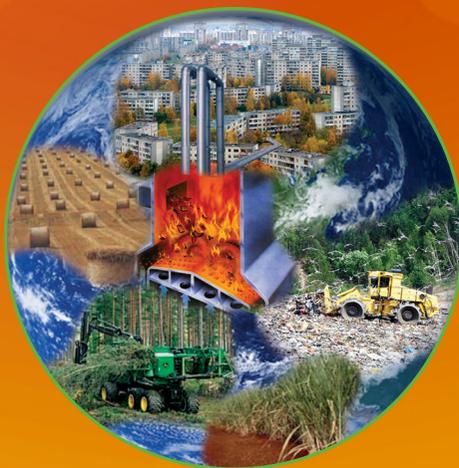


# **BIO-HEAT**

**Promotion of Short Rotation Coppice for District Heating  
Systems in Eastern Europe**

**FINAL RESULT - ORIENTED PUBLISHABLE REPORT**



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## 1. INTRODUCTION

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The present deliverable D1.1 is the final result-oriented publishable report, which comprises a comprehensive summary about all performed activities within the BIO-HEAT project (September 1st, 2010 – August 31st, 2012).

This report contains all information concerning the aims with which the BIO-HEAT project was conceived, as well as all strategies and methodologies about how the consortium has worked in order to achieve the initial goals. Moreover, information about the obstacles and limitations faced are provided, and all options and measures applied to overcome them are discussed. Finally, this report also provides a final and overall summary about all achievements reached during the project timeframe.

The preparation of this report was possible due to the joint efforts of the whole consortium. It was conceived as a final and comprehensive approximation to the project for those people interested in the use of biomass and, specifically, Short Rotation Coppice (SRCs) as a source of energy and its further application in the specific sector of District Heating (DH), as well as for those interested in the IEE projects performance ■

## 2. OVERVIEW ABOUT THE BIO-HEAT PROJECT

### 2.1. Objectives of the action

**A**lternative sources of energy with potential enough for substituting fossil fuels are urgently required, and many initiatives have been carried out in order to fulfil this objective. Due to this reason, the markets for bioenergy products developed dynamically during the last decade. Amongst all existent Renewable Energy Sources (RES), **bioenergy is considered as the as the most promising source of sustainable and secure energy in Europe**. Its availability is not a problem as in the fossil fuels case, and it is flexible enough to be applied to a wide range of services, being heating and cooling one of its most important applications.

Thus, **market expansion and especially large scale application of RES is only possible if all existing biomass resources are used and additional potentials are activated to increase the basis for non-fossil fuels**. SRCs constitute one of the most promising sources for sustainable wooden biomass production. These are plantations of fast growing trees, such as poplars or willows, and wood can be produced in short rotation cycles of 1 to 5 years (for woodchips production) or cycles of 10-12 years (for paper wood production).

At the moment, **SRCs are rarely used in Eastern and Central Europe**, although there is a constantly expanding bioenergy sector and more rural areas with agricultural focus than in Western Europe. Former research projects showed a high potential and interest for the SRC topic in the whole agricultural sector, but due to uncertain regulatory framework and an enormous lack of adequate (end-user oriented) information, investments in this sector are still small and the development of a free market is inhibited.

Some countries can look back on successful long-term experiences in the establishment of SRC systems and their markets. Additionally, many research projects dealt already with practically oriented investigations in the SRC sector, but in most cases a competent expert assistance was missing after the first contact between potential market partners. Furthermore, **rising costs for fossil fuels force especially Eastern and Central European Countries to find additional fuel substitutes and to concentrate on sustainable concepts to support regional value chains**.

Since heating comprises most of the energy consumption in buildings in all Eastern European countries, **the introduction of biomass fuel sources for heating can significantly reduce their regions' emissions**, which could significantly contribute to fulfil the EU targets. However, biomass-based RES are not currently being used as much as it would be desirable. Despite its potential, the lack of knowledge and know-how about its possibilities amongst other important barriers are hindering its use.

Specifically DH, which is already an important source of heating in many European countries such as Denmark, Austria, Sweden, Finland, Czech Republic and the Netherlands, could benefit from the use of biomass as combustible.

DH not only offers excellent opportunities for reducing environmental pollution, but also for energy savings. **DH has proved to be much more energy efficient than traditional individual heating systems**, and could therefore be a major contribution to greenhouse gases emissions reduction. It is an extremely flexible technology which can make use of any fuel including the utilisation of waste energy, renewables and, most significantly, the application of combined heat and power (CHP). Replacement of fossil fuel by woody biomass would typically reduce net CO<sub>2</sub> emissions in the process by over 90% (assuming that the wood supply is managed in a sustainable way). SRCs can be grown to supply the markets and provide a secure and sustainable long-term resource.

Therefore, **the combination of DH technology together with a sustainable, secure, renewable and harmless combustible such as biomass (and more concretely SRCs), could contribute to generate heat in a very efficient way and to reduce CO<sub>2</sub> emissions significantly**. This represents a feasible solution for the heating problems encountered in Eastern and Central Europe, where the application of biomass for these purposes is not as extended as in other European countries.

For these reasons, the overall objective of BIO-HEAT was promoting the use of biomass from SRCs as a source of energy for DH systems in Eastern and Central European countries, showing potential future end users, such as district heating professionals, established municipal energy suppliers and land owners, and stakeholders, such as local authorities or policy makers, the advantages of using biomass from SRCs as a source of energy and its more than advisable applicability on DH systems.

The intention of the project was therefore the transference of research results and success stories through the assessment of RE systems for

DH in Czech Republic, Romania, Poland, Slovakia and Lithuania, i.e., the target countries of the project, the elaboration of a training plan and the development of a comprehensive dissemination and promotion strategy focused on each of the target countries. The final aim was to finally set up new regional SRC to DH chains in these countries and start and / or enhance the development and expansion of the sector.



Thus, BIO-HEAT specific objectives were:

- To **transfer know-how in Eastern and Central Europe about the potential of biomass as a high efficient, low-cost and sustainable source of energy** and the opportunities their use offers.
- To **provide access to valuable information and raise awareness of SRCs as a CO<sub>2</sub> neutral biomass source to DH operators and other related stakeholders and decision makers** in order to raise awareness.
- To **create local agricultural value on basis of renewables and CO<sub>2</sub> neutral sources of energy**, reaching new target groups in Eastern and Central Europe.
- To **connect all relevant stakeholders through a web-based**

**platform to ensure a long-term information flow** and to **initiate local initiatives and implementation strategies** for SRCs in combination with DH as one sustainable outcome even for external parties.

- To **implement a comprehensive dissemination strategy focused on the transfer of best practices and networking** of professionals, decision makers and national support scheme managers.

- To **develop together with the dissemination strategy a training plan, acting as the guideline and instrument for transferring essential knowledge** to the most important groups of key actors in the promotion of SRCs as an energy source for DH.

- To **transfer the practical oriented information derived from the previous projects to end users**, especially landowners, power plant engineers and municipal energy suppliers in order to initiate or strengthen national plans and to increase the number of initiatives on the use of SRCs.

- To tackle technical and non-technical barriers that hinder the implementation of SRCs, and / or that end users could encounter through the organisation of **practical workshops and seminars, reaching more than 3.200 key-members of the Associations taking part in the project**. During these events, DH professionals, policy makers, authorities and other relevant stakeholders are meant to be informed in detail about the SRCs use benefits, and to be encouraged to support schemes and legal frameworks that affect SRCs. Speakers are supposed to be, among others, technological practitioners, technology providers, farmers who already produce SRC, and DH operators.

- To **state future dissemination activities and promotion plans**. A common program about attendance to future conferences, trade fairs, seminars, etc. is to be developed during and after the project timeframe in order to maintain and strengthen the information channels created within and outside the project.

- To **open up new markets for renewable energy sources**, as well as to **assure continuous energy supply from RES**.

In parallel to the accomplishment of these objectives (and in order to attain them), the BIO-HEAT project aimed to achieve the following results:

- The **development of suitable training and dissemination strategies** according to the country addressed, adapting the strategy to the specific characteristics of each country.

- The **organisation of 20 training workshops** in the target countries for DH professionals and established municipal energy suppliers, attracting **100 participants per country per workshop**.
- The **organisation of 10 seminars** for stakeholders of the value chain in the target countries, attracting an average of **20 attendees per seminar** representing regional and national authorities.
- The **awareness-raising of potential end users** and relevant stakeholders, leading to:
  - o 5 – 10% additional hectares of SRC per target country.
  - o 5 new & working regional value-added chains on SRCs in combination with DH applications submitting agreements to commit to continue the work once the project is finished per targeted country (25 in total).
- The **creation of dissemination material and translation of the items produced into the target countries languages**, through which 10000 representatives from the whole value chain (stakeholders, farmers, policy makers, investors, etc) were aimed to be reached.
- The **creation and maintenance of a project website**, including a public forum, lists of relevant actors of the whole value chain in Eastern and Central European countries and a platform where other finished and on-going initiatives on SRCs were aimed to be included for further consultation.
- The **creation of min. 25 energy clusters** (min. 5 per target country) by farmers and other professionals of the energy sector in order to establish closer collaboration between the energy production (district heating, co-firing) and farming (SRCs growing) sectors.

### ***Expected market changes and effects on target areas***

As mentioned, DH in Eastern and Central Europe is currently fuelled mostly by natural gas, next to coal and oil. Moreover, energy losses are high due to poor pipe insulation and corrosion. Taking into account the increasing fossil fuel prices and the problem that their excessive consume causes, the necessity of looking for alternative energy supply is becoming a priority.

In this sense, **biomass is the most advisable substitute of fossil fuels, as it is the RES with the highest realisable potential for DH**. In addition to its undeniable contribution in the use of fossil fuels reduction, together with its environmental advantages, its utilisation opens new markets and opportunities for local producers and other potential end

users. DH professionals, established municipal energy suppliers and land owners could benefit by the use of biomass – new cost effective energy source, secure availability, new or alternative land uses – and the income source it would mean. It would also lead to the creation of additional employment in the fast growing energy sector. Taking into account the potential that biomass use has, employment would be created in order to attend the demand, reaching this benefit also to sub-suppliers.

Therefore, the BIO-HEAT project was conceived with the following strategic objectives:

- To **increase the share of RES-energy from biomass produced by SRCs**, what will contribute to reach the EU targets regarding renewable energies use in the upcoming years.
- To **increase the number of farmers growing SRCs** in order to provide energy for different applications.
- To **connect local actors directly over the internet-based platform and through personal contact** in the workshops and seminars.
- To **increase the energy sustainability**.
- To **improve the support schemes and legal frameworks affecting the biomass growing and harvesting sector, as well as those regulating the use of RES**, enabling a wider implementation.
- To **stabilise the market through the proposal of new support schemes and policies specifically designed for biomass sector** to the relevant regulation bodies.
- To **increase and diversify the farmers' sources of income**.
- To **create biomass energy clusters throughout EU**.
- To **transfer success stories** at European level, between researchers and technology providers to end users and policy makers.

### ***Contribution to EU targets***

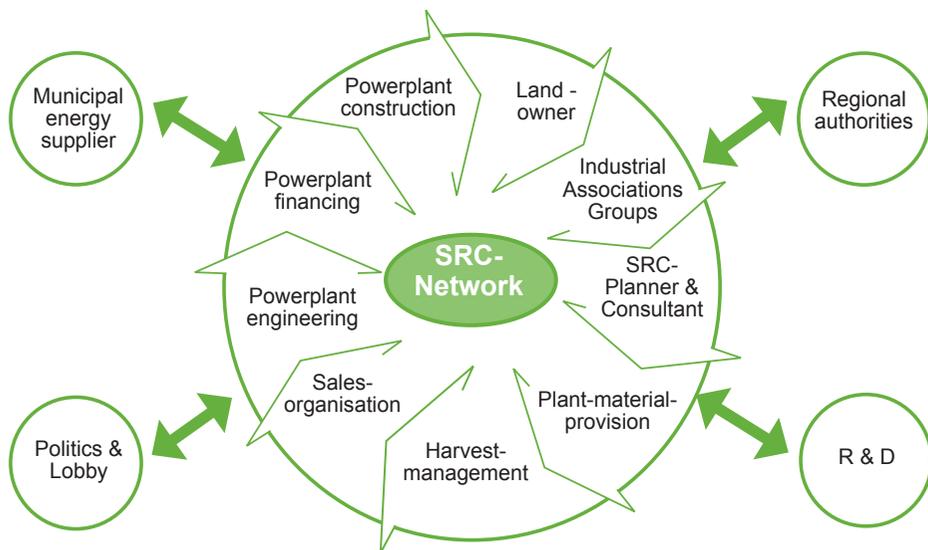
In the face of Europe's increasing dependency on fossil fuels, using biomass is one of the key ways of ensuring the security and sustainability of energy supply in Europe. By the time it was conceived, the **BIO-HEAT project aimed to contribute to European legislation on:**

- o Energy mix (Renewable Energy Road Map)
- o Biomass use & biomass for heating (Biomass Action Plan)
- o DIRECTIVE 2009/28/EC
- o National Renewable Energy Action Plans (NREAPs)

- o Information and training
- o EU Strategy for Biofuels
- o Agricultural regulations - Common Agricultural Policy (CAP)
- o CAP Health Check of 2008

### **Target groups and key actors**

The target groups for training and dissemination activities are stakeholders of the whole of SRC and DH systems, as well external experts like community authorities, politicians and young students to offer opportunities for RE jobs.



