion of local usage of biomass (instead of long transports or large plants) and the strengthening of local independent private actors. The Kloboucka lesni issue could possibly be addressed with long-term contracts that provide security in business operations with them.

The planned log wood sale project in Brumov-Bylnice seems to be neatly woven and surely earns a business attempt, if the cooperation with Kloboucka lesni can be formally agreed upon. The purchase or installation of a technical drying facility (with waste heat at an appropriate site) should be considered to upgrade the quality of firewood or wood chips more easily than with air drying only.

France: Trieves region

The question about the applicability of a BTC needs to be restated in the case of Trieves, as a centre already exists close to the town of St. Michel-les-Portes. Rather than querying the setup of a new business, it had to be assessed whether the existing one is well-adapted to the actually necessary supply and demand or whether it needs to be restructured.

Currently, the centre produces and sells wood chips only. Its supply is covered from regional forestry resources. An increase of sales is planned, but the sources of the necessary raw material are not identified yet. The local forests are difficult to access due to the steep mountain slopes. Main consumers of wood chips are the 2MW-boiler at the site itself (heat is used for drying timber from saw mills and, until September 2011, wood chips), the local industry and private households. The centre is operated by a consortium of four organisations (saw mill, municipality, forest owner association and development committee), a complicated public-private partnership structure that hardly allows for fast decisions. The mayor of St Michel, however, shows a substantial interest in developing and extending the centre. Additionally, there is a rather strong bioenergy culture in the region, as it tries to develop an eco-tourism image to increase the touristic value but also keep nature healthy.

In general, the existing BTC is a good starting point for a further extension of the biomass usage. Nonetheless, several measures to improve the efficiency and economic situation of the current BTC can be thought of. First, the mobilisation strategy for the mountainous wood resources needs to be clarified. Second, a marketing strategy to increase the turnover and profit could be devised. Third, a construction of the originally planned but not implemented DH system could be reconsidered. Fourth, technical improvements of the drying boxes could foster their usage and increase their efficiency. Fifth, a restructuring of the management to allow for easy and economic decisions could be very helpful. The monetary resources required for these actions depend on their actual implementation, and could for example be obtained from the participating organisations or administrative bodies.

Ireland: Westmeath region

Despite several positive influences for the establishment of a BTC in the Irish target region, a clear “yes” with regard to the applicability is not yet possible. The strong and traditional rural community culture among the citizens with networks and communal non-profit companies,

together with the high motivation of several individuals, is a fundamental advantage of the region. National legislation to combat climate change and rising interest in private biofuel consumption could provide a substantial market basis for refined biomass. The locally organised heat provision infrastructure is a further benefit for a putative BTC as the people are used to buying fuels for their private stoves, and many areas are oil dependant and not on the gas grid.

However, these positive factors are balanced by the as yet lack of a dedicated promoter person or group who is willing to take the responsibility for such a project. The search for this driver person (or group) should definitely be a major issue. Additionally, the financing of a BTC venture is not clarified, although several possible sources for seed capital are identified. The compilation of a detailed business plan might prove helpful for the acquisition of investment capital. The traditionally limited role of municipalities in Ireland may mean they are not involved in a BTC venture, although their limited sphere might be overcome by a private business or cooperative and the collaboration with established public organisations. The raw material supply of a BTC is not secured yet. Low forest coverage in the target region and the increasing demand of the nearby Bord Na Mona peat power plant could severely aggravate this problem. Early clarification or contracting with the plant, both on supply and other cooperation themes (e.g. heat, logistics), might attain a certain planning security level. Further plantation of SRCs should also alleviate the effects of rising biomass demand. The general lack of (small) DH plants in Ireland and the target region deprives a potential BTC from reliable medium-scale customers.

The still unclear market potential in the region could be answered by a feasibility study that refines the applicability question in more detail. A responsible organisation or individual to carry out the analysis should be the first step towards it.

Latvia: Limbazi region

The question of applicability in the Latvian target region can be answered with a “yes” in principle, although several factors are unclear or their effects are not yet known.

The rising municipal interest in biomass and energy efficiency surely serves as a positive signal for the applicability, as the town of Limbazi plans to start an energy information centre. A combination of this centre with a (virtual) BTC might be an interesting option. Ekodoma’s professional support of the municipality and the whole venture is a valuable benefit. The strong motivation of a local sawmill owner to cooperate in developing a trading centre and his idea to commercialize the obligatory roadside cleaning are appreciated. Supply with raw materials could be organized with the local forest owners since a mobilisation infrastructure already partly exists. Despite the very high coverage of the heat market with biomass (in private stoves and DH systems), a fuel quality increase might have market potential and could be operated by a BTC. The situation of the local DH plant is unclear, although a general support of a regional BTC could be identified.

Contrary to these positive aspects some problems require an approach before getting started with business. A major flaw is the current lack of a dedicated responsible person. Implementing a search for a motivated anchorman with apt qualifications should be a natural next step. With such a person the financial issues might also experience improvement. At the moment the capital sourcing of a BTC is completely unclear. The clear definition of a business concept could be a first pace towards the attraction of interested investors or application for funding. Last but not least the demand situation (for wood chips or log wood) is not completely clarified, which makes it difficult to assess the business potential of a BTC. A survey in both population and possible commercial customers could help to clear up this issue.

The fruitful cooperation between Ekodoma and Limbazi municipal representatives should be continued and the partners could serve as a work nucleus in the further persecution of a BTC establishment, if desired.

Evaluation of the results in all target regions

The five individual results from above can be supplemented with some remarks valid for all target regions. A market potential for a BTC seems to be present in all of the regions. The establishment (or, in the case of France, strengthening) of a trading centre at this time might be adequate for securing a good long-term position in the bioenergy sector. Additionally, the goals of the BioRegions project can usually be fulfilled more easily with the support of a BTC. In all regions, several persons or groups have shown a strong motivation to build up a BTC and enter into the market. Nonetheless, except in the cases of Bulgaria and the Czech Republic, dedicated anchor persons are not yet known, although critically required. A further issue is the lack of appropriate financing.

Every target region is quite different from the others, and each of them requires an individually adapted strategy for the establishment of a BTC. The decision about its implementation should be made in the next phase of the BioRegions project, the implementation of the Biomass Action Plan. The natural first pace after an affirmative agreement would be the elimination of the negative factors stated above and the fostering of the positive ones. Suggestions in these directions by BAT are provided below (in the minutes of the target region visits).

Methodology of the applicability assessment

In this chapter the methodology to analyse the appropriateness of a BTC in any defined region is introduced and explained. It has been developed by BAT, and the successful application of this rule set can be surveyed in the best practice region of Achental. In 2005 a RES-Integration was performed for that region, resulting in a positive potential for a BTC according to this rule set. The core structure of the envisioned BTC (the BAT) was implemented in 2007 and has been steadily growing since. Thus the application of these applicability decision criteria is based on substantial experience and successful implementation.

Outline of the consultation

In this section the steps undertaken by BAT and the target regions to assess the BTC applicability are described. Throughout these steps, BAT provided support by mail and phone and aided in solving ambiguities and answering questions on the topic.

1) Visits to the “Best-practice Regions” of Achental (Germany) and Jönköping (Sweden)

One of the major goals of the BioRegions project is to identify the success factors of best-practice regions. The underlying idea is to copy an appropriate subset of these factors and apply them to different regions throughout Europe. Possibly the best way to learn and comprehend critical ingredients is by watching and querying. Thus representatives from the five target regions visited the two “Best-practice Regions” within the project, Achental in Germany (March 2011) and Jönköping in Sweden (September 2011).

During these journeys they could also inspect the local BTCs and understand the necessary prerequisites for their establishment. All participants could strongly profit from the experience of the management staff of both centres.

2) Definition of a general BTC structure

In the project meeting in Riga (May 2011), Christian Epp from BAT outlined the general idea of a BTC and the methodology of its applicability analysis to all participants. During the presentation and the following discussion all attendants showed a clear understanding of the topic and stated their capability to compile the required data. This presentation can be found in the appendix.

3) The criteria in a nutshell (TCA document)

Shortly after the meeting a formal document was published by BAT via mail and website (also in May 2011) that outlined the core points of the applicability assessment. Its main aim was to encourage the target region representatives to collect the requested figures and opinions (see also next point). This TCA document can be found in the appendix.

4) Data compilation in target regions (until November 2011)

With the publication of the TCA outline, all target regions were asked to start with the data gathering and the analysis of the BTC applicability. During this time consultation on the topic was provided by BAT. Relevant issues about the data collection and interpretation were discussed.

5) Visit to target regions (July 2010 till November 2011)

From July 2011 until November 2011 the four target regions in Bulgaria, the Czech Republic, Ireland and Latvia were visited by Bernhard Schauberger. Christian Epp already visited the target region of Trieves in France in July 2010. During these visits important stakeholders (from agriculture, forestry, municipal administration, politics, energy agencies) were met and interviewed, workshops with interested regional representatives were held and possible promoters or anchor persons of a BTC establishment were queried.

The aims of these visits were to assess whether there is potential for a BTC and which form of BTC could be appropriate, raise the awareness for bioenergy and the advantages of a BTC (in the workshops) and understand whether the respective requirements were met. Reports from the individual visits can be found in the next chapter.

6) Shared conclusion between target region and BAT

After the visit and the detailed analysis of the TCA document, conclusions about the applicability were drawn in concordance between the target region and BAT. In case of a positive result, the next steps towards the implementation were considered and agreed upon. In case that the applicability analysis yielded no clear result due to unclear data, further measures to alleviate this drawback were decided. This report contains the results of the analysis up to this step.

7) Further consultation

After the completion of task WP 3.4 (the applicability analysis), further consultation by BAT will be provided in a limited extent, given that a target region indeed wants to establish a BTC. This support will be coordinated with the mentor of the respective target region.

Requirements of a BTC

Due to the various forms a BTC could adopt and the different products it could trade with, the requirements for its establishment also vary greatly. However, several fields can be identified in which the fulfilment of the basic requirements needs to be clarified in all cases. Namely these are:

Supply and demand

There needs to be both a sufficient supply of biomass and also a promising demand of biofuels to allow for the establishment of a BTC. Additionally, current problems with the provision of biofuels are often an indicator that a local market player (e.g. a trading centre) is missing.

Financing issues

Establishing a BTC is usually cost and labour intensive, and if machines or infrastructure are required, a sum of € 1 million can easily be reached. Thus a secure and reliable financing structure needs to be designed. This can base on several sources, namely bank loan, private investment or seed capital, public start-up aid or other funds.

Political support

Even if municipal or regional authorities are not directly involved in the process, their support is often decisive. On the one hand, they can provide financial support or non-financial services like public relations, legal aid, strong networks or protection against competition. On the other hand municipalities often own an important amount of real estate, and the administration could be convinced more easily about the rewards of switching from fossil energy to biomass.

Site

The existence of a well-accessible and appropriate site is a critical factor. Usually a good site includes a truck-supporting ground, proximity to major roads, no problems with noise and sufficient size.

Competition status

In most regions throughout Europe, the biomass market is still in its infancy, although developing. Thus a business set up now has good chances to stand its ground in the future.

Actors

The existence of highly motivated anchor persons who drive the initial and future development of a BTC is of vital importance. Without a core motivation of one or few persons who have a deep interest in the topic, setting up a BTC is usually hardly possible.

Networks and partnerships

Depending on the current status of bioenergy in the region, there might already be interested cooperatives or business groups in this market. Their opinion about a BTC can be of high relevance. If no networks exist yet, fostering their build-up and possible partnerships might be very helpful for future actions.

Detailed results from all target regions

In this chapter, the reports of BAT's visits along with detailed conclusions and recommendations for the next steps are given. The documents are separated by target regions, and each of the five sections is structured as follows.

First the target region is described by some key facts, then the schedule of the visit and the attending participants are listed. Afterwards the minutes from each of the meetings during the visit are given. Eventually each section closes with summarizing comments and recommendations for the future strategy.

The only region with a different structure is France where the visit was carried out by Christian Epp already in July 2010.

Please note that consultation took place also after the meetings by mail or phone. Thus not all facts stated in the conclusions above were already completely clear during the visits. However, the major facts and results do correspond.

Plovdiv region in Bulgaria

Presenting the target region

The region of the Sredna Gora mountains in Plovdiv, Bulgaria, is located in the centre of the country. The target region is a part of the mountain area with 2,926 km² and 121,000 inhabitants altogether. The larger municipalities in the region are Karlovo, Brezovo, Hisarya, Panagyurishte and Strelcha.

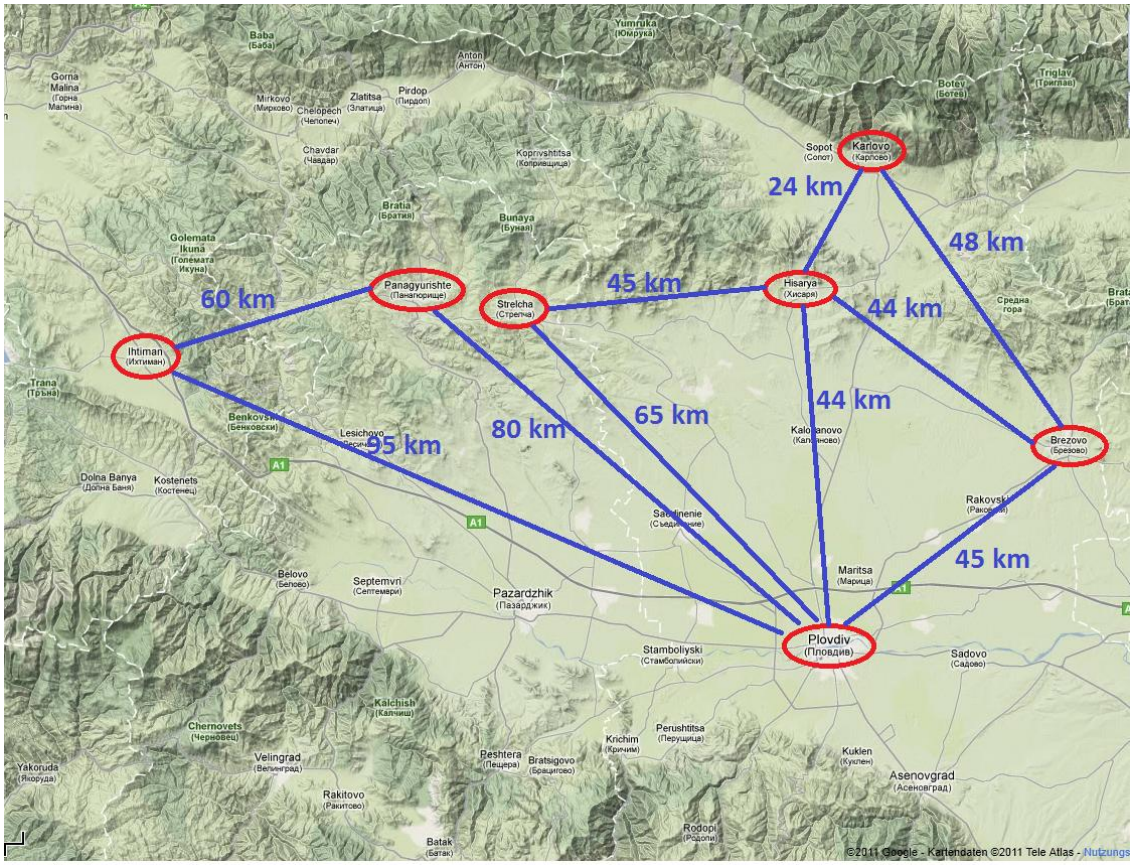
The forested area in the target region is 1,270 km² (43%). It is largely owned by the state (79%) and municipalities (13%), with the remaining forests being private owned or protected. The structure is mixed broad-leaved and coniferous forests.

The current usage of the forest is to remove a substantial part of the annual growth and sell it for high-quality industrial usage (furniture), low-quality industrial usage (paper, pulp) and firewood. The percentages of each usage are not clear. However, the local inhabitants seem to use a large amount of biomass for private heating.

The Biomass Action Plan for the target region envisions the implementation of the project aims with a high percentage of woody biomass for heating, both in municipal and private buildings. Several steps towards the replacement of the old heating systems are planned: encouraging municipalities and private households to change to biomass, building up at least one biomass trading centre (BTC) in the region and promoting energy efficiency in buildings.

There was a stakeholder workshop in November 2010 with 46 participants, including representatives of municipalities as well as boiler producers and biomass providers. After the meeting, a BTC was founded in the proximity of Brezovo which used to supply a vegetable greenhouse in winter. Additionally, the city of Ihtiman has already changed to central heating by biomass instead of oil and serves as a role model in the region (this change was not part of the Biomass Action Plan).

The current share of sustainable regional resources in the local energy production is lower than one third, and there is a large potential of biomass still unused. To mobilize and utilize this potential several projects are in the planning stage and are described below. These individual projects were attended by the visitors and stakeholders of the region.



Map of the Sredna Gora target region, with involved municipalities encircled and approximate distances between them

Schedule of the target region visit (24.07. till 27.07.2011)

The following table gives a short overview of the meetings during the visit of BAT's and AUA's representatives. For the attendants' abbreviations please see section 3.

Date	Time	Meeting/Agenda	Attendants
24.07.2011	19h	Welcome dinner in Sofia	LA,VV,BS
25.07.2011	10 – 12h	Meeting in Ministry of Agriculture and Food, with Executive Forest Agency	KK,LA,VV,TT,VT,AB, BS
	12 – 15h	Travel to Hisarya	
	15 – 17h	Discussion about mobilisation of biomass near Hisarya	PD,LA,VV,TT,VT,AB, BS and others

	18h	Temple sight tour and dinner in Starosel	As above
26.07.2011	9 – 13h	Stakeholder meeting in Hisarya	LA,VV,TT,VT,AB,BS, stakeholders
	14 – 16h	Visit to municipality of Brezovo	LA,VV,TT,VT,AB,BS, MB
	16 – 18h	Meeting with BTC owners near Brezovo	As above + BO
	20h	Project dinner in Hisarya	LA,AB,BS
27.07.2011	9 – 10h	Visit to municipality of Karlovo	GK,LA,VV,AB,BS

Description of participants

The following persons participated in (almost) all meetings:

Name	Abbr	Affiliation	Role in meetings	Phone number & E-Mail	Meetings
Liyana Adjarova	LA	Energy Agency of Plovdiv (EAP)	Director of EAP; Coordinator	+35932625756 liyana.adjarova@eap-save.dir.bg	ALL
Vladimir Valkov	VV	EAP	Coordinator at EAP; Scientific RES Background	vladimir.valkov@mbox.contact.bg	ALL
Tzenko Tzanov	TT	Executive Forest Agency (EFA)	New forest law expert		Ministry, Brezovo, Hisarya
Valentin Tchambov	VT	Ministry of Agriculture and Food (MAF)	New forest law expert; Interpreter		Ministry, Brezovo, Hisarya
Athanasios Balafoutis	AB	Agricultural University of Athens (AUA)	Mentor of EAP in the Biomass Action Plan	+302105294046 abalafoutis@aua.gr	ALL
Bernhard Schauberger	BS	Biomass Trading Centre Achental (BAT)	BTC consultant	+498957070725 b.schauberger@biomassehof-achental.de	ALL

The following persons participated in the meetings according to their respective affiliations:

Name	Abbr.	Affiliation	Meetings	Role in meetings
Krasimir Kamenov	KK	EFA, Deputy Executive Director	Ministry	Expert in administrative and legislative framework
Pencho Dermendijev	PD	EFA, Regional Forest Director of Plovdiv	Hisarya forest	Expert in Plovdiv forest administration
[Deputy and Mayor of Brezovo]	MB	Municipality of Brezovo	Hisarya meeting, Brezovo	Representative of Brezovo; Deputy Mayor is anchor person for projects
[Owners of BTC near Brezovo]	BO	Biomass Trading Centre Brezovo	Brezovo trading centre	Owners of existing BTC
Georgi Karamchev	GK	Deputy mayor of Karlovo	Karlovo	Representative of Karlovo; Anchor person for Karlovo projects

Additionally, several other persons attended the meetings whose affiliation was already represented by the persons mentioned above.

Detailed description of the individual projects

In the target region two strands of projects within the Biomass Action Plan are tracked: the establishment of a Biomass Trade Centre (BTC) and the implementation of efficient heating systems in municipal buildings.

A Biomass Trading Centre was created after the stakeholder meeting in November 2010. However, in the summer of 2011, the centre closed down after an unexpectedly high increase in facility rents. It was owned by three individuals and was located near Brezovo. The centre used to produce and sell wood chips made from predryed log wood. The main customer was a greenhouse in the region (28km distance) which consumes 200 tons per year (with 20% moisture) in winter. In summer no production and no sale took place due to lacking customers.

This BTC could already have been a part of the BAP within BioRegions. Although it failed, one of the owners of the centre (together with a partner group) has the clear commitment to restart the business and currently negotiates with the owner of an unused industrial ground near Brezovo. Additionally, there is a plan to extend the production and sale into summer. The main

questions are the availability of biomass resources, the logistics and where to sell fuels (chips or pellets, especially in summer). The extension strategy envisions the installation of a pelletizing machine to produce pellets either for energy purposes or for horse litter (depending on the resource quality).

According to TT, the new law provides a good framework for such projects as it explicitly allows the usage of forest materials for energetic purposes.

In the next step the following items have to be clarified:

- The location of the extended centre: close to (large) customers to avoid long transports?
- Storage of fuels (space, moisture content) for stock keeping
- Future customers (industrial plants with constant demand?)
- Availability of biomass close to the centre

Additionally, a BTC is under consideration for the municipality of Hisarya. Currently the town administration is not strongly interested, but possibly after the elections in November 2011 the administration changes. Then there is a concrete opportunity to start and implement such a centre with the support of the mayor and city council.

The implementation of efficient heating systems in public buildings has already been done in Ihtiman, where a district heating system based on wood chips is used to heat households in the city. The distance between the existing BTC near Brezovo and Ihtiman is approx. 130 km. This plant is not part of the Biomass Action Plan but can serve as a good example for similar ventures, concerning the main questions of fuel availability, technical implementation, financing and energy costs.

In the course of the action plan, the municipality of Brezovo plans to exchange the old Diesel boiler in the municipal kindergarten for a new chips boiler of 2 * 400 kW. The current plant needs 22t/a of Diesel, which should correspond to 250-300 loose-m³ of chips per year. The idea is to install a larger boiler which could supply both the kindergarten and the nearby town hall (and even other municipal buildings). The municipal forest (2,200 ha) could decisively foster this project.

A similar approach is tracked in Karlovo. An initial plan of the deputy mayor Georgi Karamchev to exchange the oil boilers of four kindergartens for pellets boilers was rejected by the municipal council (reason unclear). Now it is planned to perform the exchange in another kindergarten outside the town area first, where the investment sum is low enough to not require a council consensus.

The original project is, nonetheless, still persecuted and to gain the confirmation of the council, a presentation of EAP in the next session on September, 22nd, is planned. The financing of the project is already clarified as the boiler producer offers a leasing system where the municipality pays a monthly interest and depreciation rate as well as the needed MWh (thus, including the pellets fuel). The boiler would be handed over to the city after a contract running time of 4.5 years. Additionally, the boiler company receives European funds for installing boilers, allowing them to decrease the price.

In Hisarya, the owner of the hotel “Albena” intends to exchange the currently used coal boiler for a chips or pellet boiler.

Additional items of clarifications are:

- Financing of projects (leasing idea?)
- Municipal council conviction
- Local fuel supplier for Hisarya (long-term supply from planned BTC run vs. intermediate short-term supply)

Summarizing comments

The visit has clearly confirmed the strong commitment of individuals and organizations in the target region to promote and extend bio-energy markets in the region. There are different ideas for the BTC location and design as well as for consumers which could change from fossil fuels to biomass. In this respect the work for the Biomass Action Plan and for the BTC applicability analysis are of high importance for getting a clear picture for the possibilities and constraints for additional bio-energy ventures.

The potential for a BTC in the region seems to be given, although some financial issues are not yet clear. The next steps to be tackled are listed above and could provide helpful insights on how to construct and setup the business structure.

Slavicin and Brumov-Bylnice region in the Czech Republic

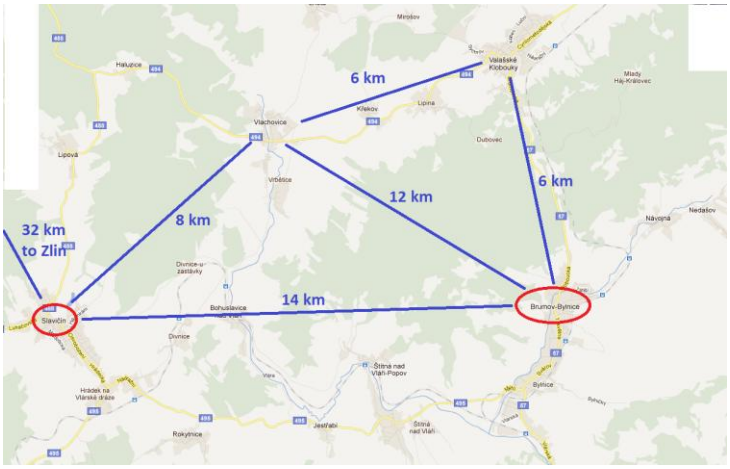
Presenting the target region

The target region of Slavicin and Brumov-Bylnice is already described in the TCA document and the Biomass Action Plan. Only the key facts are listed here.

Slavicin and Brumov-Bylnice are the two major towns (7,000 and 6,000 inhabitants, respectively) of the equally named target region east of the regional centre Zlin, with a total of approx. 20,000 inhabitants. It is located in the very eastern part of the Czech Republic and shares a border with the Slovak republic. The area of 206km² is part of the White Carpatian Mountains and is completely subject to landscape protection restrictions, which are split into four levels of distinct limitations with respect to land use and forestry. Forests cover half of the region and are largely state-owned, a quarter is formed by grassland and the rest is arable land or subject to municipal or other use.

The economy is diverse, with equal shares of agriculture, industry and construction together forming half of the trading volume. Retail sale and catering make up a quarter, and the final quarter is shared between different activities.

In the current energy consumption natural gas is dominating with a share of 42%, fossil fuels (coal, oil) have another large share and a substantial part (mainly in the private sector) is covered by firewood. Other renewable energies currently play a minor role only. The national gas pipeline system reaches the central parts of the two towns and most villages, while six parishes are not connected. The households in the latter usually heat with coal or firewood. In Slavicin and Brumov-Bylnice there are DH systems operating on gas and biomass and supplying all public buildings, together with substantial fractions of private households.



Map of the target region in the Czech Republic.

The forest management (both private and public) is subject to sustainability and landscape protection conditions defined by the Czech government. The national forest agency opens a call for tenders for forest management in its wood estates every five years, where the company with the highest bid wins. The management contracts are split between timber wood (> 7 cm) and wood residue (<7 cm) usage and can be operated by two different companies even within the same forest area.

There is one large saw mill and forest management company in the target region, the privately owned Kloboucka lesni. It is the fifth-largest in the CZ and located in Brumov-Bylnice.

The Energy Agency of the Zlin region (EAZK) was established in 2006 and maintains a trustful and well established cooperation to the municipalities in the Zlin region and provides energy- or environment-related services free of charge. It is estimated as a reliable and independent partner both from municipalities and private companies. Several houses and public buildings were counseled on their energy management by the EAZK within the greater Zlin region, of which most heeded the suggestions and now serve as models for ecological standards. Additionally, 400 houses in the region are constantly monitored about their energetic behavior by the agency. The resulting data is used for project ideas and policy recommendations.

A workshop within the BioRegions project was held in December 2010 where the future of biomass usage was discussed. The meeting was appreciated by the various stakeholders in general and showed the commitment to bioenergy of several people in the target region.

The best-practice visits to Achental and Jönköping have fostered this attitude and now provide a good basis for cooperation in this sector.

Schedule of the target region visit (13.11. till 15.11.2011)

The following table gives a short overview of the meetings during the visit of the BAT representative. For the attendants' abbreviations please see section 3.