Key actors are essential to multiply the project results and, at the same time, make pressure at national levels to implement the BIO-HEAT concepts. If the key actors are convinced of the beneficial impacts of the SRC systems, on the one hand they could join initiatives at national level together with the project partners and, on the other hand, they could also make the necessary investments (in the case of investors) and refocus their activities (in case of SMEs, installers, fuel processors, forestry industries) to adapt their activities for this potential market.

The target groups and key actors identified and the benefits this action can bring them are summarised below.

<b>Target Groups</b>	<b>Benefit to the target groups</b>
Public authorities	Access to State-of-the-Art information on SRC for DH and prospects for its evolution. Latest information on support schemes and policies throughout Europe. Benefit expected from the outcomes of workshops, networking and dissemination of best practices
Support scheme managers	Access to State-of-the-Art information on co-firing and prospects for its evolution. Latest information on support schemes and policies throughout Europe
Market analysts, researchers, modellers	Access to State-of-the-Art information on markets related to co-firing and their evolution
Energy agencies	Access to State-of-the-Art information on co-firing and prospects for its evolution. Latest information on support schemes and policies throughout Europe
End users	Access to State-of-the-Art information on co-firing and prospects for its evolution. Latest information on support schemes and policies throughout Europe
Standards bodies	Access to the latest information on markets and opportunities for trade in Europe. Information on business opportunities related to SRC for DH. Increased network of contacts through workshops and events
Media	Accurate information on SRC for DH

Key actors	Benefit to the key actors
Investors	Access to State-of-the-Art information on co-firing and prospects for its evolution. Latest information on support schemes and policies throughout Europe
Forestry industries	Access to the latest information on biomass markets and opportunities for trade in Europe
SMEs	Access to the latest information on markets and opportunities for trade in Europe. Information on business opportunities related to SRC for DH. Increased network of contacts through workshops and events
Installers	Information on the prospects for development of technology related SRC for DH, increased business opportunities
Fuel processors	Access to the latest information on markets and opportunities for trade in Europe. Information on business opportunities related to SRC for DH. Increased network of contacts through workshops and events
Industry association groups	Access to State-of-the-Art information on SRC for DH and prospects for its evolution. Latest information on support schemes and policies throughout Europe

## 2.2. The background

The BIO-HEAT project came up as a continuation of European and national research and development projects, such as the FP6 BIOPROS, NETBIOCOF, LADAS, WAFLA, WACOSYS or INAWAB, dealing with biomass-production for combustion. Restricted partnerships and work programmes and resources of these successful projects did not cover some high-potential regions in Eastern and Central Europe. Based on these successful previous experiences, and taking into account that its most important point would be to inform, motivate and convince the key-stakeholders of the whole value chain, **BIO-HEAT represented the necessary dissemination and exploitation steps, aiming at implementing SRCs application as an energy source for DH in Eastern and Central European countries due to their energy needs and their potential as SRCs producers.** Furthermore, SRC systems could create economic, social and environmental friendly value chains, especially in rural and/or agricultural affected areas.

The BIO-HEAT project built on those successful projects mainly by using their results and avoiding duplication of the work already performed by some of the BIO-HEAT partners. BIO-HEAT partners participating in previous projects had already learnt how to design effective dissemination activities and to develop adequate training material for the real implementation of SRCs. The contacts made by the project partners through their participation in former projects would also help to build the clusters foreseen in the project ■

## 2.3. The BIO-HEAT consortium

Partic N°	Participant name	Participant short name	Country	Main Role in Consortium
CO 1	BIOAZUL S.L.	BIOAZUL	Spain	Coordinator & Expert
CO 2	Technology Transfer Centre Bremerhaven	TTZ	Germany	Expert
CO 3	Czech Biomass Association	CZ-BIOM	Czech Republic	Market & key actor representative
CO 4	Czech Biomass Association University "Politehnica" from Timisoara	UPT	Romania	Expert & Market & key actor representative
CO 5	The Polish Association of Research and Applied Agriculture Specialists // EKSPERT-SITR Ltd. *	SITR	Poland	Market & key actor representative
CO 6	Lithuanian Biomass Association	LITBIOMA	Lithuania	Market & key actor representative
CO 7	Slovak Biomass Association	SK-BIOM	Slovakia	Market & key actor representative
CO 6	Lithuanian District Heating Association	LDHA	Lithuania	Market & key actor representative



**BIOAZUL S.L.** is an engineering consultancy company devoted to environment, energy and water with two interconnected business

areas: R&D consultancy, being a catalyst, promoter and facilitator of R&D projects, and commercialisation of innovative products related to water, environment protection and energy efficiency, working on the marketing of 3rd parties' highly innovative products as well as on R&D and marketing of own products.

The highly qualified staff of BIOAZUL (composed by scientists and engineers) has an extensive experience in the preparation and management of R&D projects (including EC funded ones with large amount of partners, such as several Coordination Actions, Collective Research, etc.) and in R&D activities in the fields of water and wastewater management, renewable energies (especially concerning biomass), energy efficiency and environmentally-sound agriculture.

Regarding project management, BIOAZUL has in-depth know-how both of the available funding tools (mainly the 6th and 7th Research Framework Programme of the European Commission), and of the necessary technical and administrative procedures for carrying out public-funded R&D. This knowledge together with the extensive network of technological and commercial contacts all over Europe of the company has facilitated BIOAZUL to set up strong R&D proposals finally funded by the EC, in which BIOAZUL is taking care of the management and co-ordination tasks, as well as R&D tasks.

**[www.bioazul.com](http://www.bioazul.com)**



**ttz Bremerhaven**

TTZ Bremerhaven is a Technology Transfer Centre associated to the University of Bremerhaven (North of Germany), a private non-profit organisation specialised in the fields of environment technology, biomass production, conversion and use, waste and wastewater management and energy efficiency. TTZ has more than 100 employees and long experience in European and International

projects, as it has participated in more than 200 during the 6th and 7th Framework Programme, either as co-coordinator or key member. TTZ carries out applied research (mainly for and with SMEs) and has been or is involved in several European projects dealing with sustainable biomass production and use: sustainable agricultural management, new crops and new markets, short rotation plantations, future trends for biomass production as well as other innovations project dealing with membrane technology for bioethanol, ethanol and biogas from lignocelluloses, etc.

In addition, TTZ has a worldwide partner network and a broad experience in the development and implementation of projects financed by international organisations, e.g the EU and the UNDP, as well as by national or regional institutions. TTZ has taken part in more than 700 international research projects among which TTZ has gathered vast experience as general coordinator.

**[www.ttz-bremerhaven.de](http://www.ttz-bremerhaven.de)**



CZ-BIOM, founded in 1994, is a non-governmental non-profit organisation and professional association supporting the development of phytoenergy in the

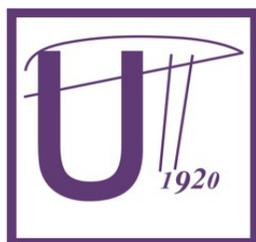
Czech Republic. CZ-BIOM consists of 5 sections, of which the main ones are: phytoenergy, biogas, composting, biomass combusting, biomass production, and information services. CZ-BIOM works together with other non-governmental organisations in the field of bioenergy (in the Czech Republic and abroad). CZ-BIOM is a member of the European Biomass Association AEBIOM, the German Biogas Association - Fachverband Biogas e.V. and the ECN – European Compost Network, to which it holds close contacts.

The main activities of CZ-BIOM consist of dissemination and research activities. CZ-BIOM yearly organises or co-organises 8 to 10 expert conferences. CZ-BIOM publishes its own printed bulletin. For the broad public, CZ-BIOM distributes general information material, such as practical information on the use of biomass for energy purposes for local governments or information material for education (teaching aids). For the distribution of its information materials CZ-BIOM uses different

information channels, most of all its own website, leaflets, educational films and press releases.

CZ-BIOM is involved in research and other projects for the government of Czech Republic as well as for several local governments. CZ-BIOM is actively lobbying for more favorable conditions for the use of phytoenergy in the Czech Republic, recent efforts have concentrated on pushing for financial support for the growing of energy crops and greater acceptance for the growing of energy crops among the general public.

**[www.czbiom.cz](http://www.czbiom.cz)**



**The POLITEHNICA University** has a tradition in teaching and research since its creation in 1920, and over the last years it has been recognised as the best state university for university management and scientific achievements and results at national level. It is involved in offering to the society the necessary support for the sustainable development and progress in terms of techniques in engineering

fields, as well as associated research fields. The Department for Mechanical Machines, Equipment & Transportation is based on four basic Chairs comprising Thermal Machines & Vehicles, Mechanical Technologies, Hydromechanics and Railway systems & Transport Engineering. The research developed is focusing on diverse aspects such as Environmental protection, Classic and Renewable energy systems, Mechanical machines (Thermal and Hydraulic) & Equipments, Transport systems on roads, railways and Traffic control, Food and Agricultural Machines, Mechanical Technologies, etc.

It is attested at national level by a quality certificate for research in the areas of energy transformation, renewable an fossil fuel energy resources and applications, including waste management, air quality monitoring and emission control, clean combustion technologies, traffic optimisation and the associated mechanical facilities, nutrient chain engineering, food security, and agricultural machines. The personnel includes university professors as well as young researchers, PhD and master students and

technicians. The laboratories are equipped for work in several areas, such as air quality monitoring, emission control, waste and biomass combustion, CO<sub>2</sub> capture as well as other renewable energy-generation utilities (bio-gas, bio-diesel, etc.).

[www.upt.ro](http://www.upt.ro)



**EKSPERT-SITR Spółka z o.o.**  
Określony Ośrodek Rzeczoznawstwa i Doradztwa Technicznego  
The Regional Centre of Expertise and Technical Consult

**SITR** was founded in 1953 by the distinguished Polish researchers and practitioners. The very first aim of the

organisation was to help Polish agriculture devastated after the II World War to recover and develop by applying modern solutions in primary agricultural production. Over the years, SITR has become the main representation of agriculturists in Poland advocating on their behalf and undertaking actions supporting further development of agricultural industry.

Presently the aim of SITR is to support development of Polish agriculture, promote modern technologies and techniques, improve professional skills of graduates of both agricultural colleges and universities who are working in agriculture and for its development, represent their professional interests, give opinions to the public and governmental bodies on agricultural and rural development policies.

The Association is an independent body registered in the National Court Registrar under Association Law and does not receive any state donations. Income is made of membership fees and levies drawn from member consultants and a subsidiary company who provide services under SITR's brand name.

SITR is organised in 37 regional branches throughout the country and governed by central board based in Warsaw (Zarząd Główny). Members are researchers and teachers, students, consultants and state advisers, farmers, civil servants, entrepreneurs. Total membership reaches 5000 people. The national board is constituted of 15 individuals elected every four years by National Assemble of deputies. The President of SITR is elected by the Assemble and chairs the National Board and its Governing Group (5 member body) who controls the central office and national operations.

[www.sitr.pl](http://www.sitr.pl) // [www.ekspert-sitr.pl](http://www.ekspert-sitr.pl)



**Lithuanian Biomass Energy Association** involves the producers and suppliers of solid biofuel and other renewable local resources,

such as wood, straw, energetic willows, as well as the producers and designers of biofuel boiler rooms and other equipment, developers of plantations and academic institutions. It counts with 30 members. In order to strengthen the strategically important heat and electricity production and biofuel market in Lithuania, the association is actively collaborating with various public institutions, organising seminars, conferences, etc. LITBIOMA is paying much attention to implementation of innovations and research studies intended for more effective handling of local energy resources in Lithuania.