Date	Time	Meeting/Agenda	Attendants
14.11.2011	8 – 9 h	Short meeting in EAZK office, travel to target region	MK,RS,JP,BS
	9 – 10 h	Visit to ecological model village Hostetin	MK,RS,JP,YG,BS
	10 – 11 h	Discussion about BTC applicability in Slavicin	MK,RS,JP,PU,OK,JK,BS
	11 – 12 h	Visit to DH plant of Slavicin	As above
	12 – 14 h	Project lunch	As above + ZB,VB,JS
	14 – 15 h	Discussion about BTC applicability in Brumov-Bylnice	As above
	15 – 17 h	Visit to saw mill Kloboucka lesni	MK,RS,JP,PU,JS,PS,BS
	17 – 18 h	Visit to Brumov-Bylnice service company	MK,RS,JP,PU,JS,BS
15.11.2011	9 – 11 h	Discussion about BTC applicability in EAZK office	MK,TP,BS

Description of participants

The following persons participated in all meetings:

Name	Abbr.	Affiliation	Role in meetings	Phone number & E-Mail	Meetings
Miroslava Knotkova	MK	Energy Agency of Zlin (EAZK)	Director of EAZK	+420 577 043 940, miroslava.knotkova@eazk.cz	ALL
Bernhard Schauberger	BS	Biomass Trading Centre Achental (BAT)	BTC consultant	+498957070725 b.schauberger@biomassehof-achental.de	ALL

The following persons participated in the meetings according to their respective affiliations:

Name	Abbr.	Affiliation	Meetings	Role in meetings
Radek Sedlacik	RS	EAZK	All on Monday	Project manager, translator
Josef Popelka	JP	EAZK	All on Monday	Project manager
Tomas Perutka	TP	EAZK	Tuesday workshop	BioRegions project coordinator
Yvonna Gaillyova	YG	Hostetin energy centre	Hostetin	Director of the Veronica foundation
Pavel Urban	PU	BioPal company	All on Monday	Technology expert
Oldrich Kozacek	OK	DH of Slavicin	Monday morning	Director of Slavicin DH
Jaroslav Koncicky	JK	Mayor of Slavicin	Monday morning	Mayor of Slavicin
ZdenekBlanar	ZB	Mayor of Brumov-Bylnice	Monday afternoon	Mayor of Brumov-Bylnice
Vaclav Bliznak	VB	Deputy mayor of Brumov-Bylnice	Monday afternoon	*Dito*
Jaroslav Sery	JS	Brumov-Bylnice service company	Monday afternoon	Director of the B-B service company
Petr Stranak	PS	Kloboucka lesni	Kloboucka lesni	Owner of the saw mill

Detailed description of the individual meetings

In this section, minutes of the meetings during the BAT visit to the Czech Republic (see above) are given.

The **ecological model village Hostetin** has served as an impressive example of progressive energy solutions in the Czech Republic for almost 20 years. The village consists of 70 houses of which almost all are covered by a DH system firing biomass. The information centre of the village hosts 5,000 visitors each year and is built after passive-house standards. YG, the director of the house, and MK together envisioned the change of Hostetin into an eco-village. Today it serves as a role model for the whole Czech Republic, but does not lie within this project's target region. The DH was funded with 90% by the EU and operates as JI-project in the Kyoto emission trading system.

Afterwards, during the **discussion about the BTC applicability in the Slavicin town hall**, several important questions concerning the establishment of a BTC in the target region could be clarified.
There were four separate district heating systems in the town, which are now connected to form one large grid. The central heating plant has several gas boilers and CHPs (5.7 MW total) and two biomass boilers (1.6 MW and 1 MW, latter one starting soon). The biofuel used is wood chips of different (mid to low) qualities, which are bought depending on the final price at the plant. The annual amount will be approx. 17,000 loose-m^3 (with the new boiler) and is supplied from a region with radius more than 100km, as the transport costs are often not the decisive factor. Main suppliers in the region are the saw mills Kloboucka lesni and Pila Vagner. The biomass market in the republic is generally nation-wide and thus dominated by big players like co-firing plants (which produce electricity and thus are able to pay higher prices due to feed-in tariffs of currently 4 CZK per kWh_{el} from biomass). Some of the local biomass is exported to Austria (with higher feed-in tariffs) and Slovakia (lower tariffs).

The manager of the Slavicin DH plant would support the establishment of a BTC in general if it can provide reliable prices and quality and also additional storage capacity. Such a system could significantly reduce the necessary efforts for organizing biomass supply and quality checks at the DH plant.

PU, owner of a boiler production and technology council company, stated that the market for pellets, briquettes and wood chips in the private sector is still very small in the whole republic, which is mostly due to the high boiler prices and the currently insecure supply. The national Green Savings Programme, which is intended to provide incentives for energy efficiency and boiler exchanges, is currently re-formulated. The future situation is unclear at the moment and all submitted proposals for private boiler exchanges (mostly to pellets) are currently pending. The governmental decision deadline for these proposals is April 2012. The dimension of the private market for log wood is not clear. Most people in rural areas (thus also the target region)

who heat with fire logs supply themselves, mostly from private or municipal forest grounds. However, there seems to be a potential for selling log wood to elder or young people who lack physical capabilities, time or equipment to manage their own supply.

Generally the demand for a BTC is rather low in Slavicin (stated by mayor and DH plant manager), although the establishment of such a business in Brumov-Bylnice would be appreciated. As a result, there is no anchor person for a BTC in Slavicin. Nonetheless, the mayor assured to provide financial and non-financial support if a BTC start-up would happen in Slavicin. But the first step according to his view would be the establishment of a BTC in Brumov-Bylnice, as the gas pipeline coverage is lower there and thus the market for private biomass could be larger.

Asked for the status of civil energy information in Slavicin it was stated that a lack of information about renewable energy is usually not the major problem. More important is usually the lack of appropriate financing or the people's investment behavior. Additionally, information services for the region are already provided by EAZK. Summing up, there seems to be no need for a local energy information centre in the target region.

The **district heating plant of Slavicin** was visited after the discussion. The pipeline length is 3.2km and all public buildings, along with a large fraction of private households (in multifamily buildings mainly) are connected to the grid. There are no problems with burning low-quality wood chips. The chips are stored in boxes and open-air (about 1,500 m³ capacity in sum). There is no chips or log drying facility. The price for wood chips at the plant fluctuates between 300-350 CZK (12-14 Euro) per loose-m³, while the final price per MWh of heat is 590 CZK (24 Euro) for the customers. There is currently no electricity generation from biomass.

The **discussion about the BTC applicability in Brumov-Bylnice** took place with the mayor and deputy mayor of Brumov-Bylnice as well as the manager of the town service company. This company is operated by the municipality and provides a DH system for 500 households, road and roadside maintenance, park keeping, electricity and other related services, but not the waste collection or sewage treatment.

There are concrete plans for the establishment of a BTC in Brumov-Bylnice near the DH site. The applicability analysis thus focused on this concrete project, as the general situation in the target region has already been assessed before. This centre should be established as a joint-venture between the municipality and its service company, and the director of the latter is planned to be the director of the BTC as well. Since the business start-up conditions are challenging due to the economic circumstances at the moment, only a small start is planned. It should be financed by the joint partners, and future investments will only be on demand according to the experiences with the currently planned centre. The general idea is to trade air-dried log wood to private households, wood chips from land care material to the DH plant and possibly pellets or briquettes in the future. In the first phase, only log wood should be sold as a recent survey indicated a positive potential for this market. For the production of logs and chips

appropriate machines should be bought and for the collection of private and municipal lignite land care material a container logistics system should be established. Kloboucka lesni is a potential partner for the venture. This company could support the BTC with their technical experience and machinery and also the provision of spare raw material. On the other hand, the BTC provides them with access to a small-scale market otherwise not amenable for this large saw mill. The revenues of the centre stay within the service company, only the leased services and raw material are paid to Kloboucka lesni. Further raw material is intended to be taken from the municipal forests that still possess an unused sustainable firewood potential and can naturally provide fair prices to municipal companies.

There had been an open discussion about this BTC business idea with several private companies in the region, but none of them showed interest – which is why the municipal service will operate it. Its capacity both in staff time and necessary investment is secured, according to the manager.

The meeting with one of the two directors from the **saw mill Kloboucka lesni** was very insightful. It is the fifth-largest saw mill in the Czech Republic and also a forest management company currently managing 120,000 ha of forests over the whole republic. One of the two owners (30%, PS) joined the two best-practice visits within BioRegions. Their annual forest harvest sums up to approx. 500,000 m³, but is possibly subject to change after the new national tender round for the next five years (starts in 2012). Within the saw mill, the annual production of timber amounts to 40,000 m³, with 4,000 m³ of wood chips remaining. These chips are partly used for their own boiler (1.5 MW) to provide heat for the drying chambers and the whole facility, while the rest is usually sold to large companies for co-firing. The saw dust is sold to a pelletizing company, although they consider buying their own briquetting machine. The total amount of wood chips from all forests managed by Kloboucka lesni sums up to approx. 70,000 tons per year. A few years ago the company tried to establish a log wood (moist) trading similar to the one currently planned by the Brumov-Bylnice municipality. This business had had to be stopped in April 2011, however, as the customers had been too few or had not been able to afford the prices. The penetration of the local market seems to be difficult and unrewarding for this large company. This is the reason why they offer their cooperation to the municipality instead of opening a local BTC on their own. The owner stated that the planned municipal BTC log wood trading might be different from their former attempt as the municipality does not focus on profit only and has a better standing within the population. Additionally, the sale is intended only locally, reducing the marketing efforts. Kloboucka lesni offers technology and logistics support along with know-how to the planned BTC. Additionally they could serve as a buffer in times of low or high demand. In return they expect a business opportunity (by local market access), a technology upgrade (as their machines are more intensively used) and experience in this business sector (to apply it with other regions). Formal contracts between BTC and Kloboucka lesni would be highly appreciated, if the project is realized. Another field of co-working (with municipality or EAZK) could be the plantation of SRCs since the saw mill also owns a tree nursery.

Note that there had already been an attempt of cooperation between Kloboucka lesni and the Brumov-Bylnice municipality in 2008, when an ORC plant was planned to be set up jointly. However, the undertaking failed due to financial arguments and was not realized. Afterwards, the attitude of the company to the municipality was rather neutral, but has significantly changed to positive again after the two best-practice visits within the BioRegions project. Additionally, the owners are interested in a local rooting of the company, which seems possible much easier with a municipal cooperation.

The last appointment on Monday was the visit to the DH system of the **municipal service company of Brumov-Bylnice**. It is heated by two biomass boilers (1 + 2 MW) firing wood chips, one gas boiler (1.4 MW, but was operated only six hours during the last season) and (in the near future) one gas CHP. The amount of wood chips fired annually is 12,000 loose-m³, and their quality depends on the price, but has not posed problems to the plant up to now. The chips are supplied mainly from Slovakia, but also from small providers in the region, all within a radius of 12km. Similar to Slavicin there is no drying facility on the grounds.

During the small **workshop in the EAZK office** on Tuesday several not yet clarified issues regarding the planned BTC in Brumov-Bylnice could be addressed. Here these are listed in random order.

- Pila Vagner is only a very small saw mill, but also sells wood chips and log wood. Their general will for cooperation with a BTC is stated, but details are lacking.
- The critical factors for the establishment of the planned log wood BTC in Brumov-Bylnice consist of:
    - Supply of raw material: Kloboucka lesni has announced its will; the private forest owners within the municipal region are positive towards a BTC; outside the municipal area the attitudes are not yet clear. The potential for firewood is assumed to be large, as a substantial amount of wood is currently burned in the forests. A new law is supposed to forbid this practice.
    - Demand for logs: in regions without gas pipeline they could help to replace coal; old or young without own supply are potential customers
    - Demand for pellets: depends on evaluation of boiler exchange proposals (300 in the region)
    - Financing: the municipal council of Brumov-Bylnice is not yet in favor of the idea, but the two mayors are rather sure they could be convinced. If so, the necessary investment will be provided by the town or the service company. Funding options are not considered.
    - Kloboucka lesni position: the 5-year forest management contracts are running out in 2011; the bid winners for the next period are not yet known. Additionally, several competitors to the BTC from outside are interested in the company's waste wood.

    - Coal prices: currently the price for one kWh_{th} from biomass is between the price for coal (cheaper) and gas (more expensive)
- Compost plants: there are plans for compost plants (converting waste biomass to compost without fermenting) in both towns; Slavicin will start operation very soon. There are plans to further process unsold compost into fuel for the DH plants; several technical issues, however, are unclear.
- The strong increase in RES energy production in the region (between 2009 and 2010 by 128 times, see Table 12 of the TCA document) is due to the change of boiler systems from gas to biomass in Brumov-Bylnice.
- The feed-in tariffs for the large electricity plants could pose a serious threat to the small-scale biofuel market, as the co-firing of biomass usually allows these companies to pay higher prices for raw material
- Possible funding opportunities for a BTC are not evaluated (due to no necessity currently). Major funds would be the national Green Savings Programme (legal situation unclear), the EkoEnergia fund (supports private boiler exchanges, existence of a next call uncertain) or LEADER (but there is no money left)
- Banks are rather skeptical towards the establishment of small bioenergy businesses.
- There is a European program called BioDest, where EAZK has submitted a proposal dealing with the establishment of BTCs. The idea is to fund a feasibility study for a trading centre in the Zlin region. Evaluation results will be available in spring 2012.

Summarizing comments

The positive attitude towards bioenergy and the highly cooperative spirit in the target region foster the extension of renewable energy and the achievement of the BioRegions goal. The professional support by EAZK and the high motivation of the staff facilitates the straightforward clarification of open questions and creates a positive atmosphere that enables ambitious projects.

Referring to the question of BTC applicability, a general “yes” cannot be stated yet. Although several factors clearly favor the establishment of a BTC, few limiting circumstances exist as well.

On the positive side are the large potential of unutilized waste wood, the low price of biomass in comparison to the dominant fuel natural gas, the will for cooperation of the Kloboucka lesni company, the existence of an anchor organization and person, the positive atmosphere between the responsible politicians, and the support both by the municipalities and by EAZK.

Factors that could hamper the establishment of a BTC are the unclear demand for log wood (although a survey yielded positive results) or premium wood chips or pellets, the unaddressed financing of larger investments, the co-firing of biomass in large plants and the seemingly unclear legal and political situation concerning bioenergy. Additionally, the possibly volatile attitude of Kloboucka lesni could seriously affect the success of any biomass business in the region.

These negative influences could be overcome by a fostering of private boiler exchanges to biomass, the acquisition of funding opportunities (if necessary), the promotion of local usage of biomass (instead of long transports or large plants) and the strengthening of local independent private actors. The Kloboucka lesni issue could possibly be addressed with long-term contracts that provide security in business operations with them.

The planned project in Brumov-Bylnice seems to be neatly woven and surely earns a business attempt, if the cooperation with Kloboucka lesni (prices, demand buffer function, technology, guarantees, …) can be formally agreed upon. Quite probably the demand for log wood and/or pellets will rise in the region once a local and reliable supply is established. The extension into further business fields (premium chips, briquettes, pellets, …) should be far easier if a market base is already present.

Nonetheless, the purchase or installation of a technical drying facility (with waste heat) should definitely be considered to upgrade the quality of firewood or wood chips in a much more comfortable way than lengthy air-drying. According to EAZK such an installation is not possible on the planned BTC site, but on the site of Kloboucka lesni only (as they have experience with this issue and also chambers for drying).

Furthermore, the private companies that declined the establishment of a log wood centre or BTC on their behalf should be questioned about the reasons for this refusal, which could yield very helpful insights.

Finally it should be discussed how the dependency of the venture on Kloboucka lesni could be reduced, as this seems daunting to the project.

The intended feasibility study within the BioDest program is surely a very positive idea.

It might be convenient to carry out the plantation of energy crops (mainly SRCs), as a previous study by EAZK has shown a clear potential. Whether the project frame of BioRegions is appropriate should be considered.

The good cooperation between Slavicin, Brumov-Bylnice and the EAZK is a strongly favorable aspect that earns any further investment.

Trièves region in France

The visit took place from July 2010, 06th till July 2010, 8th.

Meetings and Visits

- Meeting with Mme Brigitte, Mr Thibaud, Mme Maeck, SAT Office, Clelles.
- Meeting with Mme Nier, Director of Wood Drying Facility, St. Michel les Portes
- Meeting with Mr. Bellier, Mayor of St. Michel les Portes, Pôle bois, St. Michel
- Meeting with Mr. Robert Cuchet, Mayor of Monestier du Percy at Tréminis
- Meeting with Mr. Luc Puissat, Former President of SAT

- Visit of Wood Chips Burner at Mens
- Visit of Saw mill at Terminis
- Visit of Eco Village fired with wood chip burner at Miribel- Lanchâtre

General Situation in the Target Region

Its very rural structure has the following dominant economic pillars (most important first):

- Agriculture
- Forestry
- Craftsmenship (especially in the building sector)
- Tourism (Alpinism and water tourism)
- Others

Agriculture faces the same problems as all smaller farming sizes in Europe. Yet, since 25 % of all agricultural units produced under biological- dynamic patterns the situation is comparably stable. Yet, new forests grow on set-aside agricultural fields.

Forestry suffers from very small Parcells and insufficient harvesting techniques. Log wood from abroad (Scandinavia, Germany, Austria) often is cheaper.

Some years ago a motorway was constructed which connects the region to the city of Grenoble. This new connection brought strong interest for new housing quarters and week-end residents. The new residents are families with good income. The region gets a lot of daily visitors (on sunny Sundays).

Since a long time various organizations and initiatives strive to pave for Trièves a sustainable development that preserves the beautiful regional peculiarities. The region suffers under a very

complicated administrative structure. The total population of 10.000 residents is administered by 20 mayors and several intercommunal and regional administration structures.

The region has a long tradition in working together in associations and non profit organisations.

Situation for Bioenergy

Wood Chips

The potential for wood chips from forest residues is huge what shows the following analysis:

Potential public forest Rhone Alp	756.000	m3
Total potential Rhone Alpe	1.512.000	m3
Current state of mobilsation	378.000	m3
Free potential Rhone Alpe	1.134.000	m3
Free potential Trieves	**378.000**	**m3**

Currently there are ten heating stations with wood chips in the region. One more is under realization. The total amount of wood chips consumed in these stations should not exceed 20.000 m3.

The current price for wood chips is around 90 Euro per ton (22 Euro per m3) for material below 25 % humidity, delivered at the customer, without taxes.

The possibility to create additional wood chip heating systems is limited because of the small and rural structure of the region.

Biogas

There is a lot of interest in the development of biogas for the use of the agricultural waste. Yet, no project was developed so far. Possible plant locations could be the cheese production place at Gresse en Vercors or at “Pôle Bois”.

Pellets

No experiences with pellets so far, no production site nearby.

Log Wood

Log wood is produced from various farmers, yet on a very individual level. No joint marketing activity existent. Log would could be a potential activity for the bio-energy centre if marketing structures in Grenoble would be created.

Others

PV Solar plants are well developing. First projects can be seen on the larger roofs with south orientation.

Concrete Projects

Visit of Wood Chips Burner at Mens

The wood chip burner was erected in 2009 within a rural development programme that gave 80 % subsidies. With a capacity of 1,2 MW the wood burner provides heating for the elderly people housing and private buildings in Mens. 80% of the heat is produced from wood chips. With some severe problems in the starting phase the plant is well operating now. It consumes approximately 4.200 m3 wood chips which are provided by the bioenergy centre. The plant is operating in summer for providing warm water.

Saw mill at Terminis

The saw mill cuts 100.000 m3 of wood per year. It faces strong competition from Germany and Austria. The saw dust (100 m3 per day) and the waste wood are given to the paper factory for prices of 6 Euro / m3 (for saw dust) and 10 Euro / m3 (for white wood chips). There is an old water line which could run a small hydro plant of 4 PS. It is not feasible for the saw mill to use the drying facility at the Pôle Bois.

Bio-Energy Centre at St. Michel les Portes (Pôle Bois)

The Centre was erected three years ago. It consist of

- A heating station with 2 MW capacity on wood chip bases (possessed by GEG, will be sold to the community soon)
- Two drying facilities for log wood (one vacuum based), rented by saw mill association
- Two drying boxes each taking 300 m3 wood chips, rented by COFORET
- Additional two storage boxes of each taking 500 m3 wood chips rented by COFORET
- Large storage places outside (15.000 m2)

Currently around 6000 m3 of wood chips are produced. This figure will extend with the implementation of the wood chip burner in Mens. It is envisioned that the production capacity should be 12.000 m3 in 2011. Yet, the marketing strategy for this enormous plus is not clear.

The drying in the boxes takes a time of three weeks. When this is not improved the total production capacity is limited to 10.000 m3 / year.

All machinery for chipping and storage is rented for the concrete moment.

The roof of the storage hall is designed for PV Solar panels (appr. 12 kW).

The economics of the wood drying and of the wood chip production don't go well because of the large heating capacity and the small turnover. The financial expenses exceed the operation gains. There is a certain frustration between stakeholders that the Centre has not developed better so far. It particularly lacks a strong operating person and any kind of marketing efforts. In mid term perspective it is necessary to make the heating device more efficient.

Eco Village fired with wood chip burner at Miribel- Lanchâtre

The EcoVillage was especially designed for the new residents coming with the new motorway connection. Because of the new comers the numbers of school kids went up from 4 to 26. The Ecovillage tried to combine shops, residents and working space.

Two small district heating networks have been constructed in the village in the last years fired with one stove of 200 kW and one of 100 kW. The heating price is approximately 6,7 Cent per kWh (split in a fix and a variable share). The required wood chips of 1000 m3 are produced from forestry residues by a local farmer (who rents the chipping machine for the harvesting). The wood chips have a humidity of 25 % and are produced without industrial drying facility. The wood chips from the Pôle Bois are not purchased because their price and quality is too high. Still, the wet material causes some severe problems in the combustion chamber. The station is closed in summer, warm water is produced with electricity.

The production price of the wood chips is in total 20,75 Euro (of which a subsidy of 6,50 Euro is given currently). Details of the prices are:

Wood Price	2
Harvesting	9
Transport	2,5
Chippling and storage	4,75
Fee Agroforest	2
Sum	20,25

With running cost of 40.000 Euro per year the public owned networks can work on economic terms.

Received documentation

- Project description of Wood Development Project in which the Bio-energy Centre and the Wood Chip combustion in Mens was erected.
- Analysis of wood chip potential for public forests in region Rhone- Alps
- Documentation of the Forest Charta of the Region Trièves
- Documentation of the bioenergy centre in St. Pierre

Next steps

- Brief update and thanks to all local stakeholders.
- A meeting with the manager of COFORET, Mr. Jean Luc Chenal is very important to find out his ambitions and interest in cooperation within BioRegions.
- The potential for agricultural waste products should be analysed.
- It would be good to get the Mayor of St. Pierre and Jean Luc to Achental for creating understanding for the business potential of bioenergy.
- The Mayor of St. Pierre should be encouraged to rent out the roof of Pôle Bois for solar energy.
- The framework conditions for Biogas electricity production in France should be examinated.

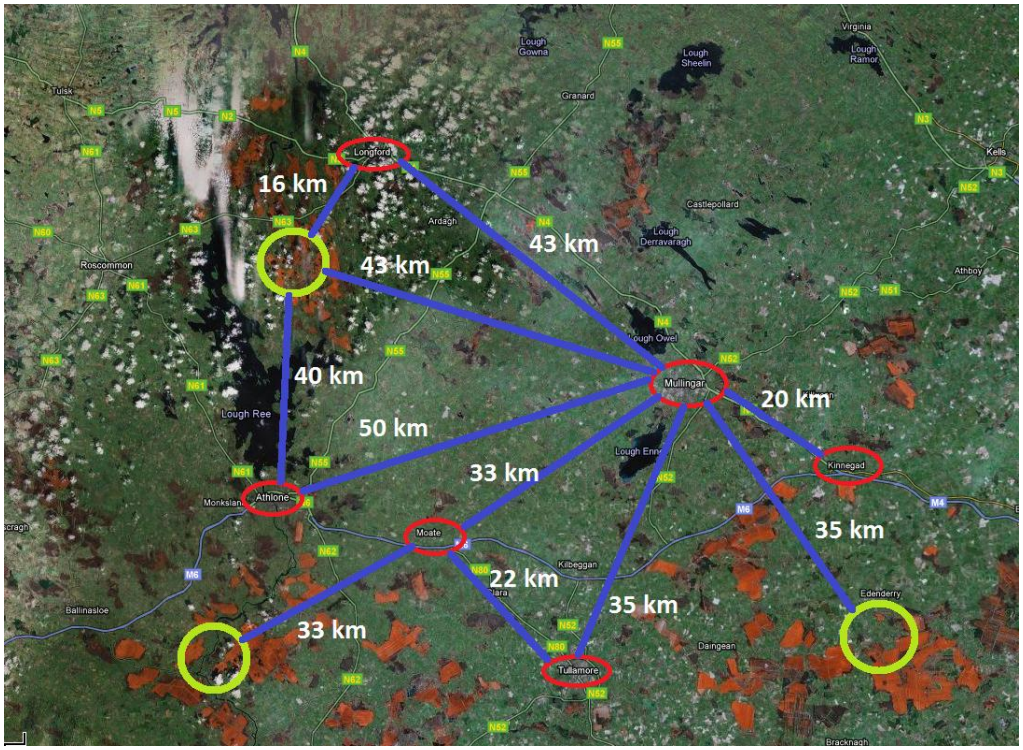
Westmeath County in Ireland

Presenting the target region

The target region of Westmeath is already presented very accurately in chapter 2 of the Biomass Action Plan (BAP). However, the essential geographical facts and some economic background is summarized here. A map of the extended region can be seen in the following Figure.

The county of Westmeath is located 80 km to the west of Dublin and is subject to moderate continental climate (mild winters, rather moist summers). Its largest cities are Mullingar (18,416 inhabitants) and Athlone (17,544), with a total population of 79,000 in the county. The area comprises 1,900 km², most of which are grassland, 7% are forested (62% private, 38% public) and 2.5% are under tillage.

Westmeath's main income stems from service, tourism, agriculture and light industry. Agriculture is dominated by beef and dairy farming, with over 200,000 cattle in the county.



Map of the Irish target region. Larger municipalities are encircled in red, while the three peat power stations are encircled in green (outside the actual target region). Approximate road distances are given between selected cities and to the electricity stations.

The current energy demand (broken down from national data and thus a rough estimate only) is approx. 3,395 GWh/a, of which 1,165 GWh/a are thermal and 1,064 GWh/a are electrical. The missing part is for other purposes (transport, …). By far the staple source of energy are fossil fuels (98%, both thermal and electrical), consisting of largely oil, gas, coal and peat. Only 2% stem from renewable energies (biomass, wind, solar). A fraction of houses is heated by electricity, and in general homes are not well insulated.

Close to the county are the three peat power stations of Ireland, Edenderry/Bord Na Mona (120 MW), West Offaly (125 MW) and Lough Ree (85 MW). The latter two fire only peat at the moment, while Bord Na Mona has started to co-fire biomass and currently uses 15% of biomass from various sources in their plant. All three of them are obliged by law to co-fire 30% of biomass until 2015.

A special case of Ireland is the rather limited role of municipal administrations. The tasks of the town and county councils are primarily administration of essential services (water, sewage treatment and development plans). Councilors, although elected by the inhabitants of the region, have effectively few powers. All creative and incentive power is usually provided by different agencies, including cooperatives and citizen alliances, leaving the country with a strong community structure. It must be noted that the County Council has a key planning control in relation to bioenergy infrastructure. This makes the inclusion of municipalities in bioenergy plans important, although their support is estimated to be very limited. However, the municipalities have an important public building stock which could be tackled to change to bioenergy first. Westmeath Community Development (WCD) is a rural development organization (reduction of unemployment, farming questions, population management, …) in the county and has gained substantial influence both in the population as well as the administration over the years. The BioRegions project is hosted by WCD.

The Biomass Action Plan for the region is not completely elaborated yet, but aims at several different targets. The first one is to increase the usage of biomass for heating both in public and private buildings, the second is to establish a biomass trading centre, if appropriate. Another target is to provide information service about RE systems to the local population and to build capacities in this sector for important multipliers (forest owners, farmers, boiler installers, …). In general, it envisions the fostering of cooperatives and local networks dealing with the increase of the renewables' share in the regional energy demand.

Already there are several persons dedicated to this goal and highly motivated to promote the usage of bioenergy. This is indicated by the high numbers of attendees to the workshops on this topic (February 2011 and October 2011), showing the incipient interest and demand for information.

Schedule of the target region visit (12.10. till 13.10.2011)

The following table gives a short overview of the meetings during the visit of BAT's representative. For the attendants' abbreviations please see section 3.