LITBIOMA prepared a strategic biomass usage and promotion plan, which was used in the elaboration of the National Energy Strategy for 2007-2013. The plan defines how to increase the share of energy produced from biomass from 12 to 25 % till 2013. Together with the Ministry of Agriculture, recommendations were prepared on how to intensify the development of short rotation energy plantations.

LITBIOMA is actively collaborating with various Lithuanian organisations and associations related to the market of biofuels, such as the Lithuanian District Heating Association, the Directorate General of State Forests and the Forest Owners Association of Lithuania.

[www.biokuras.lt](http://www.biokuras.lt)



**SK-BIOM** is member of the European Biomass Association AEBIOM. It was established in 1993 (it was a branch of the Czech-Slovak Biomass Association during 1991-1992). Its main

objective was the dissemination of knowledge on bio-energy to support energy production from biomass in the Slovak Republic. Its main aim is to widespread the implementation of environmental sound and cost-effective biomass energy systems in Slovakia. SK-BIOM is currently hosted by the Technical University in Zvolen, that carrying out studies

of Forestry and Wood Technology, studies with long tradition in the University (since 1770). SK-BIOM staff has great experience in biomass technologies implementation, as well as other renewable.

The Technical University in Zvolen is willing to establish and to cover theoretical and practical aspects of RES, especially bioenergy systems exploitation.

**[www.sk-biom.sk](http://www.sk-biom.sk)**



The Lithuanian District Heating Association (LDHA) is a voluntary public organisation representing the interests and rights of the Lithuanian District Heat utilities, organisations and others associated energy structures in the DH sector.

The Association comprises 41 members, from which 32 are DH companies. Members of LDHA produce and supply around 99 % of the total heat through the DH network in Lithuania, and 9 members are companies whose activities are closely linked to the heat sector.

Some of their main activities are: represent the rights of the members, defend their interests in state, public and international organisations; create and coordinate groups of specialists for the preparation of legal and technical acts regarding development and management of DH sector; provide all the necessary, legal and technical consultancy, the information on new technologies, business and managements subjects to their members; arrange seminars, conferences, exhibitions; establish and develop economical-technical links with international organisations and foreign partners; carry out other activities regarding promotion and development of DH/CHP in Lithuania. The Association activities are based upon total publicity (with regard to its members), equality of members, democratic forms of management.

**[www.lsta.lt](http://www.lsta.lt)**

The partnership in BIO-HEAT has been carefully selected aiming to achieve a balanced group of professionals and experts in the fields of biomass production and application, as well as DH. The **associations**

**(LDHA, CZ-BIOM, SK-BIOM, LITBIOMA, SITR)** showed a special interest in BIO-HEAT's targets, and their long-term experiences in cooperation and networking activities expose them as perfect partners for dissemination and promoting activities. Cooperation from industry groups and end users was a key issue in the development of BIO-HEAT project. All of them also have an existing network in their countries and throughout different countries of Eastern and Central Europe already, knowing therefore about special conditions and needs in the different target areas, being also able to establish relevant links to policy makers.

On the other hand, the **expert partners (BIOAZUL, TTZ)** developed the project idea and have a long history of cooperation. BIOAZUL is a company specialised in R&D consulting and commercialisation of innovative products in the field of renewable energies, and could give the necessary focus on market needs for SMEs and companies addressed in the training events. TTZ, a technology transfer centre, acted as an interface for know-how exchange among actors across Europe, contributing with their vast experience from their participation in international projects. Last but not least, **an academic expert** from both sectors addressed was included: **UPT**. They work in the field of biomass co-firing and mechanical engineering, especially for medium- and large-scale heating systems.

In addition to this, many of these partners have already cooperated in previous experiences. Concretely, BIOAZUL, TTZ, CZ-BIOM and SK-BIOM joined forces in the previous project BIOPROS, (Efficient Biomass Production in Short-Rotation-Plantations with the safe application of wastewater and sewage sludge), a Collective Research project funded under the Sixth Framework Programme (FP6) of the EC. Furthermore, BIOAZUL, TTZ and UPT worked together in the previous project NETBIOCOF (Network for Biomass Co-firing), a Coordination Action funded under the FP6 as well.

The **distribution of tasks amongst the partners** was made taking into account their previous experience, strengths and capacities. Their expertise in coordinated work was also taken into consideration in order to achieve the best outcomes. This was reflected in the partners selected as task and work package leaders and the groups participating in each activity■

## 2.4. The main BIO-HEAT activities

### 2.4.1. Assessment of RE systems for DH currently used in Eastern Europe. Limitations and barriers for their utilisation

The first challenge of the BIO-HEAT project was reviewing the RE systems for DH currently used in Eastern and Central Europe, the benefits and advantages biomass use poses against other technologies and the identification of the existing social, economic, institutional and technical limitations and barriers for their utilisation. This compilation was meant to be afterwards the main body of knowledge used for dissemination, as the whole training, communication and dissemination programmes was to be based on the outputs resulting from this WP.

Thus, the main objectives of this WP, led by TTZ, were:

- To **review and update the state-of-the-art regarding the DH technologies currently used in the targeted countries**, comparing them to the existent political targets and objectives.
- To **analyse the current use of biomass as a source of energy for DH cogeneration plants**, characterising the existing biomass sources for supplying these installations.
- To **reveal the existing social, economic, institutional and technical barriers and limitations** for the implantation and / or extensive use of SRCs as a source of biomass for cogeneration DH plants.
- To **look for those cases in which cogeneration DH plants are successfully fed by biomass produced by SRCs**.
- To **evaluate the economical yield of the SRCs use in these successful cases** and their transferability to Eastern and Central European countries.
- To **collect all the necessary information on the main topics discussed for dissemination and promotion** of these technologies.

In order to achieve this, the first step was analysing the DH sector (DH technologies, energy sources currently used for feeding DH applications, potential for the introduction of biomass as energy supplier in the DH market, etc.) in Western countries such as Austria, Spain, Germany and Denmark, etc., and more particularly, in the different BIO-HEAT

target countries (Czech Republic, Romania, Poland, Slovakia and Lithuania). Each partner was in charge of compiling the information of its corresponding country. The objective was to concentrate mainly on regions with a high percentage of fallow land, using therefore a resource which is not being exploited and, consequently, the cultivation of SRCs would not cause any conflict regarding competitiveness with food crops. The analysis was carried out taking into account different aspects, like:

### **○DH currently used**

An **analysis on the current technologies applied in DH plants** (cogeneration plants, heat-only boiler stations, etc.) was performed. Special attention was paid to cogeneration DH heating plants, as this kind of installations is the most appropriated one when the source of energy to be used is biomass.

One of the main topics to be taken into account was the **sources of energy currently used for feeding the systems**, distinguishing between non-renewable and renewable energy sources. Biomass as energy supplier was considered principally, paying special attention to its significance in the market (existence / lack of business networks, gaps in know-how from both supply and demand side, etc.).

### **○ Biomass from SRCs potential as an energy supply for district heating applications**

The **available biomass sources in the targeted countries was also analysed in order to check their adequacy for DH purposes**. Woody biomass production for energy use and their markets exist in the countries addressed by BIO-HEAT already, but in most cases it is only connected to the forestry sector. Therefore, **markets are limited and the full potential is not used yet**. Considering that SRC could be a real contribution in the agricultural sector, there is still a high need to quantify the amount for co-firing and DH issues. In this sense, the partners focused on defining:

- **Biomass sources currently used in the targeted countries** – types of crops, production schemes used, prices, yield, potential.
- **Current demand and prices for the most frequent biomass crops**, paying special attention to SRCs.

- **Technical requirements for the utilisation of different kinds of biomass** in the existing DH systems.

- ***Regional evaluation of legal background of the targeted regions***

A review of the current national and regional legal and institutional frame was performed, looking for the appropriate legislation regarding DH applications and biomass use as a source of energy and / or identifying the policy gaps and the legislative needs.

The partners collected information on the **legal framework and its applicability, political targets and objectives at the local, national and international levels with regard to the growing and use of SRCs** (agricultural provisions, environmental legislation, energy generation legislation and land use planning), investment in DH applications and biomass production, economic activity linked to biomass, involvement of SMEs from both sectors, fees, current subsidies on EU at national level, etc.

- ***Detection of main barriers and limitations for the implementation and / or extensive use of SRCs as a source of energy for DH***

The **most relevant barriers and limitations for the implementation and/or extensive use of SRCs as a source of biomass for cogeneration DH plants** in the targeted countries were identified based on the information previously compiled. The analysis was focused on the following aspects:

- **Institutional reasons:** lack of proper implementation of national / local government policy, lack of environmental legislation that fosters good practices, lack of institutional capacity, inadequate funding, etc.
- **Economic reasons:** financial capacity, subsidies, quality of life, production sectors, etc.
- **Technical reasons:** deficits in personnel know-how at the technological and organisational level, lack of demonstration activities, etc.
- **Social reasons:** habits regarding the use of land, land availability, etc.

In addition, in order to have some first-hand information and therefore a significant evaluation, two questionnaires were developed, one for the agricultural sector and another for the power plant sector. This questionnaire was used by all local partners in order to check the situation in each of the countries they represent.

Thus, the partners used their own information, as well as the information provided by companies of the sector (both supply and demand actors, such as DH plants managers, power plants constructors and engineers, plants materials providers, SRCs planners and consultants, biomass producers and suppliers, land owners, etc. ) especially contacted with this aim in order to carry out the described assessment. It was aimed to help to find the right strategies to increase the use of SRCs in combination with DH grids and CHP by means of co-firing in the target countries.

In order to finalise this assessment, a **review of the available success stories and best practices regarding the use of SRCs as a source of biomass and, therefore, energy for feeding DH systems** was performed. The purpose was to check that the use of biomass from SRC as a renewable source of energy for DH systems had already been successfully verified in some European countries. Unfortunately, it is not as consolidated as desired in Eastern Europe. The reasons are multiple and complex, involving usually a combination of social, institutional and technical factors.

In order to compare the state of development, this review was carried out in the target Eastern and Central European countries, as well as in the Western countries already mentioned. Own experience, together with the review of available information on related bibliography, publications, papers, presentations, on-going and already finished projects, networks and associations' material, etc., were used to configure these success stories. These stories were searched in order to confirm that the use of biomass from SRCs as a renewable energy source for DH systems had been already proven in some European countries.

Then, for every country (Austria, Denmark, Germany and Spain for Western Europe and Czech Republic, Romania, Poland, Slovakia and Lithuania for Eastern and Central Europe), the most significant success stories and best practices found in each country regarding the use of SRCs as a source of energy for DH were reviewed. In addition, a socio-economic assessment was carried out, for each country, outlining the regional agricultural sector, the employment status and related institutional aspects.

It is important to highlight that **it was not possible to find success stories in which SRCs are feeding DH systems in all countries.** The

main reason is that, **in many occasions, it is very difficult to find out if the biomass feeding the systems proceeds specifically from SRCs.**

That is why it was decided to consider two types of success stories:

- **Success stories covering the whole chain** to which the project refers, that is, DH systems fed specifically by SRCs. Examples of whole chain stories were found in Austria, Germany, Czech Republic, Poland and Slovakia.

- **Partial stories in which it was not possible to find the whole chains** mentioned above. These partial stories are referred to those DH systems fed by biomass in which it is known that this biomass does not come from SRCs and / or the origin of the biomass sources is not clear / specified. These stories could be considered as pre-competitive success stories, as they would suppose a preliminary step in order to achieve the objectives proposed by the project. If the systems are already conditioned to burn biomass in an equivalent form of such coming from SRC instead of other kinds of fuels, the technology will be proven and so the substitution of this biomass with SRCs could be easily achieved and would mean a significant step towards the achievement of the project aims. Examples of partial stories were found in Austria, Denmark, Spain, Czech Republic, Romania, Poland and Lithuania.

In addition, two partial stories registered in Romania were also considered, even when they are not following the premises previously described. The first one deals with a biomass production company which is going to be the first one in Romania producing SRCs, while the second one refers to the most important Romanian company commercialising biomass boilers and other related equipments. Thus, they were really significant for us and therefore we considered that these two examples should be also mentioned, as they also represent part of the whole chain of SRCs to DH.

According to the results obtained, it could be concluded that there are good regulatory framework incentives for the use of SRC in DH in Austria, and the DRCs to DH chain is already implemented at small scale. Denmark has a well established DH sector, with good regulatory framework that supports and incentivises the use of biomass. There is also a social-awareness regarding the need to expand the use of renewable energy sources. However, there were no detailed data regarding the use of SRC in Denmark. On the other hand, Germany has an established industry

to undertake SCR into the DH chain. Moreover, there is governmental support for renewables, and general public are positive with the idea of increasing the use of renewable energy sources. Nevertheless, more dissemination is needed to take away the idea that SRC compete with food crops. Finally, biomass and, more particularly, SRCs can represent an alternative to some of the most important problems of the traditional agriculture in Spain, as well as a significant source of endogenous energy. Nevertheless, there are several barriers hindering their use, standing out the lack of links between the biomass producer and the energy producer, the immaturity of the biomass market, the lack of coordination between the different administrations involved, the absence of incentives for the biomass developing in origin and the lack of tradition in the use of thermal biomass.

With regards to the target Eastern and Central European countries, it could be stated that SRCs to DH chains are almost not present in the Czech Republic. There are only two cases of established chains which are based on a long term concept. The development of SRC in the Czech Republic is very limited and even those cases presented are rather in experimental stage, as the establishment of these chains was possible because the heating plants were already using other sources of biomass. Precisely this fact constitutes the biggest danger for further development. As the existing biomass resources of the Czech Republic are widely used, there is a high competition for biomass. The market for biomass produced in Czech Republic is not relevant only for Czech players, but those that have a strong competition from other EU countries, especially from Germany and Austria. This has caused significant price increase of biomass which further on endangers the feasibility of new projects. Nevertheless, possible changes might come with a recent law based on green bonus scheme, however used for heat production from biomass, what could enhance the investments on new SRCs plantations.

Regarding Romania, the country has a big potential according to biomass production data. Future efforts have to be driven towards the exploitation of the existing biomass, together with a more efficient usage of arable surfaces. There is also a need for implementing the new technologies for electricity and heat production (CHP) that uses biomass as fuel. Nowadays, there is only one company that assures a complete

production chain starting from crops to raw material, processing and energy production. In this case, their crops are not the main source of raw material, and they also use the residues resulted from the timber production. In addition, there are few companies in Romania producing bio-fuels from raw material. The production of solid bio-fuels is mainly concentrated around existing companies that have wood processing as main activity (timber, furniture producers, etc.) solving in this way the problems of the resulted residues. There are two big companies which have some on-going projects for implementing a complete production chain starting from SRC to raw material processing and energy production; they are Romanian companies with foreign capital and the technologies used are imported from countries with high knowledge and development within this field (Austria, Germany, Holland, Sweden). The examples provided as success stories shows that there is a potential to create a complete SRCs to DH chain. Romania has the needed knowledge to implement each part from SRCs to DH, but there some simulations are still needed, as well as dissemination of the know-how on the energetic potential of SRCs and biomass in general. The administrative, research and market infrastructures exist in Romania. There are institutions from all levels that can influence this field, but it is needed to emphasise the benefits of biomass use and to stimulate by grants all the involved parts, not only some of them (for example, green certificates are provided only for electricity and not for heating).

With regards to Poland, biomass DH projects have typically a long payback period, and there is a lack of a clear long-term regulatory framework to help the investors make long term investments. Biomass projects involving heat generation often face problems with grid accession and have difficulties with selling. Existing mechanisms are not sufficient to guarantee RES-e sales to the grid at a price reflecting environmental and social benefits of bio energy projects. In addition, the very slow decision-making in the case of biomass projects is one of the crucial barriers in Poland. Finally, there is a lack of experienced bio energy professionals: local project developers do not have good and experienced professionals to carry out biomass projects, as they usually require more effort regarding maintenance than any other fossil fuel project, since the local fuel supply system must be well operated. This means that there is a need in Poland

for the transfer of European technologies, know-how and experience, especially relating to municipal solid biomass CHP and optimisation of biomass fuel supply systems.

Finally, in Slovakia and Lithuania, the increase in the use of renewables with regards to the total energy consumption could be benefited the most by the introduction of biofuels use in the DH field, as approximately 50% of the total energy consumed in Slovakia is used for heating and DHW.

Regarding economics, the lowest relative investment volume into one power unit belongs to the DH plants, and they have the best possibilities to use different types of solid biomass and its mixtures. This would enable the reduction of heating price for the consumers, hence reducing the dependence of this sector from the fossil fuel imports. In view of the technological possibilities and economical feasibility of the DH sector, it would be possible to increase heat production based on renewable energy carriers up to 50% by 2020.

Thus, **SRC plantations offer additional possibilities**, in respect with plantation management, the commercial practice of SRC plantation culture could frequently conflict with the interests of nature and culture conservation. An active dialogue between commercial growers and nature/culture conservationists, as well as the development of guidelines for the establishment and sustainable, environmentally friendly management of SRC plantations on agricultural land will facilitate feasible compromises between the two sides. Environmental risks associated with SRC plantations, if tree plantations are managed according to the principles of best practice, they are unlikely to endanger the environment by means of groundwater contamination. In contrast with the potential risks of nutrient leakage from fertilised plantations, the plantations of **SRC can offer great possibilities for environmental control at a local scale** in terms of, for example, phytoremediation. Hence, based on the large nutrient quantities taken up by fast growing trees, the plantations can be used as recipients for municipal wastewater and industrial sludge and simultaneous biomass production – multifunctional biomass plantations. Plantations of fast growing trees, for example willow (*Salix* spp.), offer great possibilities for the efficient use of agricultural land in many regions in Eastern and Central Europe. **If the biomass produced is used as biofuel, the plantations have a great potential to contribute to carbon**

**managed future economies**, because they contribute only marginally to the production of atmospheric greenhouse gases. By combining biomass production and phytoremediation in tree plantations, waste products from society (wastewater, sludge, ash) can be used as resources to improve tree growth and generate added values in terms of both environment and economy. **Plantations of fast growing trees grown on agricultural land can improve bio-diversity at landscape level**, in particular, if the plantations are established instead of cultures of cereals and spruce or fallow ground in homogeneous agricultural landscape. These tree plantations can positively affect soil properties compared to conventional agriculture. **Particularly plantations of relatively small size offer great possibilities for landscape design**, because they are an exciting new feature in most regions and can enhance the aesthetic value of landscape by adding variation and structure.

Then, **there are many advantages and benefits of the SRC crop plants and the use of biomass from SRCs as a renewable source of energy**, resulting in resource **saving non-renewable fossil fuels, stimulating the development of new technologies and increasing energy security**. Featured success stories in the countries studied confirm that this is a very good alternative for the DH sector that should be disseminated and promoted on a large scale.

## 2.4.2. Setting up new regional SRC to DH chains – training and dissemination program

A training and dissemination plan was set to analyse the utilisation of SRCs for DH purposes and to widespread these concepts, aiming at having a clear impact on the regional development of renewable energy concepts in a sustainable way in the mid-term and long-term. It was developed during the second half of the project duration, and it was conceived for achieving the most important project expected result: the creation of SRCs to DH chains in the target countries, constituting clusters aiming to work together in the future and contribute to expand the sector.

Therefore, different activities were carried out. First of all, the consortium used the success stories reported in the previous WP with dissemination purposes. Demonstrative summaries were produced using the information already available and the project distinctive colours and layouts. They were translated into the target countries languages and distributed as dissemination material among the participants of the training events, as well as in other dissemination events.

In addition, **national workshops and seminars were organised in each of the targeted countries**, i.e., Romania, Czech Republic, Slovakia, Poland and Lithuania, according to the training program. For their preparation, the organisers of these events made use of the cost-analysis, specific user manuals and practical guidelines available.

Workshops and seminars tackled different topics and different kinds of target groups. **Workshops were designed to reach potential future end users of SRCs as an energy source for DH applications, such as DH professionals, established municipal energy suppliers, technology providers, farmer representatives, land owners and other relevant representatives** of the whole value-added chain of the targeted countries. The aim was that the attendees considered SRCs as a source of energy and, therefore, of income, and that they discussed barriers for its use and their cost-benefit analysis. On the other hand, **seminars were designed to reach relevant stakeholders such as decision makers, national, regional or local authorities and policy makers**, who were informed on the basics of the BIO-HEAT project and the use of SRCs as a source of energy for DH installations, and the existing legal framework was discussed. Last but not least, these training and dissemination events also encouraged the formation of clusters and / or local trade schemes for the collection of biomass for DH purposes,

being also be a forum in which many relevant actors from the whole value chain met.

In consequence, the main objectives of this WP, led by UPT, were:

- To **prepare appropriate training tools, such as demonstrative summaries of the selected successful stories** and best practices identified in the previous WP in order to create a reliable image of the SRCs potential in the field of DH.
- To **organise training workshops for DH professionals, established municipal energy suppliers, technology providers, farmer representatives and land owners** in order to inform and teach them about the potential of SRCs as a source of energy for DH systems.
- To **organise seminars for decision makers, national, regional or local authorities and policy makers** in order to let them know about the possibilities of SRCs as a source of energy and to discuss the existing legal framework with them.
- To **encourage the formation of local trade schemes for the production, collection and handling of biomass for its further use as a source of energy.**

As explained, in addition to other dissemination materials, demonstrative summaries of the selected successful stories and best practices identified in the previous WP were prepared to be used as supporting material in the workshops and seminars to be carried out as part of this WP, as well as in any other dissemination event carried out within the BIO-HEAT framework. They will be also used by the partners for other workshops, seminars or conferences to be developed after BIO-HEAT project's ending to force biomass interest in Eastern Europe. The summaries were aimed to exemplify that a whole value chain can benefit from SRCs producers to DH professionals, through good price / supply agreements among other means.

The project partners realised **that whole SRCs to DH chains are not so frequent in Eastern and Central Europe yet**, so as happened with the success stories, the demonstrative summaries were divided in two groups: complete success stories from SRCs to DH systems and stories on DH systems already fed by biomass which could also use biomass from SRCs with no changes. These summaries point out the main characteristics of the used systems, the advantages and costs, and all of them are structured as follows: 1, BIO-HEAT project summary; 2,

SRC concept; 3, Short description of the case; 4, SRC / biomass source exploiting; 5, Biomass DH; 6, Lessons learnt.

These printable summaries were also translated into the national languages (Czech, Romanian, Polish, Slovak and Lithuanian) of the project partners in order to be used as dissemination material for the training events. The list of stories is the following:

### **1. Successful stories and best practices - SRC to DH chains:**

- DH Plant in Bystřice nad Pernštejnem (Czech Republic)
- The modernisation of the heating system in DH plant in Plonsk (Poland)
- “The agreement between CHP and the farmer to supply biomass” - the best practice to use biomass for heat production in DH plant Zeran ( PGNiG TERMIKA) (Poland)
- One of the most powerful heating plant - Zvolen CHP Inc. with co-firing brown coal and wood chips in Eastern and Central Europe launched in Zvolen (Slovakia)
- Woody biomass based heating plant as the demonstration of an alternative energy supply system at University in Zvolen (Slovakia)

### **2. Successful stories and best practices – potential future SRC to DH chains:**

- Biggest heating plants using biomass, DH in Plzeň (Czech Republic)
- Holzindustrie Schweighofer - Romanian cogeneration power plant in Radauti (Romania)
- Sawdust heating plant – Gheorgheni (Romania)
- The company Eneco Ltd. engaged in the cultivation, harvesting and selling willow to DH plant (Poland)
- New co-fired CHP plant commissioned in Czestochowa (Poland)
- One of the most powerful biofuel boilers in Eastern and Central Europe launched in Vilnius (Lithuania)
- New biofuel boiler house in Radviliškis (Lithuania)
- Double celebration at Taugares DH company (Lithuania)

## 2. Overview about the Bio-Heat Project

Project co-funded by the Intelligent Energy - Europe Programme (IEE)

**BIO-HEAT** Promotion of Short Rotation Crops for District Heating Systems in Eastern Europe

**BIO-HEAT SUCCESS STORY (FULL CHAIN SRC TO DHE) IN DH PLANT IN BYSTRICE (BADEN-NEUCHÂTEL) (CZECH REPUBLIC)**

**BIO-HEAT project summary**  
 Alternative sources of energy with potential energy for substituting fossil fuels are urgently required in order to reduce greenhouse energy losses (GHG). Biomass is considered as the most promising source of sustainable and secure energy in Europe. Its availability is not a problem as it is available locally and it is readily transportable to a wide range of services, being heating and cooling energy for most residential applications.