(Abbreviations: BAP = Biomass Action Plan, TCA = Trading Centre Applicability, AD = Anaerobic Digestion, WCD = Westmeath Community Development)

Date	Time	Meeting/Agenda	Attendants
12.10.2011	12 – 14h	Welcome lunch in Mullingar	PD,AS,JP,BS
	14 – 17h	Discussion about BAP and TCA in the facilities of WCD	PD,AS,BS
	20 – 22h	Visit to LEADER presentation about farming diversity	PD,AS,JP,BS
13.10.2011	9 – 14h	Workshop about AD and TCA in Moate	PD,AS,JP,NG,CS,BS, local stakeholders
	14 – 17h	Discussion about TCA with reference group	PD,AS,JP,CS,BP, BrSm,BS
	17 – 18h	Discussion about BAP	PD,AS,BS

Description of participants

The following persons participated in all meetings:

Name	Abbr	Affiliation	Role in meetings	Phone number & E-Mail	Meetings
Patrick Daly	PD	Westmeath Community Development (WCD)	Project manager	+353 44 9348571 pd@patrickdaly.net	ALL
Alan Sherrard	AS	LTC	BAP mentor	+46 467 662 601 35 alan@ltc.se	ALL
Bernhard Schauberger	BS	Biomass Trade Centre Achental (BAT)	BTC consultant	+498957070725 b.schauberger@biomassehof-achental.de	ALL
Joe Potter	JP	WCD	Director of WCD	(see PD)	(see above)

The following persons participated in the meetings according to their respective affiliations:

Name	Abbr.	Affiliation	Meetings	Role in meetings
Noel Gavigan	NG	Irish Bioenergy Association (IrBEA)	Moate workshop	Spokesperson for AD
Charles Shier	CS	Edenderry power station (Bord Na Mona, BNM)	Moate workshop, TCA meeting	Responsible for biomass supply to power station
Bryn Smith	BrSm	Biotricity, international fuel trading company (among others)	Moate workshop, TCA meeting	Expert on biomass market and legal situation; owns a CHP plant
Bernadette Phelan	BP	Western Development Commission	Moate workshop, TCA meeting	Executive and consultant on rural development and biomass market

Detailed description of the individual meetings

In this section, minutes of the meetings during BAT's visit to Ireland (see section 2) are given.

During the **welcome lunch in Mullingar** a lively discussion about the political situation in Ireland spanned. Regarding the establishment of an energy infrastructure or service provider it needs to be noted that the role of municipalities is very limited. Their competences from national level do not include the provision of heat, limiting their capabilities on this sector, and additionally they have low initiative power. These circumstances result in other persons, agencies and organizations or groups needing to take a promoter role. But having in mind that the necessity for civil collaboration is standard, the willingness of Irish people to act in cooperatives and to take the initiative is estimated to be strong. A strong tradition of cooperatives exists in the agricultural sector. Additionally, the current economic situation in Ireland makes it difficult to be granted bank loans, especially for new and unexplored ventures. However, as the establishment of a BTC is a long-term project and might only start with some delay from now, this obstacle could possibly be alleviated by then. The WCD as a non-profit limited company with various different projects has gained municipal support over the years and is a valuable partner for the establishment of biomass related projects. This holds true especially in the light of their knowledge about and access to public funding.

The open **debate about the BAP and the TCA** on Wednesday afternoon in Mullingar served as a good preparation for the workshop and meetings the next day. Regarding the TCA, several

major and as yet unclear issues were identified: the unknown local biomass supply and demand volumes, the current supply chains for biomass, the possible site for a BTC, financing and funding ideas, who could serve as the anchor person, which products are possible and which initiatives of stakeholders already exist. A special point of interest was the position of the three large peat power plants, as their large demand of biomass (as required by law) is a crucial factor for a future BTC. Generally the position of the two ESB plants (Lough Ree and West Offaly) is unknown, but until now there seems to be no initiative to co-fire biomass from their side, and it might be possible that these plants even close down if the legal requirements (30% of biomass by 2015) are not met. One of these plants tried to co-fire a fraction of biomass and encountered technical problems, stopping the co-firing experiment. To Bord Na Mona, however, good personal contacts between PD and CS exist and there is a will for cooperation from the plant's side. Please refer to the workshop and the reference group meeting minutes below for further details on all points. Regarding the BAP, please see the last section below.

On Wednesday evening, there was a coincidental **event of WCD about the LEADER program**, aside from the BioRegions issues. LEADER is intended to foster rural development in European countries by various means. The topic of the presentation here was to give incentives for farmers in Ireland to apply for the money left to spend in the two years of remaining program time (until 2013). The WCD board, supported by professional application writers, offers to strongly assist in the tedious parts of the task, requiring only the existence of an innovative and eligible idea. The "innovation" character is decided on local circumstances, thus even allowing for projects that already exist elsewhere but not locally.

Altogether, this seems to be an excellent funding idea for any biomass related project, especially a BTC. It is also possible to fund feasibility studies within this program. The maximum eligible amount is 150,000 Euro; the details can be clarified with WCD on demand.

The **workshop about AD and TCA in Moate** on Thursday morning yielded insights on the local situation and was accompanied with open and helpful discussions.

In the first talk, PD presented the current status of the BioRegions project in Westmeath. He emphasized its aims (one third of the energy demand by bioenergy) and the necessary support from the stakeholders. Furthermore, the results of the two best practice visits to Achental and Jönköping were shown. Two essential lessons can be drawn from these: many small-scale projects can also make a large change, and the increase of biomass usage creates local employment. PD suggested that future "best practice" visits should also be held in Ireland, as there are already highly interesting examples of bioenergy usage in the country. Finally, he identified the main local market for biomass to be the co-firing in the peat power plants, followed by private boiler demands.

Afterwards, NG provided an introduction to the current state of Anaerobic Digestion (AD) in Ireland. He presented several possible setups of AD plants, either for electrical or heating purposes. Potential uses of the resulting gas were shown (cars, gas grid, electricity), and a short glance on the German AD market and its job creation potential was provided. The low number of AD plants in Ireland (less than 10) was told to be also due to the "REFIT debacle", where the feed-in tariffs for electricity were undefined for several years. The more stable conditions in Northern Ireland, in his view, lead to a suction of suitable AD resources away from Ireland. The overall potential for AD in Ireland is estimated to be at 0.5 GW, mainly from energy crops. The establishment of fuel quality standards was encouraged.

The third talk from CS gave insights into the position of the peat power plant Bord Na Mona and its future plans. The plant was built in 2000 and has a capacity of 120 MW. It started with peat burning only (3,3 Mt per year), but is obliged by law to co-fire 30% of biomass until 2015, and it is supposed that the required fraction will rise in the subsequent years. If the plant does not comply with these rules, it might become dispatchable based on its CO_2 emissions. After starting in 2008 with a biomass amount of 20 kt, their goal for 2011 is 160 kt of organic dry mass (ODM). The 30% goal corresponds to 300 kt ODM of biomass. To avoid damage to their boiler, they carry out chemical and thermal analyses before to assess the applicability of different sources of biomass. Possible materials originate from forest residues, energy crops and other organic dry residues (nut shells, palm kernel shells, …). The staple products currently co-fired are wood chips (60 kt ODM), but also saw dust and wood pellets (14 kt each). In 2020, their plans envision the usage of 500 kt ODM. To cover this enormous demand, they have to rely on imports (200 kt), but also on local residues. Generally, they aim to use low-quality materials to avoid the high prices for quality products; however, a fuel blending seems required in their eyes to avoid damages to the boiler. The emission of CO_2 is around 1.1 t for 1 MWh of peat only and should decrease to 0.7 t by 2015. Bord Na Mona considers the biomass availability a major constraint and has recently started to contract with farmers about the planting of SRCs and the selling of forest thinning residues.

The last talk by BS informed about the general idea of BTCs, their requirements and the example "best practice region" in Achental. For further details, please see the reference group meeting below.

The audience in the workshop consisted of approximately 30 regional stakeholders from different sectors (farming, forestry, AD, biomass trading, rural development). After the talks several questions turned up, showing the general interest in the topic.
The reception of the BioRegions is positive, as the need for a change in the energy market seems to be clearly understood.

The **reference group meeting to discuss about the TCA** was characterized by the very cooperative and positive atmosphere. Its general aim was to clarify issues and estimations regarding the establishment of a BTC in the Westmeath region. Below the main discussion

results with respect to the subjects defined above (Wednesday afternoon meeting) are summarized.

Supply of biomass and demand of biofuels

- The local Westmeath demand of biomass can currently only be broken down from national or regional data. Using this source, a demand of 4kt of high-quality biomass (mainly pellets, some wood chips) in the private sector is assumed.
- A fraction of private households also uses peat or even coal, sometimes in briquette form (provided e.g. by BNM). It is generally assumed that this will change. A possible idea for a BTC is to provide briquettes from biomass to facilitate the change for the house owners.
- BNM is considered a major competition about low-quality biomass resources. However, the function of bundling the stray occurrences and channeling it to consumers (e.g. BNM) could be managed by a BTC. The annual co-firing of BNM currently sums up to 150kt and will rise to 500kt (organic dry mass) of biomass.
- In the quality sector, BNM is currently not deemed to compete with a possible BTC. This is due to two facts: first, the high-quality resources are not required for the large boiler, thus causing unnecessary spending. Second, the electricity tariffs are capped in Ireland for 15 years, i.e. they cannot be raised by the power companies. The next 15-year period is about to begin and prices are currently still bargained. This fact implies that heat/fuel providers can achieve higher retail prices during the course of the period and can pay more for the raw material. The main competition about quality resources might be from sawmills and the paper industry, which require higher qualities.
- District heating (DH) plants are rare in Ireland, and the existing plants cover only few houses each. However, the erection of CHP plants seems to develop. This is indicated by BrSm, who owns a CHP plant driven by straw in the south of Ireland.
- BrSm would have a substantial interest in the establishment of a BTC as a possible fuel provider for his network of factories (international fuel trading, CHP plant) and has secured a yearly demand of at least 1,000 t ODM, given that a BTC exists. The BTC would have to secure the quality of the fuels then. He also has access to a large network of interested stakeholders, possibly securing further supply to and demand from the centre.
  BrSm is currently not involved in the small-scale private market.
- The heat feed-in tariff in Northern Ireland is a major competition for biomass also in the South, as transport within the island is not a main source of costs. This executes some pressure on the Irish government to stop the suction of material.
- The national gas grid reaches only three cities in the area (Mullingar, Athlone und Tullamore), and of these only the centre areas. Thus, there are many households not connected to the grid. Additionally, a large part of those in the municipalities is located in the so-called “smokeless zone”, where the burning of peat or coal is not allowed. These households could be potential customers for biomass, as they mostly heat with oil currently.

Supply chains

- BNM has established its own supply chains with local farmers and forest owners.

- BNM currently dries its own fuels with the spare heat of the plant. This service could be used by the BTC, too.
- The private biomass market is served by various companies in Ireland, of which none is located in the Midlands (clarification pending).
- The pre-drying of wood in open air is possible, but the remaining moisture is rather high due to the high humidity in Ireland. This requires technical drying and proper storage for any premium fuel.
- SRCs might become an important option for premium biomass supply, as the forest coverage is rather low (7%) in Westmeath. Additionally, the knowledge about them is increasing in Ireland, too.

Possible products

- Log wood would be a good option, as it faces no competition from BNM and the forest coverage is low in Westmeath, thus preventing many people from cutting their own fire wood.
- Pellets might be an interesting trade product, if there is no local pellet provider in the Midlands/Westmeath yet.
- Wood chips (premium/mass) could also be traded or produced, however, the competition in this sector must be accurately analyzed.
- Briquettes of wood (saw dust) could be an interesting option for people to change from turf briquettes to biomass.

Possible site

- Spare heat (e.g. from BNM) is a major issue, as it simplifies the drying of fuels.
- Proximity to major roads (N4/N6) seems reasonable despite the low transport prices, as these might increase. Additionally, a substantial fraction of possible consumers is supposed to be in the larger Dublin area, making it more necessary to easily access this area.
- According to BrSm, Westmeath is an ideal location in the middle of the three peat plants and Dublin close by.

Financing and funding

- The current economic situation in Ireland makes it difficult to apply for bank credits, especially for new and not yet established topics like biomass trading.
- A chance to acquire seed capital might be to found a local cooperative (see also networks below).
- BrSm has a strong interest in establishing a BTC and would also provide seed capital, if an adequate business plan is compiled.
- The LEADER program (see evening meeting minutes above) could be an excellent source for funding.
- The EU-funded project “Biomass Trading Centres II” could possibly be used for supportive measures, too (details to be clarified with NG). However, financial aid cannot be given by this project.

- A structure similar to Achental (municipality, bank, private investors) is not applicable without change in Ireland, as the role of municipalities is different from Germany. However, the idea of a credit default insurance provided by a third party might of course be an option in Ireland, too.

Anchor person and existing networks

- Currently, there is no dedicated anchor person. However, PD has indicated interest in developing a consortium and promotion group if feasible.
- Local networks in biomass are currently small, but growing.
- The rather strong cooperative tradition in Ireland might facilitate the building of local networks.
- There is a growing understanding for the necessity of change in the energy market, which could be channeled into a stable network structure.
- Within the county, it should be attempted to include the full supply chain (harvest, collection, production, trading, fuel selling, …) into the network.
- It seems a good choice to include stakeholders with market experience (not necessarily biomass) into a seed network.
- The networks of farmers could be a good starting point, as these have already experience with wood chips provision, SRCs and local market access.
- Forest owner cooperatives have no experience with the professional biofuel sector yet.

General remarks

- The competition in the low-quality sector possibly requires that the BTC has a strand of premium material, either additionally or exclusively. Producing premium material in turn necessitates an adequate infrastructure (choppers?, dryers, storage) and the separation of qualities at the purchase.
- Currently there seems to be no opposition (except competition) to the establishment of a BTC.
- Private debts or unpaid bills are an issue only for gas or power providers, but not for direct fuel sale.
- An AD plant on the BTC site was not discussed. However, this could serve as a power generation facility and provide spare heat for drying purposes, too.
- There exists a contracting model for heat, ESCO. It is a national program and subcontracts with local suppliers of boilers or fuels and local mechanics. The BTC could use this authorized form of contracting for its customers. However, the domestic contracting share in this program is deemed to be rather small.
- There are several national development plans into which a BTC establishment could be integrated. However, as these plans are very abstract, they provide no substantial basis for assistance or access to financing.
- The possible BTC will surely have a market facilitating role. Thus, although the market for biomass is small at the moment, it might grow solely by the establishment of the BTC.
- The positive role of a BTC for rural development is generally acknowledged by the participants and could be used as an argument to gain support from various stakeholders.

The **discussion about the BAP in Westmeath** took place in a loose form and was to clarify general aims. The role of the BAP is to provide an abstract biomass goal for the following years, but strongly supplemented with concrete actions how to reach these goals.
PD and AS have agreed to develop a draft version of the complete BAP, where chapters 1-3 should already be rather elaborated. The draft will then be discussed with a key stakeholder group in winter to backup both the abstract goals and the concrete actions. The official adoption of the BAP (required by BioRegions) shall be performed in January, when the final version is compiled.
Chapter 6 (the concrete actions to reach the goals) is considered most important and should contain a substantial influence of regional stakeholders.

Summarizing comments

The visit has shown and confirmed the strong commitment of several persons towards a BTC. This fact could definitely be exploited to establish such a centre in the region and also other projects from the Biomass Action Plan. The founding of local cooperatives and stakeholder networks might be a first step to transform the general support into actions.

The acquisition of available national and international funding programs could help to overcome the financial obstacles of the current economic situation.

The positive reception of the BioRegions project could be fostered by regular meetings, which could provide further support from local stakeholders.

In general, there seems to be a potential market for trading and producing biofuels. However, due to the still limited regional data, a feasibility study might prove very helpful to assess the true potentials. This study should investigate the current and future demand for biofuels, the current supply structure and the possible competition in the low-quality and high-quality sector. Additionally, it would facilitate the implementation a lot if the possible revenues regarding different products are analyzed. Accompanying funds and sources for seed capital are an essential feature to be included. Furthermore, the analysis of several different possible sites for such a BTC could be performed to ensure a long-term investment. Finally, the role of local networks and possible stakeholders (especially an anchorman) should be considered. ***Note that the study should refine the question of the BioRegions project (Is a BTC applicable in general?) into a more precise one (Is a BTC applicable at this place, with these products, supported by these partners, financed by this funding?), possibly with few well defined alternatives.***

This study could also be used as a role model for other regions in Ireland, facilitating the establishment of further BTCs. As this coincides with the objectives of the Biomass Trading Centres II project, their support should be investigated.

To carry out and fund this study, a promoter/anchor group is necessary. Alternatively, a development organization such as WCD could also initiate this strategic analysis on behalf of the sector. The latter version, however, requires the inclusion of a group of motivated stakeholders as well.

As there might be a general trend in the biomass market to open up, strongly fostered by EU climate protection targets and also the Bord Na Mona co-firing actions, it might be a good idea to secure a good starting position in this market.

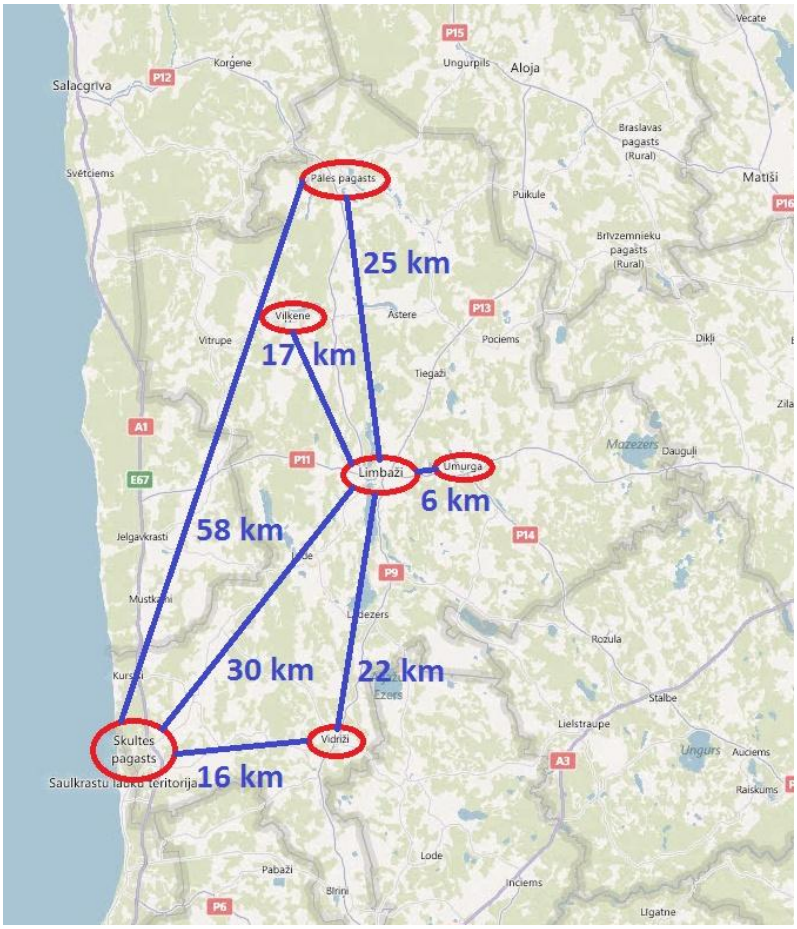
The good personal contacts with BrSm and BNM should be further encouraged and kept alive, as they are key market players in the biomass sector currently.

Summarizing the next steps, they include the search for an anchorman and initiative network, the performing of the feasibility study and the implementation of the BTC (in case of a positive result).

Limbazi region in Latvia

Presenting the target region

The region of Limbazi is already well described in the Latvian version of the Trading Centre Applicability (TCA) document, thus only the key facts are shortly listed here.



Map of the Limbazi target region, with the larger municipalities encircled and approximate distances between them

The target region is located in the north of Latvia, framed by the Baltic Sea in the west and the close Estonian border in the north. Its area comprises 97,906 ha in total, of which 48.6% are forested, 40% are agriculturally used and the rest of the area is subject to different uses. Eight communities (one city, seven parishes) are summarized in the district, whose major municipalities are Limbazi, Vidrizi, Vilkene, Skulte and Umurga (see map and the respective distances below). The inhabitants sum up to 19,400 (8,000 in Limbazi city), with an average household size of 2.7 persons. The main income of the region is from public employment, tourism and small industry.

Forests in the region are mostly privately owned (approx. 71%), while the rest is either state owned (approx. 27%) or municipally owned. A substantial share of the forest area is under different levels of nature protection, partly disallowing the economic usage. Wood stemming from the forests is used for furniture, paper and other material uses or energy (shares unknown). A large proportion of the region's inhabitants supply themselves with firewood (either self-prepared or purchased from local forest owners).

The Biomass Action Plan for the target region envisions the extended and more efficient usage of biomass for heating by basically three strategies. The first one is to replace diesel or oil

boilers in public or private buildings with biomass (wood chips or pellet) boilers and to extend the district heating connection rate, the second one is to raise the awareness for and implementation of energy efficiency measures (first in public, later in private buildings) and the third one is the establishment of a local biomass trading centre in several steps.

In general, the usage of biomass for heating purposes is already very high in the region (estimated to be above 90%), but is often very inefficient due to old stoves or burning in moist state.

There are several persons in Limbazi district who are motivated to promote the usage of biomass in their region and who support the idea of the Biomass Action Plan. Please see the descriptions of the individual visits for further details.

Schedule of the target region visit (04.09. till 06.09.2011)

The following table gives a short overview of the meetings during the visit of BAT's representative. For the attendants' abbreviations please see section 3.

Date	Time	Meeting/Agenda	Attendants
04.09.2011	20 h	Welcome dinner in Riga	IDz, BS
05.09.2011	10 – 11h	*Meeting with "Energoeksperts" company – cancelled due to unavailability of representative*	
	12 – 14h	Project lunch	IDz, BS
	14 – 15h	Visit to biomass research laboratory of Riga Technical University	IDz, RTU, BS
	15 – 17h	Meeting with a representative of the Latvian District heating association	IDz, EV, BS
06.09.2011	10 – 11h	Meeting with Limbazi municipality	IDz, AB, GI, BS
	11 – 12h	Visit to Limbazi district heating company	IDz, AB, VM, BS
	12 – 13h	Meeting with local wood chips supplier	IDz, AB, RR, BS
	13 – 14h	Project lunch	IDz, AB, BS
	14 – 16h	Visit to local sawmill and wood chips producer	IDz, AB, MK, BS
	18 – 20h	Closing dinner	IDz, BS

Description of participants

The following persons participated in (almost) all meetings:

Name	Abbr	Affiliation	Role in meetings	Phone number & E-Mail	Meetings
Ilze Dzene	IDz	Ekodoma	Project manager	+37167323212 ilze@ekodoma.lv	ALL
Bernhard Schauberger	BS	Biomass Trade Centre Achental (BAT)	BTC consultant	+498957070725 b.schauberger@biomassehof-achental.de	ALL
Aiga Barisa	AB	Ekodoma	Project assistant	+37167323212 aiga@ekodoma.lv	All in Limbazi

The following persons participated in the meetings according to their respective affiliations:

Name	Abbr.	Affiliation	Meetings	Role in meetings
Anna Beloborodko and Janis Ikaunieks	RTU	Riga Technical University	Riga Technical University Laboratory	Students of RTU, biomass quality assessment
Edgars Vigants	EV	Former president of district heating association, CEO of Ludzas bio-energy company	Ekodoma meeting	Expert in district heating and biomass market situation
Girts Ieleja	GI	Head of the development division (Limbazi municipality)	Limbazi municipality	Local project officer
Valters Mardoks	VM	Limbazi district heating company- technical director	Limbazi DH meeting	Technical manager of the plant
Ritvars Ramis	RR	Company “Rolek-A”, local wood chips supplier	Wood chips supplier meeting	Head of the company
Marcis Kruzenbergs	MK	Company “Bumpo” - local sawmill and wood chips producer	Saw mill meeting	Head of the company

Detailed description of the individual meetings

In general, the meetings included stakeholders from the region interested in (or opposed to) a potential biomass trading centre (BTC) and experts in the national supply of biomass or the quality assessment of biomass. In this section all meetings and their results are described in detail.

The meeting in the **biomass laboratory of the Riga Technical University (RTU)**, Institute of Energy Systems and Environment, with two students working there was to evaluate the capacity of the facility as a potential partner for biomass quality assessment.

The laboratory currently has the potential to determine the moisture, ash content, calorific value, particle size distribution (with sieves) and durability (pellets only) of solid biomass. European standards (CEN/TS 14961) are heeded in the methods, although they are not explicitly certified. The employees have experience in all procedures necessary to carry out the analyses and usually require, according to personal statements, one day to assess the parameters for one lot of biomass.

Additionally, a gas chromatography can be performed to examine the gas particles after a biomass pyrolysis (necessary to avoid excess ash agglomeration). The analysis of ash melting points is currently planned.

Summing up, the laboratory is appropriate for biomass quality assessment when considering the technical equipment and personal experience of the employees. The only drawback is the relatively large distance of the RTU from the target region of Limbazi. However, as there is no laboratory in the target region, a transport seems inevitable.

The former president of the Latvian district heating association (LSUA) and owner of a district heating (DH) plant in the Ludza region, **Mr. Edgars Vigants**, provided insights on the current market for biomass in Latvia as well as the possible advantages and drawbacks of local biomass trading centres in the country. The estimation of Mr. Vigants and the results of the discussion are listed here.

The market for biomass in Latvia is large, and there are many wood chips-producing companies ranging from very small to very large. The largest producer of wood chips is a state owned company “Latvijas Valsts Meži” (Latvian State Forests) and alone turns out 400 million loose-m³ each year. Approximately 50% of the total domestic production are exported, mostly to Scandinavia, as selling abroad usually yields higher earnings (ca. 8 Ls/loose m³ instead of 6-7 Ls/loose m³). Additionally, the Latvian DH companies often have financial problems since their attached heat consumers are often unwilling or unable to pay, which makes exporting even more attractive.

It has to be noted that on the one hand all state owned companies are required to sell for tenders and choose the highest price. On the other hand, the mostly municipally owned DH plants (which are by far the staple consumers of wood chips) need to buy for tenders and choose the lowest price. Together, these facts result in the domestic demand exceeding the domestic supply.

The ports, to where the wood chips are brought for export, often involuntarily assume the role of a stock keeper when export prices lower in summer, as the Latvian consumers mostly buy in winter.

Long-term contracts are rare, and prices are bargained anew with almost every delivery.

Often the owners of the DH plants are not satisfied with the quality of the wood chips (disturbing substances like soil or stones, moisture/mould).

Summing up the facts listed above, an intermediate partner between wood chips producers and consumers seems a natural choice, as it could provide a constant supply (with stock keeping) at reliable prices (when buying all year round) and also guarantee certain quality requirements (when applying and ensuring quality criteria). However, such a biomass trading centre is currently not desired by the DH owners as they fear higher prices. Additionally there might be informal contracts between DHs and suppliers, further preventing the establishment of an additional market player.

But a change of the stakeholders' attitude can be expected soon for several reasons: the main expenditure of municipalities is often for heating (thus requiring more efficient heating with quality material); long-term contracts could release DH owners from lengthy negotiations; the lacking supply could be filled with stock keeping during summer; energy security for the citizens could easier be guaranteed; and finally such a trading centre could also fill the gap between the two tender (maximization and minimization) principles.

Additionally, a trading centre could take care of aggregating small amounts of biomass from different suppliers and reselling them to small-scale customers.

Major handicaps for the establishment of a BTC are the lack of revenue during summer, which would definitely have to be covered up in the first years of existence, and the inability of most municipalities to finance such an investment.

Summing up, Mr. Vigants is well aware of the concept of a BTC and considers them to provide many benefits to the national biomass market. The main obstacles for the creation of such a centre are the mentality of the stakeholders and lack of municipal finances.

Within the **Limbazi municipality, Mr. Girts Ieleja** is the head of the development division and thus responsible for programs that promote the regions' capacities and its position in the

national and European context. The discussion in his office was about the local biomass situation, plans for an information centre (IC) and the possibilities of a BTC.

In his eyes, a BTC is needed to secure a cost-efficient supply of wood chips with reliable quality for the DH company. Additionally, the BTC could possibly be a pellet trader as these are bought from a company located 50 kilometers away from Limbazi. However, the financial and human resource situation of the municipality is not sufficient to build up such a centre by its own, thus it would need to be privately run. Additionally, as long as the clear support of the DH company (which is municipally owned, but with no direct influence by the council) is not secured, it seems a reckless idea. Additionally, a centre could only be lasting if it is profitable and needs no backup by municipal funds. This, in turn, is not easy due to the heating debts of the local citizens (see also above). The average price of energy is 40 Ls/MWh in Limbazi, while the average net salary is approximately 280 Ls per month. Furthermore, the very volatile wood price (heavily depends on the export situation and is mostly dictated by the large companies, see also above) could also impair an economic management of a putative centre. Currently long-term contracts are not favored by the wood chips producers as short term negotiations allow them to gain higher revenues, which is also a fact that such a trading facility would have to face.

The municipality currently plans to construct an information centre for bioenergy services and education. This IC should counsel citizens on energy efficiency, house renovation and different forms of renewable energy. The clients should also receive support when they want to appeal to public funds for energy saving measures. The IC should be equipped with demonstration tools and the staff should consist of professional energy consultants. The establishment of the IC is already decided by the municipality and a funding application is currently under preparation.