The heating system are the most energy consuming in Eastern European countries, the utilization of biomass is considered instead of fossil fuel would mean an important reduction in the emissions of greenhouse gases that significantly contribute to global warming (GHG) targets.

Thus, the BIO-HEAT project (IEE/EN/019670/2013/2/1), co-funded by the European Commission within its Intelligent Energy Europe (IEE) Programme, aims to promote the use of Biomass Short Rotation Crops (SRC) as a source of energy for District Heating (DH) systems in Central and Eastern European countries.

**SRG concept**  
 Short Rotation Crops (SRC) are plantations of fast growing trees like poplars, willows or hybrid poplar, a so called growing season for general 3-6 years, trees can be harvested and afterwards, the trees are cut and split and the most growing season begins. The growing and harvesting cycle continues for 20-30 years.

In average, the annual growth rate of dry mass reaches up to 30 tons, whereby 1kg absolute dry mass contains 1.99 t of energy. This means that, approximately, an area of one hectare can produce 4000 t of biomass yielding to around 8000 t of water content. SRC cultivation is an environmental friendly, low cost method to produce an energy source suitable to replace fossil fuels like coal, gas, oil, etc. SRC can be planted on soils which are low in nutrients, for example, contaminated soil. Therefore, not suitable for food crops. Consequently, these plantations do not compete with other agricultural products.

In addition to these benefits, SRC provides regional value-added chains and other security of supply for the area.

**Operational test of the crop**  
 This is one of the biggest heating plants which was built in the Czech Republic. The heating plant is located in the village of Bystrice near the town of Bad Neuschwanau. In the year 2007 the plant was expanded to produce heating and hot water for local businesses to district heating and cold water distribution. The heating plant and hot water network had to be adapted to the biomass energy source. This construction deal with an application of wood chips as fuel for an energy

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**BIO-HEAT** Promotion of Short Rotation Crops for District Heating Systems in Eastern Europe

**BIO-HEAT SUCCESS STORY (FULL CHAIN SRC TO DHE): THE MODERNIZATION OF THE HEATING SYSTEM IN DH PLANT IN PLOŃSK (POLAND)**

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**Operational test of the crop**  
 The modernization of the heating system in Plońsk is an example of a modernized plant, which is a combination of biomass energy source, substitution of fossil fuels and production of clean energy in contrast with the application of energy which promotes the production of greenhouse gases. The growing and harvesting cycle of the crop and proper plant on different conditions is to reduce greenhouse gas emissions by changing the type of fuel from fossil fuels to biomass wood chips.

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**BIO-HEAT** Promotion of Short Rotation Crops for District Heating Systems in Eastern Europe

**BIO-HEAT SUCCESS STORY (FULL CHAIN SRC TO DHE): WOODY BIOMASS BASED HEATING PLANT AS THE DEMONSTRATION OF AN ALTERNATIVE ENERGY SUPPLY SYSTEM AT UNIVERSITY IN ZVOLIEN (SLOVAKIA)**

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 Alternative sources of energy with potential energy for substituting fossil fuels are urgently required in order to reduce greenhouse energy losses (GHG). Biomass is considered as the most promising source of sustainable and secure energy in Europe. Its availability is not a problem as it is available locally and it is readily transportable to a wide range of services, being heating and cooling energy for most residential applications.

The heating system are the most energy consuming in Eastern European countries, the utilization of biomass is considered instead of fossil fuel would mean an important reduction in the emissions of greenhouse gases that significantly contribute to global warming (GHG) targets.

Thus, the BIO-HEAT project (IEE/EN/019670/2013/2/1), co-funded by the European Commission within its Intelligent Energy Europe (IEE) Programme, aims to promote the use of Biomass Short Rotation Crops (SRC) as a source of energy for District Heating (DH) systems in Central and Eastern European countries.

**SRG concept**  
 Short Rotation Crops (SRC) are plantations of fast growing trees like poplars, willows or hybrid poplar, a so called growing season for general 3-6 years, trees can be harvested and afterwards, the trees are cut and split and the most growing season begins. The growing and harvesting cycle continues for 20-30 years.

In average, the annual growth rate of dry mass reaches up to 30 tons, whereby 1kg absolute dry mass contains 1.99 t of energy. This means that, approximately, an area of one hectare can produce 4000 t of biomass yielding to around 8000 t of water content. SRC cultivation is an environmental friendly, low cost method to produce an energy source suitable to replace fossil fuels like coal, gas, oil, etc. SRC can be planted on soils which are low in nutrients, for example, contaminated soil. Therefore, not suitable for food crops. Consequently, these plantations do not compete with other agricultural products.

In addition to these benefits, SRC provides regional value-added chains and other security of supply for the area.

**Operational test of the crop**  
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Project co-funded by the Intelligent Energy - Europe Programme (IEE)

**BIO-HEAT** Promotion of Short Rotation Crops for District Heating Systems in Eastern Europe

**BIO-HEAT SUCCESS STORY (FULL CHAIN SRC TO DHE): WOODY BIOMASS BASED HEATING PLANT AS THE DEMONSTRATION OF AN ALTERNATIVE ENERGY SUPPLY SYSTEM AT UNIVERSITY IN ZVOLIEN (SLOVAKIA)**

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Examples of demonstrative summaries from different countries in different languages

From all these stories, some common aspects can be highlighted:

- For developing such systems or chains, different financing sources should be available.
- There should be a good cooperation between different institutions and organizations and between people with different backgrounds.
- They contribute to the reduction of emissions and especially of the greenhouse gases.
- They contribute to the reduction of used fossil fuels.
- They provide an opportunity to make a complete use of biomass residues.
- Heating price can be in most cases lower than the existing price when using other systems and/or fuels.

On the other hand, a **suitable dissemination strategy for each country was designed** in order to establish the basis for promoting the project training and dissemination events and to assure the participants attendance. The basics of this dissemination strategy were the following:

- **Elaboration of contact lists for potential workshops / seminars attendees.** Each Eastern and Central partner has to find out potential attendees within their collaborators portfolio, addressing both the supply and the demand sector.
- **Seeking of organisations belonging to the same market that could be interested in attending the events through the associates of the IAGs,** causing a 'multiplying effect' by providing the contact details of suitable organisations of their own collaborators portfolio.
- **Identification of other types of attendees such as public administrations at national, regional and local level, policy makers, mayors,** etc.
- **Provision of general information on the project** as well as of any news generated **to all** potential attendees previously identified.
- Invitation to the training and dissemination events.

Training events ran in parallel in the different target countries, with common objectives and target groups. For each country the national partner of the BIO-HEAT project was the organiser, and contents were adapted to specific needs in each case.

**Workshops aimed to provide general knowledge and background of the SRCs to DH value chain to future end users:** DH professionals, municipal energy suppliers and utilities, technology providers, farmers and land owners. Workshops showed the technical feasibility of the chain and its advantages, provided the technical basis and showed relevant successful examples, fostering the creation of new initiatives and business activities.

With the information compiled in the previous WP regarding the current state-of-the-art in each country (including the success stories) and the barriers for the extensive use of SRCs for DH purposes, the workshops were orientated in each country to highlight their existing best practices and generate a debate on the existing main barriers.

**Seminars were oriented to decision makers, authorities and policy-makers.** As so, the main topics were discussions around existing legal framework, the potential regional benefits of incentivising SRCs for DH applications and measures to overcome existing barriers.

Workshops and seminars were in general designed as two days events, in order to facilitate by-side meetings and the starting of clustering activities, but in some particular cases other structures were more beneficial. The general schedule and objectives for the training events were the following:

<b>WORKSHOPS FOR DH PROFESSIONALS</b>					
	WORKSHOPS CZECH REPUBLIC 	WORKSHOPS ROMANIA 	WORKSHOPS POLAND 	WORKSHOPS SLOVAKIA 	WORKSHOPS LITHUANIA 
<b>DATE</b>	WS 1: 26-27/03/2012 WS 2: 31.03-01.04/2012	WS 1: 25-26/ 11/ 2011 WS 2: 30.31/ 03 /2012	WS 1: 12/ 10/ 2011 WS 2: 08.10/ 02/ 2012	WS 1: 29-30/ 05/ 2012 WS 2: 20-21/ 06/ 2012	WS 1: 06/ 12/ 2012 WS 2: 15/ 02/ 2012
<b>OBJECTIVE</b>	Strengthening the information flow and reaching possible future end users.				
<b>SPECIFIC ACTIVITIES</b>	<ul style="list-style-type: none"> <li>- Aiming the local farmers to consider SRCs as a source of energy and, therefore, of income.</li> <li>- Discussing the obstacles and barriers for its use, as well as the best ways to overcome them.</li> <li>- Visiting existing district heating installations fed by biomass produced by SRCs.</li> <li>- Discussing cost-benefit-analysis.</li> </ul>				
<b>TARGET GROUPS</b>	District heating professionals, established municipal energy suppliers, technology providers, farmer representatives and land owners, reducing the gap between technology development and future end users.				
<b>ORGANISER</b>	CZ-BIOM	UPT	SITR	SK-BIOM	LDHA SUPPORTED BY LITBIOMA

<b>SEMINARS FOR STAKEHOLDERS</b>					
	SEMINARS CZECH REPUBLIC 	SEMINARS ROMANIA 	SEMINARS POLAND 	SEMINARS SLOVAKIA 	SEMINARS LITHUANIA 
<b>DATE</b>	SEM 1: 03.04/ 05 / 2012 SEM 2: 28.31/ 05/ 2012	SEM 1: 26.27/ 04/ 2012 SEM 2: 11.12/ 05/ 2012	SEM 1: 18.19/ 04/ 2012 SEM 2: 19.20/ 06/ 2012	SEM 1: 13.14/ 10/ 2010 SEM 2: 12.13/ 06/ 2012	SEM 1: 09/ 06/ 2012 SEM 2: 20/ 04/ 2012
<b>OBJECTIVE</b>	Reaching relevant stakeholders and decision makers to improve or set up a proper legal framework to boost the use of SRCs as a source of energy.				
<b>SPECIFIC ACTIVITIES</b>	<ul style="list-style-type: none"> <li>- Reviewing the existing legal framework regarding SRCs and its application as a source of energy.</li> <li>- Discussing how to improve or how to set up a proper legal framework to boost the use of SRCs.</li> <li>- Transmitting to the stakeholders and decision makers the impressions of the workshops' attendees (relevant actors and potential end users).</li> </ul>				
<b>TARGET GROUPS</b>	Decision makers (banks, power plants financing and owners, sales organisation, SRC planners and consultants, national, regional or local authorities and policy makers.				
<b>ORGANISER</b>	CZ-BIOM	UPT	SITR	SK-BIOM	LDHA SUPPORTED BY LITBIOMA

**Workshops and seminars aimed to strengthen the information flow and reaching possible future end users**, and they were expected to tackle different topics and different kinds of target groups. The workshops were designed to reach potential future end users of SRCs as an energy source for DH applications, such as DH professionals, established municipal energy suppliers, technology providers, farmer representatives, land owners and other relevant representatives of the whole value-added chain of the targeted countries. The objective of these workshops was that the attendees consider **SRCs as a source of energy and, therefore, of income**, and that they discuss barriers for its use and their cost-benefit analysis. On the other hand, seminars were designed to reach relevant stakeholders such as decision makers, national, regional or local authorities and policy makers, who were informed on the basics of the BIO-HEAT project and the use of SRCs as a source of energy for DH installations, and the existing legal framework was intended to be discussed. Last but not least, these training and dissemination events **encouraged the formation of clusters and / or local trade schemes for the collection of biomass for DH purposes**, being a forum in which many relevant actors from the whole value chain met.