The technical manager of the **Limbazi DH company, Mr. Valters Mardoks**, related facts about the facility and shared his attitude towards a possible future local BTC.
The DH system in Limbazi consists of an underground pipe system and two boiler houses at opposite ends of the city. If not stated otherwise, the figures are related to both plants (thus, they are the summed values). Around 120 large houses are connected to the grid, housing 4,000 inhabitants and thus half the population of Limbazi city.
The plant is 30 years old, has a capacity of 5 MW and consumes approx. 70,000 loose m³ of low-quality wood chips per year, as the heating season is nine months. The daily consumption in winter is about 500 loose m³ per day, and to gain enough heat a fraction of premium-quality chips is added. The chips are purchased from two suppliers, one local (company “Rolek-A”, see below) and one further away (50km from Limbazi). There are only one-year contracts and every autumn the price is retreated; the calculation is based on energy content (MWh), not on volume. The heat customers also pay by MWh, but only 75% of them actually pay their bills (in time or at all).
The boiler in one plant was replaced in 2008, and in 2011 the pipes are replaced to reduce the underground heat loss (currently around 30%). The storage capacity of the DH system is 25,000 loose m³, of which 15,000 are stored outside (low-quality) and 10,000 in boxes (premium

quality). To avoid lack of material in winter, 10,000 loose m³ are always kept preserved and are usually heated during the summer period. The price for low-quality wood chips is 6-6.5 Ls/loose m³ and for premium quality 7-9 Ls. The technical director is in general open to a BTC under the conditions that it ensures quality (as there are problems with the local supplier, who delivers chips with substantial portions of earth and sand) and offers written and stable long-term prices (as currently the negotiations last two months per year).

The meeting with **Mr. Ritvars Ramis, head of the board of the company "Rolek-A" (wood chips supplier located in Limbazi)**, was meant to ease his concerns about the establishment of a BTC in the region. The company of Mr. Ramis sells around 10,000 loose m³ of wood chips per month to different locations (also to Limbazi DH and for exporting). Their assumed concerns about a local BTC could be alleviated by ensuring them that there would be rather a business-stimulating effect in the region rather than a loss of their own business. Additionally, the objections against the usage of premium material ("currently not necessary in the region") could be dispelled by mentioning the usage of premium material in the Limbazi DH company and the quite certain future needs for dry wood chips in small public or private chips stoves. It was explained to them that the putative BTC will start from small scale and develop only with the needs of the region, thus hoping to undermine the possibility of building up a local resistance against the project.

Summing up, their concerns should not be heeded too much and no personal importance assigned to them.

Mr. Marcis Kruzenbergs, the director of a company "Bumpo" (local sawmill) and small-scale wood chips producer, invited us to visit his company and explained his point of view on the local biomass situation along with possible ideas for a local BTC.
The main product of the company are planks for wooden packaging palettes. The market is rather volatile, requiring the company owner to be flexible in production volumes. A large portion of the work is performed manually. The supply of wood timber is based on three companies and sums up to 150-250 m³ per month (without one month in spring where the roads are closed for trucks). The efficiency of the overall plant is 65%, meaning that this fraction of the complete timber is turned into planks, while the rest is waste wood and processed to wood chips with a private chipper. The saw dust (200 m³ in 2-3 months) is sold to a pelletizing company. The production of wood chips sums up to 200-300 loose m³ per month and is sold to large chips trading companies. There are no official contracts, but a good partnership exists with an Estonian company which regularly pays higher prices than Latvian companies and is also very reliable in financial issues. In general, long-term contracts would be desirable in Mr. Kruzenbergs' point of view. The price for moist wood chips is currently around 4.5 Ls/loose m³. One idea of the owner was to develop the wood chips market with roadside cleaning chips. There is a huge potential in this biomass (see also TCA document) for two reasons. First, it is available for free as the municipalities are required to clean roads and ditches and currently even have to pay to get rid of the material. Second, the amount is substantial and large enough to open up this market with a dedicated company. Mr. Kruzenbergs is willing to play a leading role in such a project, but does not want to be the overall responsible person.

Summarizing comments

The visit has shown and confirmed the strong commitment of several individual municipality and company representatives, which could definitely be used to foster the usage of bioenergy in the target region according to the Biomass Action Plan. The acquisition of further national and international funding programs could certainly support this.

The financial obstacles against the establishment of a BTC could be overcome either by such a funding program, a small-scale start and investment on demand or the usage of existing infrastructure.
The information centre currently planned in Limbazi might be a very good tool to increase energy efficiency and reduce emissions and its establishment should be fostered. Currently, a physical BTC is difficult to implement in the target region, due to financial hurdles and a missing “anchor” person. Thus, a virtual BTC is targeted which requires rather few investment and can later be extended if the acceptance in the local population and the market demand is clear. This BTC should provide a platform (web, newspaper, municipal information material) which simplifies the trade of biomass in the region by collecting and regularly publishing data on both supply and demand side. Possibly the information centre mentioned above could be combined with the envisioned virtual BTC and be promoted with combined resources.

The plan to open up the market for roadside cleaning material seems also very reasonable and could possibly be started as soon as there is a person who is willing to take the lead on this project. Alternatively, this can be considered as the first step of expansion of the virtual BTC, as it is related to small-scale collection of data on the supply side.

The strategy for searching a lead person is decisive and could be discussed with BAT, if desired. For the information centre (and its combination with the virtual centre) the inclusion of municipality employees seems a good choice to have easy access to existing publishing infrastructure.

Although all meetings above dealt with wood chips as the main trading good, the market for log wood is currently even larger in Latvia (and Limbazi). The refining of this fuel (drying, cleaning, standardizing) could also be very helpful for an increase in efficiency and should not be neglected when planning the information or trading centre.

Appendix

List of abbreviations

The following abbreviations are used in the text.

Abbreviation	Explanation
AD	Anaerobic Digestion
BAP	Biomass Action Plan
BAT	Biomassehof Achental
BNM	Bord Na Mona
BTC	Biomass Trading Centre
CHP	Combined Heat and Power generation
DH	District Heating system
EAZK	Energy Agency of the Zlin region
ESCO	Energy Service Company
IC	Information Centre
kW, MW, GW (h)	Kilo-, Mega-, Gigawatt (hours)
LEADER	Liaison Entre Actions de Développement de l'Économie Rurale (European Development Program)
LSUA	Latvian district heating association
LTC	Länsteknikcentrum AB (Sweden)
ODM	Organic Dry Mass
RE	Renewable Energy
RTU	Riga Technical University
SAT	Syndicat Amenagement du Trieves
SRC	Short Rotation Coppice
TCA	Trading Centre Applicability
WCD	Westmeath Community Development
WP	Working Package

Documents

1. Presentation about the general idea of Biomass Trading Centres (Powerpoint Presentation, held by Christian Epp in Riga, May 2011)
2. Methodology for the applicability assessment (Document, compiled by BAT, published in May 2011)

Trading Centre Applicabilty Task 3.4

Dr. Christian Epp
BAT

Structure of the Presentation

- Idea of Trading Centres
- Status Quo evaluation
- Site selection
- Investment definition
- Profit and loss forecast
- Implementation strategy
- Compilation of findings

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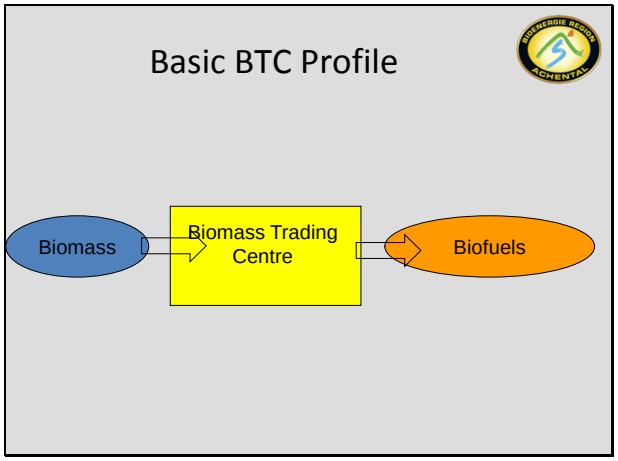
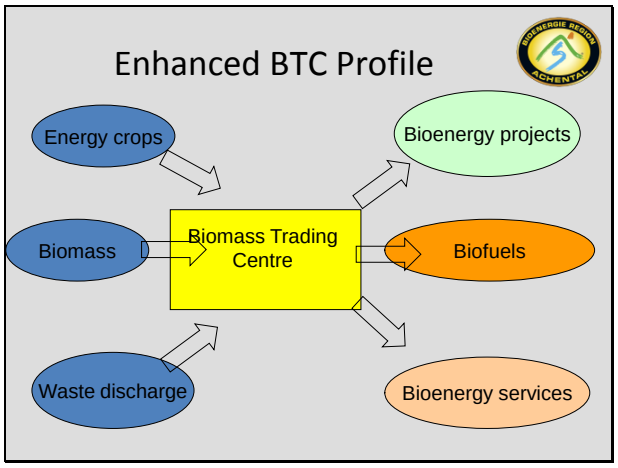
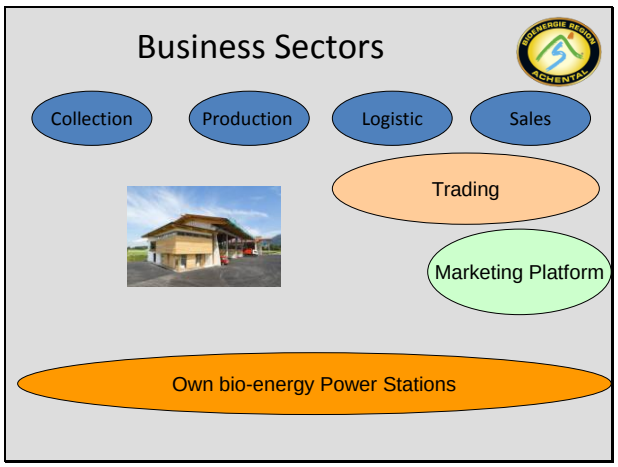

Basic BTC Profile
Biomass
Biomass Trading Centre
Biofuels


Enhanced BTC Profile
Energy crops
Bioenergy projects
Biomass
Biomass Trading Centre
Biofuels
Waste discharge
Bioenergy services


Business Sectors
Collection
Production
Logistic
Sales
Trading
Marketing Platform
Own bio-energy Power Stations

Main Question

- Is there space / need for a Biomass Trading Centre in your target region?
- What BTC profile is required?
- What Start-Up Business is required?

a) Status Quo analysis
b) Definition of opportunities
c) Selection of strategy
d) Final decision „yes“ or „no“

Structure of the Presentation

- Idea of Trading Centres
- Status Quo evaluation
- Site selection
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- Profit and loss forecast
- Implementation strategy
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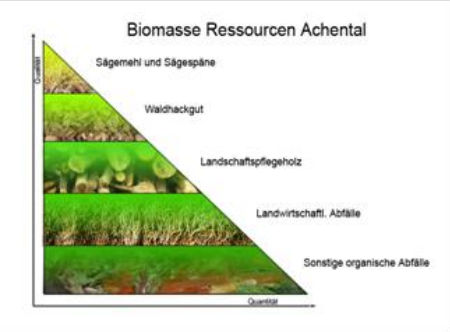
Relevant levels of investigation

1) Biomass availability
   - Classic biomass (agricultural and forest residues)
   - Non conventional sources (chicken litter)
   - Energy Crops (short rotation, maize)
2) Bio-fuels demand (existing and future)
3) Need for bio-energy services (public funding?)
4) Actor analysis

The dirtier the more…



Biomass Availability

- Waste and log wood from forestry
- Waste wood from wood processing industry
- Agricultural residues (manure, straw, other crop residues)
- Organic waste (food processing, restaurants, MSW)
- Energy crops

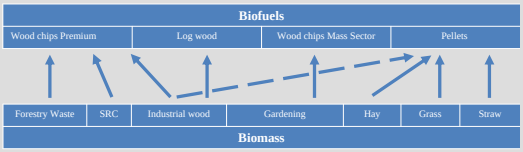
→ Decisive is the quality and the seasonal availabilty (addition to Biomass Action Plan)

Bioenergy Customers

- Existing bio-energy project (heating, cogeneration, fuel sale)
- Plans for new bio-energy projects
- Possibilities for own bio-energy projects (waste heat producers)

→ Lowest quality requirements are best!

Matching Potential with Demand



Each Region has to define ist own „products“ and the available raw materials

Bioenergy Services

- Information, PR work, networking
- Training and capacity building
- Participation in R&D work for on-site testing
- PR and lobby work
- Clearing house toward overall region development
- Certification of sustainability?
- Network of ackknowledged partners?

Actor analysis

- Who is active in the sector of biomass mobilisation?
- Interest of biomass suppliers for partnership?
- Interest of bio-energy projects for partnership?
- Interest of public bodies?

→Partnership or competition

→Design of partnership

Selecting the right site...
...is a key factor for success

- Good position between „biomass“ and „consumer“
- Proximity to main trading lines (roads, railway, harbour)
- Sufficient size and tolerant neighbours (also for future development)
- Waste heat is avalaible or needed
- Long term contract is possible

→ Selection depends on BTC profile

Structure of the Presentation

- Idea of Trading Centres
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- Profit and loss forecast
- Compilation of findings

Investment Sectors

- Management structure
- Production facilities (drying unit, energy crops)
- Logistics (transport and storage)
- Retail infrastructure
- Operation liquidity
- Money to cover

deficites of the first years...

Investment Priorities

- Management structure (AAA)
- Production facilities (drying unit, energy crops) (B)
- Logistics (transport and storage) (A)
- Retail infrastructure (AA)
- Operation liquidity (AAA)
- Money to cover deficites of the first years… (AAA)

Financial Engineering

- Own sources
- Bank loan
- Third Party financing
- Public money

→More details by Capital Connect

→Yet, investment plan should be defined in view to potential funding sources.

Structure of the Presentation

- Idea of Trading Centres
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Profit and Loss Calculation

Total yield from sale of bio-fuels	
minus	Purchase prices biomass
minus	Direct production cost
= Raw Yield	
minus	Personal expenses
	Office Cost
minus	Marketing Cost
	Depreciation
minus	Other cost
= Eearning BEFORE INTEREST + TAX	

Main Structure

- 10 years forecast including growth rate
- Focus on „raw yield“
- German experiences for fixed cost calculation
- Separation between summer and winter phase (optional)
- Defining best case and worst case scenario (optional)

→ Excel Tool will be provided

Structure of the Presentation

- Idea of Trading Centres
- Status Quo evaluation
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- Compilation of findings

Implementation Strategy

- Working group as nucleus
- Selection of one or two “drivers”
- Clever cooperation schemes
- Akquisition of SEED money
- Further development of business plan
- Start of project

→ Individual strategy recommendation will be given by target region visit.