In brief, the contents of the workshops and seminars per country were the following:

	<b>Workshop 1 Czech Republic</b>	<b>Workshop 2 Czech Republic</b>
<b>Organiser</b>	CZ-BIOM	
<b>Place</b>	Prague	Brno
<b>Date</b>	26-27/ March / 2012	31.March -01.April / 2012
<b>N° attendees</b>	34 in Workshop 19 in field trip	65 in Workshop 14 in field trip
<b>Presentation overview</b>	<p><b>1.Presentation of BIO-HEAT project</b> Leona Šimková, CZ-BIOM</p> <p><b>2.Short rotation coppice (SRC) planting also with the view of environmental protection</b> Jan Weger, Head of phytoenergy department of VÚKOZ Research Institute</p> <p><b>3.Changes in the Czech Renewable Energy Act and targets of the Czech National Action Plan</b> Jan Habart, Head of Czech Biomass Association</p> <p><b>4.Short rotation plantation planting experiences together with success stories examples</b> Jan Saglena, planter and SRC technology supplier, Bečkov</p>	<p><b>1.Presentation of BIO-HEAT project</b> Leona Šimková, CZ-BIOM</p> <p><b>2.Short rotation coppice (SRC) planting also with the view of environmental protection</b> Jana Jobikova, Phytoenergy department of VÚKOZ Research Institute</p> <p><b>3.Changes in the Czech Renewable Energy Act and targets of the Czech National Action Plan</b> Jan Habart, Head of Czech Biomass Association</p> <p><b>4.Short rotation plantation planting experiences together with success stories examples</b> Jan Saglena, planter and SRC technology supplier, Bečkov</p>

<p><b>Presentation overview</b></p>	<p><b>5.Experience of utilisation of SRC for district heating system in Bystřice n. Perštýnem region</b>  Ivan Buchta, representative of the Bystřice nad Perštýnem municipality and Miroslav Trnka, research worker and planter of SRC, Bystřice nad Perštýnem</p> <p><b>6.Role of the heating plants as a final consumer of biomass for energy</b>  Jiří Holoubek, head of heat power plant Plzeňské teplárenské, a.s.</p>	<p><b>5.Experience of utilisation of SRC for district heating system in Bystřice n. Perštýnem region</b>  Ivan Buchta, representative of the Bystřice nad Perštýnem municipality and Miroslav Trnka, research worker and planter of SRC, Bystřice nad Perštýnem</p> <p><b>6.Role of the heating plants as a final consumer of biomass for energy</b>  Richard Horký, Head of heat power plant TTS Třebíč</p>
<p><b>Field trip overview</b></p>	<p><b>I.SRC plantation of VÚKOZ Research Institute, Průhonice</b>  Jan Weger, VÚKOZ Research Institute</p> <p><b>II.Biomass district heating plant in Žatec</b>  Alena Hlávková, head of the heating plant Žatecké teplárenské, a.s.</p>	<p><b>I.SRC plantation, Bystřice nad Perštýnem</b>  Miroslav Trnka, Zkušební stanice Domanínek</p> <p><b>II.Biomass municipal heating plant in Bystřice nad Perštýnem</b>  Stanislav Loukota, head of the heating plant Bystřické tepelné s.r.o.</p>

	<b>Seminar 1 Czech Republic</b>	<b>Seminar 2 Czech Republic</b>
<b>Organiser</b>	CZ-BIOM	
<b>Place</b>	Bernartice	Praha
<b>Date</b>	3-4th May 2012	28th and 31st May 2012
<b>N° attendees</b>	23 attendees	27 attendees
<b>Presentation overview</b>	<p><b>1. Presentation of BIO-HEAT project and results of the BIO-HEAT workshops</b> Leona Šimková, CZ-BIOM</p> <p><b>2. Legislative conditions for the promotion of heat from biomass - Changes in the Czech Renewable Energy Act</b> Jan Habart, Head of Czech Biomass Association</p> <p><b>3. Situation of utilisation of SRC for the production of heat in the Czech Republic</b> Jan Saglena, planter and SRC technology supplier, Bečkov</p> <p><b>4. Possible support mechanisms for use SRC for the production of heat</b> Josef Pavel, expert on heat from biomass, District heating plant Poříčí</p>	<p><b>1. Presentation of BIO-HEAT project and results of the BIO-HEAT workshops</b> Leona Šimková, CZ-BIOM</p> <p><b>2. Discussion forum about a new cluster of SRC for the production of heat in the Czech Republic</b></p> <p><b>3. Introduction and welcome</b> Marek Světlík, Head of RES Department, Ministry of Agriculture</p> <p><b>4. Presentation of BIO-HEAT project</b> Leona Šimková, CZ-BIOM</p> <p><b>5. Situation of utilisation of SRC and possibilities for the production of heat in the Czech Republic</b> Jan Saglena, planter and SRC technology supplier, Bečkov</p>

<p><b>Presentation overview</b></p>	<p><b>5. Presentation of results of the questionnaire inquiry from BIO-HEAT workshops</b> Leona Šimková, CZ-BIOM</p> <p><b>6. Discussion forum about a new cluster of SRC for the production of heat in the Czech Republic</b></p>	<p><b>6. Cluster for SRC – Introduction of SRC Cluster in the Czech Republic</b> Jan Weger, Head of phytoenergy department of VÚKOZ Research Institute</p> <p><b>7. Presentation of results of the questionnaire inquiry from BIO-HEAT workshops</b> Leona Šimková, CZ-BIOM</p> <p><b>8. Round table: The new cluster of SRC for the production of heat in the Czech Republic performance</b> <b>Official establishment of the cluster</b></p>
<p><b>Field trip overview</b></p>	<p><b>I. Demonstration of technology for SRC planting</b></p> <p><b>II. SRC plantation in Bečkov, Trutnov</b> Jan Saglena, planter and SRC technology supplier, Bečkov</p>	<p><b>I. Biomass local heating plant in Kněžice, energy-sufficient village</b> Milan Kazda, mayor</p>

	<b>Workshop 1 Romania</b>	<b>Workshop 2 Romania</b>
<b>Organiser</b>	UPT	
<b>Place</b>	Timisoara and Ghilad	Deta and Ghilad
<b>Date</b>	25-26 November 2011	30-31 March 2012
<b>N° attendees</b>	119 attendees	121 attendees
<b>Presentation overview</b>	<p><b>1.BIO-HEAT project presentation</b> Prof .habil.dr.ing. Ioana Ionel, Universitatea Politehnica Timisoara</p> <p><b>2.Fuels and combustion. Impact on air quality. Informative lecture</b> Prof .habil.dr.ing. Ioana Ionel, Universitatea Politehnica Timisoara</p> <p><b>3.Air quality monitoring (experimental demonstration)</b> Dr.ing. Popescu Francisc, Univeristatea Politehnica Timisoara</p> <p><b>4.What is the cogeneration (trigeneration)</b> Prof .habil.dr.ing. Ioana Ionel, Universitatea Politehnica Timisoara</p>	<p><b>1.BIO-HEAT project presentation</b> Prof .habil.dr.ing. Ioana Ionel, University Politehnica Timisoara</p> <p><b>2.What is the cogeneration (trigeneration)</b> Prof .habil.dr.ing. Ioana Ionel, University Politehnica Timisoara</p> <p><b>3.Equipment for valorization of biomass energy for individual use</b> Prof.dr.ing. Dumitru Tucu, University Politehnica Timisoara Ing. Pogan Mihai, SC Ambassador SA</p> <p><b>4.What is the interest group with potential partners (SRC'cluster formation)</b> prof. habil. dr. ing. Ioana IONEL, University Politehnica Timisoara</p>

<p><b>Presentation overview</b></p>	<p><b>5. Energy willow- opportunities, cultivation, energetic characteristics, machinery</b>  Dipl.ec. Hollerbach Wilhelm, SC. REBINA SA</p> <p><b>6. Sweet sorghum, opportunities, energetic characteristics, cultivation machinery</b>  Prof.dr.ing. Dumitru Tucu, Universitatea Politehnica Timișoara</p>	<p><b>5. Advantages and disadvantages of energy recovery solution for fast growing plantations for local community</b>  Prof. dr. ing. Dumitru ȚUCU, prof. habil. Dr. ing. Ioana IONEL, University Politehnica Timisoara</p> <p><b>6. Success stories</b>  Prof. habil. dr. ing. Ioana IONEI, Ș. I. dr. ing. Virgil STOICA, University Politehnica Timisoara</p>
<p><b>Field trip overview</b></p>	<p><b>Willow plantation at Ghilad</b>  Prof .habil.dr.ing. Ioana Ionel, University Politehnica Timisoara  Ing. Wilhelm Hollerbach, SC REBINA SA</p>	<p><b>Willow plantation at Ghilad</b>  Prof .habil.dr.ing. Ioana Ionel, University Politehnica Timisoara  Ing. Wilhelm Hollerbach, SC REBINA SA</p>

	<b>Seminar 1 Romania</b>	<b>Seminar 2 Romania</b>
<b>Organiser</b>	UPT	
<b>Place</b>	Arad	Ghilad and Timisoara
<b>Date</b>	26-27th April 2012	11th and 19th May 2012
<b>N° attendees</b>	35 attendees	49 attendees
<b>Presentation overview</b>	<p><b>1. BIO-HEAT project presentation</b> Prof. habil. dr. ing. Ioana Ionel, Universitatea Politehnica Timisoara</p> <p><b>2. Analysis of business opportunities for energy willow by life-cycle costs</b> prof. dr. ing. Dumitru ŢUCU, Politehnica University of Timisoara</p> <p><b>3. What are the ecologic fuels?</b> prof. habil. dr. ing. Ioana Ionel, Politehnica University of Timisoara</p> <p><b>4. Presentations of special movies with explanations</b> prof. habil. dr. ing. Ioana Ionel, Politehnica University of Timisoara prof. dr. ing. Dumitru ŢUCU, Politehnica University of Timisoara</p>	<p><b>1. Bio heat project presentation and the working program</b> prof. habil. dr. ing. Ioana Ionel, Politehnica University of Timisoara</p> <p><b>2. Analysis of business opportunities for energy willow by life-cycle costs</b> prof. dr. ing. Dumitru ŢUCU, drd. ing. Liviu HERMAN, Politehnica University of Timisoara</p> <p><b>3. Effects of biomass usage within district heating systems on the environment</b> Ş. I. dr. ing. Francisc POPESCU, Politehnica University of Timisoara</p> <p><b>4. Energy plants</b> ing. Marius ABOAICE, Politehnica University of Timisoara</p>

<p><b>Presentation overview</b></p>	<p><b>5. What is the cogeneration (trigeneration)</b>          prof. habil dr. ing. Ioana Ionel, Politehnica University of Timisoara</p> <p><b>6. What is the interest group with potential partners (SRC'cluster formation) and its formation</b>          prof. habil. dr. ing. Ioana Ionel, Politehnica University of Timisoara</p> <p><b>7. Advantages and disadvantages of energy recovery solution for fast growing plantations for local community</b>          prof. dr. ing. Dumitru ŢUCU, prof. habil. dr. ing. Ioana IONEL, Politehnica University of Timisoara</p> <p><b>8. Success stories</b>          prof. habil. dr. ing. Ioana IONEL, Ş. I. dr. ing. Virgil STOICA, Politehnica University of Timisoara</p>	<p><b>5. What is the interest group with potential partners (SRC'cluster formation) and its formation</b>          prof. habil. dr. ing. Ioana IONEL, Politehnica University of Timisoara</p> <p><b>6. Advantages and disadvantages of energy recovery solution for fast growing plantations for local community</b>          prof. dr. ing. Dumitru ŢUCU, prof. habil. dr. ing. Ioana IONEL, Politehnica University of Timisoara</p> <p><b>7. Examples of success stories</b>          prof. habil. dr. ing. Ioana IONEL, Ş. I. dr. ing. Virgil STOICA, Politehnica University of Timisoara</p>
<p><b>Field trip overview</b></p>		<p><b>Presentation of the Ghilad Willow plantation. Study visit, guided tour.</b>          ing. Wilhelm HOLLERBACH, SC REBINA SA</p>

	<b>Workshop 1 Poland</b>	<b>Workshop 2 Poland</b>	<b>Workshop 3 Poland</b>
<b>Organiser</b>	EKSPERT - SITR		
<b>Place</b>	Nowy Sacz	Boguchwała	Płońsk
<b>Date</b>	12th October 2011	8-9th February 2012	28-29th February 2012
<b>N° attendees</b>	119 attendees	121 attendees	104 attendees
<b>Presentation overview</b>	<p><b>1. Biomass as an energy source</b> MsC. Ing. Andrzej Zarazka (Association of Partnership for the Earth Sadecka)</p> <p><b>2. The practice of the SRC establishment together with success stories</b> MsC. Ing. Wojciech Ślęzak (President - Cooperative Group of Manufacturers of Power Plants)</p>	<p><b>1. Biomass as an energy source</b> MsC. Hubert Ćwik</p> <p><b>2. Biomass as local source of energy</b> MsC. Hubert Ćwik</p> <p><b>3. Plantation SRC establishment</b> MsC. Ing. Wojciech Ślęzak</p> <p><b>4. The practice of the SRC establishment together with success stories</b> MsC. Ing. Wojciech Ślęzak</p> <p><b>5. Economy efficiency of biomass use for heating purposes</b> MsC. Ing. Andrzej Zarazka</p>	<p><b>1. Presentation BIO. HEAT project</b> Magdalena Lewicka</p> <p><b>Cultivation of SR in Poland</b> MsC. Krzysztof Lech (The Mzaovia Agriculture Advisory Centre in Poświętne)</p> <p><b>2. The practice of the SRC establishment</b> MsC. Krzysztof Lech (The Mzaovia Agriculture Advisory Centre in Poświętne)</p> <p><b>3. The experience of the Agriculture Market Agency in support of energy crops</b> MsC. Andrzej Różycki (Agricultural Market Agency)</p>

Presentation overview	<p><b>3. Local conditions of use of biomass for energy purposes</b> MsC. Ing. Andrzej Zarazka</p> <p><b>4. Effectiveness of complex thermal facilities in Gorlice</b> MsC. Józef Biernat</p>	<p><b>6. Rules of financing the establishment of SRC</b> MsC. Ing. Andrzej Zarazka</p>	<p><b>4. Use of biomass from SRC in production heat and electricity in DH plant in Warsaw- the experience of Vattenfall Heat Poland/Termika PGNiG S.A.)</b> MsC. Marcin Pisarek (Business Analyst PGNiG Termika S.A.)</p> <p><b>5. The evaluation of cost by using the calculators available</b> MsC. Marek Amrozy (National Energy Conservation Agency S.A.)</p> <p><b>6. Technology Overview and assessment of viability of biomass combustion</b> MsC. Andrzej Wiszniewski (National Energy Conservation Agency S.A.)</p>
	<p><b>I. Biomass boiler in Gorlice</b></p> <p><b>II. Plantation of Short Rotation Coppice in Wojnarowa</b></p>	<p><b>I. DH plant in Nowa Dęba</b> MsC. Tadeusz Plaskota (president of DH in Nowa Dęba)</p> <p><b>II. RES laboratory in PODR Boguchwała</b> MsC. Hubert Ćwik (The Scubcarpatian Agriculture Advisory Centre)</p>	<p><b>I. DH plant in Płońsk</b> MsC. Krzysztof Lech</p> <p><b>II. Plantation of willow in Siedlin</b> MsC. Krzysztof Lech</p>
Field trip overview			

	<b>Seminar 1 Poland</b>	<b>Seminar 2 Poland</b>
<b>Organiser</b>	EKSPERT-SITR	
<b>Place</b>	Koszalin	Płońsk
<b>Date</b>	18-19th April 2012	19-20th June 2012
<b>N° attendees</b>	25 attendees	26 attendees
<b>Presentation overview</b>	<p><b>1. BIO-HEAT project presentation</b> Magdalena Lewicka (EKSPERT-SITR Sp. z o.o. in Koszalin)</p> <p><b>2. Characteristics of SRC</b> Wojciech Krużewski (EKSPERT-SITR Sp. z o.o. in Koszalin)</p> <p><b>3. The legal framework for renewable energy in particular biomass from SRC</b> Wojciech Krużewski (EKSPERT-SITR Sp. z o.o. in Koszalin)</p> <p><b>4. Finance activities related to the use of biomass from SRC</b> Wojciech Krużewski (EKSPERT-SITR Sp. z o.o. in Koszalin)</p> <p><b>5. Barriers and limitations in the use of SRC in Poland</b> Wojciech Krużewski (EKSPERT-SITR Sp. z o.o. in Koszalin)</p>	<p><b>1. BIO-HEAT project presentation</b> Magdalena Lewicka (EKSPERT-SITR Sp. z o.o. in Koszalin)</p> <p><b>2. Characteristics of SRC</b> Waldemar Witek (ODR Branch in Radom)</p> <p><b>3. The legal framework for renewable energy in particular biomass from SRC</b> Waldemar Witek (ODR Branch in Radom)</p> <p><b>4. „Use of biomass from SRC in production heat and electricity in plant in Warsaw - the experience of Vattenfall Heat Poland / Termika PGNiG SA”</b> Marcin Pisarek – (Business Analyst PGNIG Termika S.A)</p> <p><b>5. Barriers and limitations in the use of SRC in Poland</b> Expert: Krzysztof Lech (MODR Branch In Poświętnym)</p>

<p><b>Presentation overview</b></p>	<p><b>6. SRC as a source of energy in Poland - increased use of SRC by changing the existing legal framework and financing conditions</b>  Wojciech Krużewski (EKSPERT-SITR Sp. z o.o. in Koszalin)</p> <p><b>7. Round table” – exchange knowledge and experiences among the participants of the seminar related to the use and financing of SRC in Poland.</b>  Magdalena Lewicka and Wojciech Krużewski (EKSPERT-SITR Sp. z o.o. in Koszalin)</p> <p><b>8. „Round table” – Discussion of loopholes and ambiguities in existing law, the barriers to the use of SRC, and propose new solutions to increase the use of biomass from SRC in district heating systems in Poland.</b>  Magdalena Lewicka and Wojciech Krużewski (EKSPERT-SITR Sp. z o.o. in Koszalin)</p>	<p><b>6. SRC as a source of energy in Poland – increased use of SRC by changing the existing legal framework and financing conditions.</b>  Expert: Krzysztof Lech (MODR Branch In Poświętnym)</p> <p><b>7. „Round table” – exchange knowledge and experiences among the participants of the seminar related to the use and financing of SRC in Poland.</b>  Krzysztof Lech (MODR Branch in Poświętne)</p>
<p><b>Field trip overview</b></p>		<p><b>DH plant in Płońsk</b></p>

	<b>Workshop 1 Slovakia</b>	<b>Workshop 2 Slovakia</b>
<b>Organiser</b>	SK-BIOM	
<b>Place</b>	Zvolen	Kapušany
<b>Date</b>	29-30th May 2012	20-21th June 2012
<b>N° attendees</b>	116 attendees	116 attendees
<b>Presentation overview</b>	<p><b>1.Introduction and opening</b> Pilar Zapata Aranda, BIO-HEAT Coordinator</p> <p><b>2.Presentation of BIO-HEAT project</b> Jozef Víglaský, president of Slovak Biomass Association (SK-Biom)</p> <p><b>3.Evaluation of micro-region Sekčov-Topla potential for SRC cultivation</b> Vladimír Vagaský, Department of Environment in Prešov</p> <p><b>4.Selection of suitable location and land for plantation establishment and growing SRC</b> Jozef Viglasky, president of SK-Biom</p> <p><b>5.Short rotation plantation planting experiences together with success stories examples</b> Pavol Porvaz, CVRV - Research institute – Agroecology in Michalovce</p>	<p><b>1.Introduction and opening</b> Pilar Zapata Aranda, BIO-HEAT Coordinator</p> <p><b>2.Presentation of BIO-HEAT project</b> Jozef Víglaský, president of Slovak Biomass Association (SK-Biom)</p> <p><b>3.Evaluation of micro-region Sekčov-Topla potential for SRC cultivation</b> Vladimír Vagaský, Department of Environment in Prešov</p> <p><b>4.Selection of suitable location and land for plantation establishment and growing SRC</b> Jozef Viglasky, president of SK-Biom</p> <p><b>5.Short rotation plantation planting experiences together with success stories examples</b> Pavol Porvaz, CVRV - Research institute – Agroecology in Michalovce</p>

<p><b>Presentation overview</b></p>	<p><b>6. Testing of yield and energy potentials of SRC-Salix Willow in semidry soil-climatic conditions of the southwest Slovakia</b> Milan Demo, Slovak University of Agriculture in Nitra</p> <p><b>7. Cultivation of plantation SRC – growing, weed and pest control</b> Jozef Huska, Slovak University of Agriculture in Nitra</p> <p><b>8. Energy characteristic of biofuels – woody chips base on dendromass grown on plantation SRCs</b> Ladislav Dzurenda, Technical University in Zvolen</p> <p><b>9. Zvolen CHP-plant – experiences with coal and woody chips co-firing from environmental aspects</b> Július Jankovsky, DG of Zvolenska teplarenska, Jsc</p> <p><b>10. Round table: A discussion about the utilisation of the SRC &amp; questions</b></p>	<p><b>6. Testing of yield and energy potentials of SRC-Salix Willow in semidry soil-climatic conditions of the southwest Slovakia</b> Milan Demo, Slovak University of Agriculture in Nitra</p> <p><b>7. Cultivation of plantation SRC – growing, weed and pest control</b> Jozef Huska, Slovak University of Agriculture in Nitra</p> <p><b>8. Energy characteristic of biofuels – woody chips base on dendromass grown on plantation SRCs</b> Ladislav Dzurenda, Technical University in Zvolen</p> <p><b>9. Zvolen CHP-plant – experiences with coal and woody chips co-firing from environmental aspects</b> Július Jankovsky, DG of Zvolenska teplarenska, Jsc</p> <p><b>10. Round table: A discussion about the utilisation of the SRC &amp; questions</b></p>
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<p><b>Field trip overview</b></p>	<p><b>I. Wood chips fired boiler at TU in Zvolen</b>, thermal output = 0.6 MW.</p> <p>Prof. Jozef Víglaský, local coordinator during redesign of boiler and brown coal substitution by wood chips, within period January 1999 – December 2000</p> <p><b>II. SRC plantation with different tree species at the University enterprise in Koliňany</b></p> <p>Prof. Milan Demo, Slovak University of Agriculture in Nitra</p>	<p><b>I. Wood chips fired boiler in Prešov</b>, thermal output = 8 MW.</p> <p><b>Prof. Jozef Víglaský</b></p> <p><b>II. SRC plantation with different tree species at experimental plots in Kapušany</b></p> <p>P. Porvaz, expert in energy crops, Institute of Ecology and energy crops</p>
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	<b>Seminar 1 Slovakia</b>	<b>Seminar 2 Slovakia</b>
<b>Organiser</b>	SK-BIOM	
<b>Place</b>	Banská Bystrica	Kapušany
<b>Date</b>	13-14th October 2010	12-13th June 2012
<b>N° attendees</b>	32 attendees	36 attendees
<b>Presentation overview</b>	<p><b>1. Introduction of the BIOHEAT Project</b> Jozef Víglaský, president of Slovak Biomass Association (SK-Biom)</p> <p><b>2. Agricultural and forest biomass use for energy purposes-current situation and real opportunities</b> Hana Fratričova – Ministry of Agriculture of the SR</p> <p><b>3. Conditions for exploitation of agricultural biomass within energy sector - legislation, potential, reality)</b> Maria Čepanová – Ministry of Agriculture of the SR</p> <p><b>4. Current State in cultivation and growing of Short Rotation Coppice within South –West Slovakian Region</b> Milan Demo – Slovak University of Agriculture in Nitra</p>	<p><b>1. Introduction of the BIOHEAT Project</b> Jozef Víglaský, president of Slovak Biomass Association (SK-Biom)</p> <p><b>2. Evaluation of micro-region Sekčov-Topľa potential for SRC cultivation</b> Vladimír Vagaský, Department of Environment in Prešov</p> <p><b>3. Selection of suitable location and land for plantation establishment and growing SRC</b> Jozef Vígasky, president of SK-Biom</p> <p><b>4. Short rotation plantation planting experiences together with success stories examples</b> Pavol Porvaz, CVRV - Research institute – Agroecology in Michalovce</p>