Structure of the Presentation

- Idea of Trading Centres
- Status Quo evaluation
- Site selection
- Investment definition
- Profit and loss forecast
- Implementation strategy
- Compilation of findings

Compilation of findings

- Selected biomass source
- Selected biofuels
- Business Sectors
- Investment demand
- Profit and loss forecast

→Maximum size 4 pages!

→Close reference towards Action Plan!

Trading Centre Applicabilty
Task 3.4

May 2011

Provided by:

Biomassehof Achental
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Eichelreuth 20
83224 Grassau

Idea and document structure

With this document all BioRegions target regions shuld be given a guideline which allows to effectively assess the applicability for the creation of Biomass Trading Centres (BTC) in their respecitive region. In case of a positive result of this evaluation process in depth analysis of the technical and economic feasibility should be undertaken that will then result in a detailed Business Concept.

The document goes along the following structure:

- Idea of Biomass Trading Centres
- Status Quo evaluation
- Site selection
- Implementation strategy
- Compilation of findings

The main questions to be answered by this analysis work are:

Is there space / need for a Biomass Trading Centre in your target region?

What BTC profile is required?

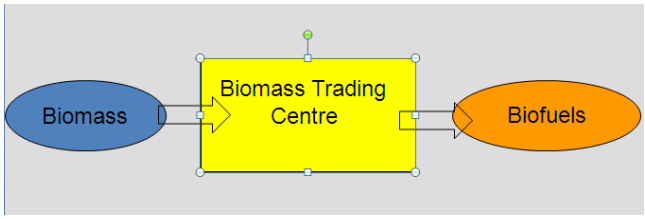
Status Quo analysis concerning biomass availability and biofuels demand

Definition of opportunities in all possible BTC business sectors

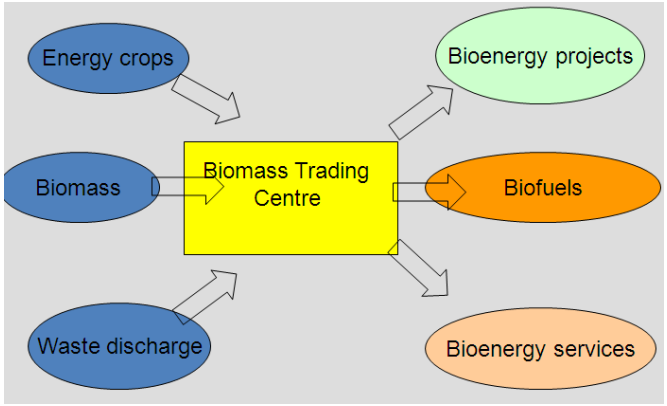
The applicability analysis should end with a clear decision: „yes“ or „no“

Idea of Biomass Trading Centres

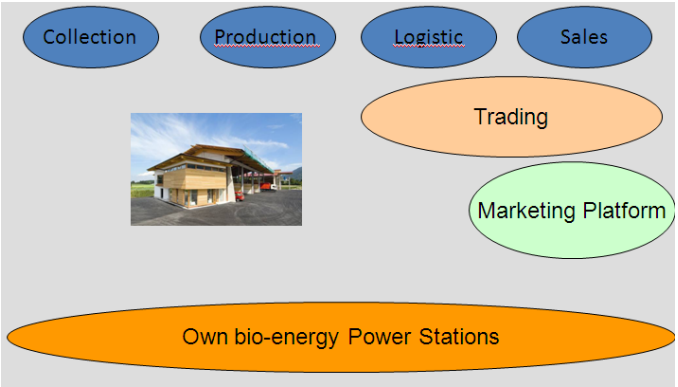
It is the main idea of BTC to act as an intermediator between the regional biomass potentials and the biofuel demands of energy project in the respective region. This basis structure can be highlighted by the following picture:



Existing BTC have highlighted that there are various additional functions a BTC can take over in the respective region. Thus, a more complete picture of the possible BTC profile can be documented in the following picture:



Moreover, the BT C can cover all necessary steps of biomass logistics, starting with the compilation of the raw material, its upgrading (such as chipping, drying, pelletising), the logistics and marketing. Yet, there is also the possibility to restrict the economic activities to certain sectors, e.g. by buying already processed fuels and concentrated on the logistics and marketing. On the other side BTCs could also install own energy plants and so overtake the complete value chain to the sale of electricity and heat. These various possibilities which have a strong impact on the financial demand and economic performance of the Centre can be highlighted by the following picture:



Status Quo evaluation

Biomass availability

The following three sectors should be analysed for their regional potential:

- Classic biomass (agricultural and forest residues)
- Non conventional sources (chicken litter)
- Energy Crops (short rotation, maize)

Data from the Biomass Action Plan should be used extensively. Particular focus should be laid on defining quality criteria. Moreover, for the future logistics of the BTC it is important to also look on the seasonal availability (heating and non heating season).

The biomass analysis should be done rather conservatively what means competing uses from the paper of dashboard industries should be taken into consideration. Moreover, a complete unwillingness of the biomass producer to get into biomass mobilization chain should be taken into consideration already at this early stage.

Prices for the biomass should be given. It is very important to defined this prices rather carefully otherwise the later economic analysis is very difficult. Your price indication should

- Be referred to quantity (volume or weight)and to energy content (in MWh)
- Clearly indicate if VAT already is included (better calculate without any tax)
- Clearly define if the price is at the production place (so without transport)
- Describe carefully the biomass quality for the given price (degree of humidity, chopped, sources of contamination)
- Indicate price development of the last years and future price expectations

Bio-fuels demand (existing and future)

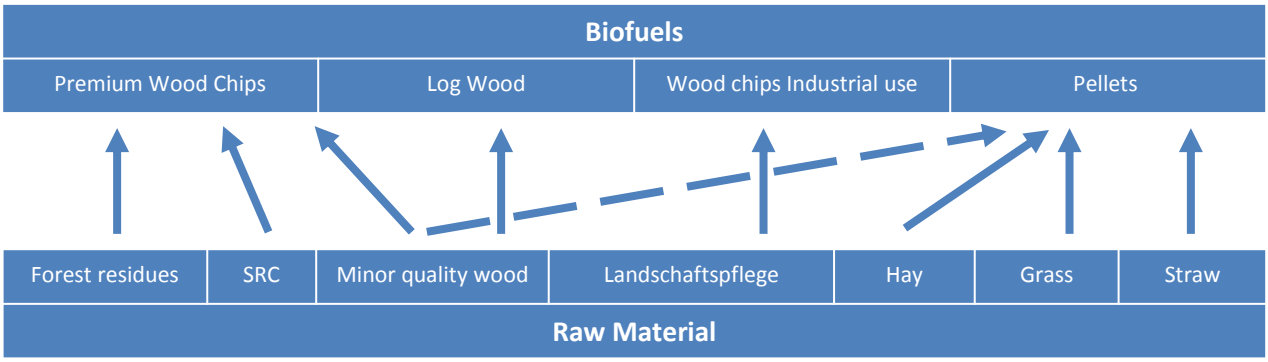
Data should be taken from the Biomass Action plan about existing bio-energy plants in the region. Also here particular focus should be put on the quality requirements and the varying demand between

heating and non heating season. Current project developments should be analysed and assessment should be given on future market developments in the different bio-energy sectors.

Also for the biofuels price indication should be given. Please make reference to the specifications given above.

Matching supply and demand

The findings of for potential and demand should be brought together into a graphic scheme. It is recommended to individually adopt the following sample structure:



Description of the biomass supply chain

In this section it should be explained how in the current situation biomass supply is managed in view to the demand and supply figures explained before. Who is responsible for the supply:

- The biomass provider himself?
- The biofuels consumer?
- A third (trading)organization?

Need for bio-energy services

An evaluation should be given about the potential for additional bio-energy services the BTC could offer in your target region.

The following list should give you an idea of the different services a BTC could overtake in the region. Please analyse carefully what could be needed in your target region. The services only are relevant if they are paid e.g. by public sources.

- Information, PR work, networking
- Training and capacity building
- Participation in R&D work for on-site testing
- PR and lobby work
- Clearing house toward overall region development

- Certification of sustainability?
- Network of acknowledged partners?

Actor analysis

A supportive partner structure is vital for a successful BTC preparation, implementation and operation (even more than the biomass availability!). Thus, this sector should be worked on with upmost care and sensitivity.

The following stakeholder groups should be directly questioned for their interest and support:

- Farmers and forestry associations
- Larger farmers and forest owners
- Forestry companies
- Municipalities and regional administration
- Utilities and project operators
- Local and regional Politicians

Moreover, competing structures in the field of bio-energy services should be checked in view to those actors:

- Energy and development agencies in the region
- Private consultancies
- Administrative bodies with bio-energy related profile

At last you should be aware that the BTC can only get a success with a skilled and committed “pilot”. This should be an individual from the region who sees his / her economic future within BTG. It is important to carefully select this person in view to motivation and skills and to bind him or her in an early stage into the project planning.

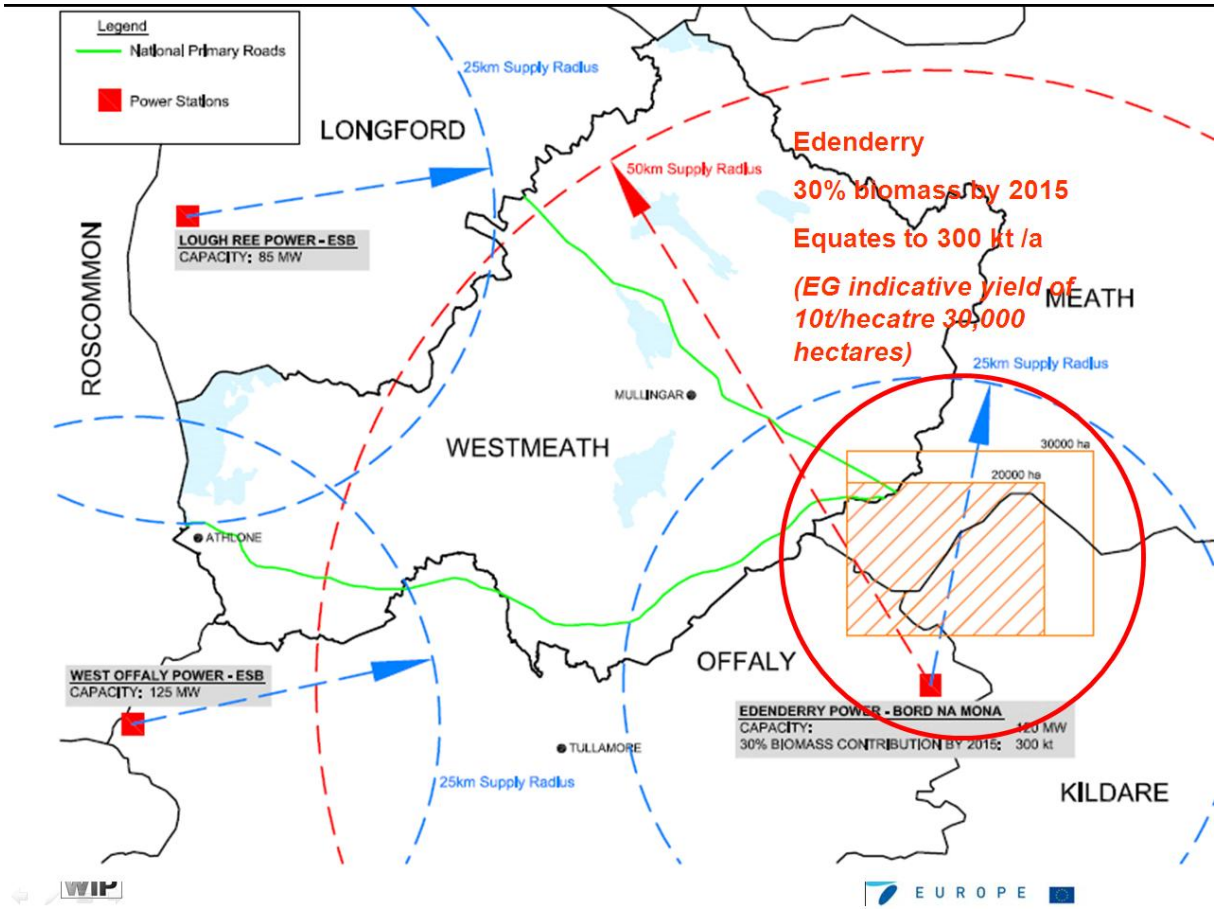
Site selection

Selecting the right site is a key factor for success. Thus, also this analysis step should be undertaken with much consideration. The optimum BTC site should fulfill the following criteria:

- Good position between „biomass“ and „consumer“
- Proximity to main trading lines (roads, railway, harbour)
- Sufficient size and tolerant neighbours (also in view to future development)
- Waste heat is available or needed
- Long term renting contract is possible

Of course, the selection of site should be done in view to the individually selected profile of BTC concerning the business sectors.

It would help to highlight the possible site on a regional map showing the traffic lines, the biomass availability and the proximity to possible consumers. A sample of such a map related analysis is given in the following from the Irish partner region:



Implementation strategy

The concrete implementation strategy should be defined jointly after the applicability analysis was answered with a clear “yes”. For this rather detailed discussion about the investment demand, the profit and loss forecast and about the legal form of your future BTC is needed. This will be part of the work implemented in Work- Package 4.

Final decision about applicability

In this final step of the Applicability analysis a clear conclusion should be drawn: “yes” or “no”:

"Yes": There seems to be need for a BTC. It is worth studying further the design and business model of a possible BTC including the investment demand and the profit and loss forecast.

"No": The biofuel needs of the "bio-energy region" can be served adequately by the existing businesses and supply chains and their expected evolution. There does not seem to be a need for a new BTC.

For finding this final answer the following process should be undertaken:

- The target region will compile all relevant data along this document profile.
- The completed document will be revised by BAT, additional information will be requested if necessary.
- BAT will give a first statement addressing strong points and weak points for the BTC implementation in the respective region.
- This BAT statement will be given to the target region stakeholders with the request for comments.
- The final decision will be formulated jointly by BAT and the target region stakeholders in the fringe of BAT target region visits.

Compilation of findings

The results of your analysis along this guideline should be brought together in a brief document (not longer than 6 pages). This document should have a structure rather similar to this guideline. The final decision “yes” or “no” should be given and explained thoroughly.