<p><b>Presentation overview</b></p>	<p><b>5. Case study: Potential valuation of the micro region Sekčov-Topľa within East Slovakia concerning exploitation of arable land – soil capacity for cultivation and growing of energy crops or short rotation coppices (e.g. willows, poplar)</b>                  VI. Vagasky – Regional department of Environment protection in Prešov, Slovakia</p> <p><b>6. Examples of short rotation coppice willows cultivation within Orava Region, Jan Daniel -</b>                  Regional Research Station at Kriva na Orave, North Slovakia</p> <p><b>7. „Brown coal substitution by wood chips at the large-scale district CHP plant“</b>                  Július Jankovský, Zvolen CHP Plant Inc., Zvolen</p> <p><b>8. Financing of energy projects concerning renewable energy carriers</b>                  Martin Kello, VÚB-Bank, J.s.c. in Bratislava;</p> <p><b>9. SRC-W plantation as reliable resource of firewood and woody chips for DH systems</b>                  Miroslav Forgač, Forgim, Ltd. Košice - Slovakia</p>	<p><b>5. Testing of yield and energy potentials of SRC-Salix Willow in semidry soil-climatic conditions of the southwest Slovakia</b>                  Milan Demo, Slovak University of Agriculture in Nitra</p> <p><b>6. Cultivation of plantation SRC – growing, weed and pest control</b>                  Jozef Huska, Slovak University of Agriculture in Nitra</p> <p><b>7. Energy characteristic of biofuels – woody chips base on dendromass grown on plantation SRCs</b>                  Ladislav Dzurenda, Technical University in Zvolen</p> <p><b>8. Zvolen CHP-plant – experiences with coal and woody chips co-firing from environmental aspects</b>                  Július Jankovsky, DG of Zvolenska teplarenska, Jsc.</p> <p><b>9. Targeted growing Short Rotation Coppice on Farmland</b>                  Robert Knoško, Dalkia, Jsc., Bratislava</p>
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<p><b>Field trip overview</b></p>	<p><b>I. Integrated energy centre in town Detva</b></p> <p><b>II. Wood chips fired boiler (as DH) at TU in Zvolen, thermal output = 0.605 MW</b> Prof. Jozef Víglaský, local coordinator during redesign of boiler and brown coal substitution by wood chips, within period January 1999 – December 2000;</p> <p><b>III. SRC plantation with different tree species (base on willow <i>Salix</i> and poplar) at the TU in Zvolen, in vicinity of Zvolen</b> Assoc. Prof. Jozef Suchomel – responsible for SRC plantation - RD&amp;D, Faculty of Forestry at the Technical University in Zvolen; he is also a member of SK-BIOM.</p>	<p><b>I. Wood chips fired boiler in Prešov, thermal output = 8 MW.</b></p> <p><b>II. SRC plantation with different tree species at experimental plots in Kapušany</b></p>
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	<b>Workshop 1 Lithuania</b>	<b>Workshop 2 Lithuania</b>
<b>Organiser</b>	LDHA/LITBIOMA	
<b>Place</b>	Vilnius	Klaipėda city
<b>Date</b>	6th December 2011	15th February 2012
<b>N° attendees</b>	102 attendees	85 attendees
<b>Presentation overview</b>	<p><b>1.Lithuanian district heating sector and the perspectives of its development</b> Vytautas Stasiūnas, president of LDHA</p> <p><b>2.The goals and objectives of BIO-HEAT project</b> Nerijus Jasinskas, Specialist of LDHA</p> <p><b>3.The possibilities of biomass use for energy production in DH sector</b> Aleksas Jakštas, director of LITBIOMA</p>	<p><b>1.Lithuanian district heating sector and the perspectives of its development</b> Romualdas Morkvėnas, vice president of LDHA</p> <p><b>2.Introduction of the new project of thermal power plant in Klaipėda</b> Juozas Doniela, director of UAB „Fortum Klaipėda“</p> <p><b>3.Production of heat using geothermal energy</b> Edmundas Paplauskas, chief economist of UAB “GEOTERMA”</p> <p><b>4.The goals and objectives of BIO-HEAT project</b> Nerijus Jasinskas, Specialist of LDHA</p> <p><b>5.The possibilities of biomass use for energy production in DH sector</b> Aleksas Jakštas, director of LITBIOMA</p>
	<p><b>I.Biofuel boilers of Vilnius Power Plant</b> <b>II.No.2 Naujoji Vilnia boiler house</b></p>	<p><b>I.Geothermal heat plant of Klaipėda</b> <b>II.Construction site of new thermal power plant of Klaipėda</b></p>

	<b>Seminar 1 Lithuania</b>	<b>Seminar 2 Lithuania</b>
<b>Organiser</b>	LDHA/LITBIOMA	
<b>Place</b>	Vilnius	Kaunas
<b>Date</b>	9th June 2012	20th April 2012
<b>N° attendees</b>	41 attendees	45 attendees
<b>Presentation overview</b>	<p><b>1. Lithuanian district heating sector and the perspectives of its development</b> Vytautas Stasiūnas, president of LDHA</p> <p><b>2. Existing legal framework regarding SRC plantations</b> Aleksas Jakštas, director of LITBIOMA</p> <p><b>3. Possible ways of utilizing ashes from biomass incineration</b> Rimantas Ramanauskas, representative of UAB “Vilniaus energija”</p> <p><b>4. BIO-HEAT project and its impact on SRC development in Lithuania</b> Nerijus Jasinskas, Specialist of LDHA</p> <p><b>5. Practical aspects of SRC plantation development for potential investor</b> Remigijus Lapinskas, president of LITBIOMA</p> <p><b>6. Correct accounting of biomass at DH plants</b> Prof. dr. Vaclovas Miškinis, Lithuanian energy institute</p>	<p><b>1. Introduction of the BIOHEAT Project</b> Jozef Vígaský, president of Slovak Biomass Association (SK-Biom)</p> <p><b>2. Evaluation of micro-region Sekčov-Topľa potential for SRC cultivation</b> Vladimír Vagaský, Department of Environment in Prešov</p> <p><b>3. Selection of suitable location and land for plantation establishment and growing SRC</b> Jozef Vígaský, president of SK-Biom</p> <p><b>4. Short rotation plantation planting experiences together with success stories examples</b> Pavol Porvaz, CVRV - Research institute – Agroecology in Michalovce</p> <p><b>5. Practical aspects of SRC plantation development for potential investor</b> Remigijus Lapinskas, president of LITBIOMA</p>

<p><b>Presentation overview</b></p>	<p><b>7. Roundtable discussion</b> moderated by Aleksas Jakštas, director of LITBIOMA</p>	<p><b>6. Technical aspects of SRC plantations cutting and biofuel production from SRC</b> Donatas Gustas, director of UAB “Renergija”</p> <p><b>7. Roundtable discussion</b> moderated by Aleksas Jakštas, director of LITBIOMA</p>
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### 2.4.3. Setting up new regional SRC to D chains – clusters formation

All the work carried out in the previous task was done in order to establishing all needed basis for the cluster formation, the most relevant task of the whole project and the one whose results were meant to be the most valuable output of the project. **By bringing different stakeholders together in regional clusters, joint efforts would increase the possibilities for market visibility and for increasing cooperation and transfer of knowledge between different actors of the whole value chain.**

The first activity to be carried out was the elaboration of a list with present and future possible cluster partners. In this sense, the present members used their network of contacts in order to look for suitable future cluster partners. In addition, the attendees of all BIO-HEAT workshops/seminars were screened, and those considered as potential partners were contacted, receiving therefore a proposal to take part in the forming clusters.

Once the preliminary clusters were created, the initial agreements and action plans were drafted, as well as those future activities to be carried out once the project is finished in order to extend the cluster. The dissemination material produced within BIO-HEAT project (leaflets, posters, website, best practices summaries, etc.) supported these activities. Thus, bilateral and multi-lateral partnering meetings were drafted and scheduled.

It was initially foreseen that five clusters for each target country would be created, but it was concluded that this should be more open and that this would depend on which suits better to each country. The main aim was to create functional structures that could draft a plan for the medium and long term. The agreements, action plans, partnering meetings, etc., hugely depended on the type of organisations agreeing to take part on a cluster.

Independently on the structural differences of the clusters in the different countries, the procedure followed by all partners regarding the organisation of this task was more or less the same. They designed their working strategy, including the following steps:

- **Agreement on a clear picture of the main barriers encountered in each country:** financial, legal/administrative, or lack of knowledge, etc., using the outputs from the state-of-the-art revision carried out previously during the project.

- **Identification of actors really interested in developing business activities at short term on the SRCs to DH value chain during the workshops** and creation of a separated contact list. This was already foreseen when the workshops took place, and there was planned time for side-meetings during the workshops. In addition, those potential clusters members that the partners had in mind from the very beginning were invited to attend the workshops.

- **Clear demonstration of the potential of the SRCs to DH value chain and highlighting of the local benefits of the chain development during the seminars**, identification of the actors that could be key in fostering this initiative: local authorities from adequate locations, local banks, and potential investors, etc. and creation of a contact list. This was already foreseen when the seminars took place, and there was planned time for side-meetings during the seminars. In addition, those potential clusters members that the partners had in mind from the very beginning were invited to attend the seminars.

- **Scheduling of a meeting with the clusters members**, with the main agenda agreeing on the clusters goals and drafting an action plan for the next year. The most convenient structure had to be discussed, as it could be possible to have one big national cluster, targeting mainly the policy makers, and / or smaller clusters acting locally, in areas suitable for SRCs growth and with DH plants operating in the area. During this first meeting, a Memorandum of Understanding should be agreed on. The clusters participants should also agree on the Letters of Intent to be signed in order to become a member.

- **Starting of a web-site and / or other mechanisms in order to make the cluster visible**. The web-site should be linked to the BIO-HEAT website. It is of vital importance that the existence of the clusters is publicised, using the BIO-HEAT partners own dissemination channels (web-site, newsletters, contacts lists, magazines, local newspapers). The cluster website (or the main dissemination tool chosen) should clearly state the Cluster's Objectives and Members, and all BIO-HEAT dissemination material would be available for its use. It should also contain the Cluster Action Plan and the events carried out / to be carried out.

Thus, the final results vary from one country to the other. In some cases, the cluster has been created within the umbrella of the own organisation due to the power it already has in the country, like in Czech Republic and Slovakia. In other occasions, it was created within bigger already

existing structures like in Poland, where there were already working clusters on biomass issues that had not tackled SRCs topic yet. It has also happened that the BIO-HEAT cluster is completely new, like in Lithuania. It also happened that three new clusters instead of one were created, like in Romania, being each of them focused on a specific topic and target group.

Regarding geographical extension, this also varied from one country to another. In Czech Republic, Romania, Slovakia and Lithuania the cluster has national coverage, while in Poland, for example, the cluster covers one region.

**- Czech Republic and Slovakia:**

The cluster has been created under the umbrella of the CZ-BIOM and SK-BIOM organisations respectively. This has been done for several reasons. The first reason was that as the CZ-BIOM and SK-BIOM are the biggest associations in Czech Republic and Slovakia supporting the use of biomass, it will be beneficial for the cluster to use the contacts of the association. This will be crucial for the negotiation and general contact with policy makers, but as well with general public during the dissemination stage. The second reason is that CZ-BIOM and SK-BIOM have already developed dissemination channels and web presence, which can be used by the cluster in the future. These are especially the websites [www.biom.cz](http://www.biom.cz) and [www.skbiom.sk](http://www.skbiom.sk) respectively, where special sections for the clusters have been created. In addition, this will enable at once easy and targeted communication towards general public, as the cluster can use the tools for publishing articles, newsletters, events, etc. in the CZ-BIOM and SK-BIOM databases. For receiving news and updates about the SRC to DH chain and about the activities within the cluster, the [www.biom.cz](http://www.biom.cz) and [www.skbiom.sk](http://www.skbiom.sk) channels can be used, like tweets or RSS (really Simple Syndication) news feeds. Using RSS, Web content providers can easily create and disseminate feeds of data that include, for example, news links, headlines, and summaries.

The members of the cluster will receive the full support of CZ-BIOM and SK-BIOM teams and by bundling the efforts the SRC to heat development will receive new impulse in Czech Republic and Slovakia respectively.

**- Romania:**

In this case, several clusters have been created at “Politechnica” University, under the umbrella of the Research Centre for Machines, Thermal Equipments, Transportation and Pollution Reduction. This has been done

for several reasons.

The first reason is that “Politechnica” University is the biggest technical University in the West of Romania and there are many researches supporting the use of biomass, and it will be beneficial for the clusters to use the contacts of the University. This will be crucial for the negotiation and general contact with policy makers, but as well with general public during the dissemination stage.

The second reason is that “Politechnica” University has already developed dissemination channels and web presence, which can be used by the cluster in the future. The most important is the website [www.upt.ro](http://www.upt.ro), where a special section for the cluster has been created. In addition, this will enable at once easy and targeted communication towards general public, as the cluster can use the tools for publishing articles, newsletters, events, etc. in the database. For receiving news and updates about the SRC to heat chain and about the activities within the cluster, the web channels can be used, as tweets.

The members of the cluster will receive the full support of “Politechnica” University project team and by bundling the efforts the SRC to heat development in the West side of Romania will receive new impulse.

Because of different interests considered, three clusters were created:

1. Innovative cluster BIOHEAT, created from universities and researches institutes for researches and technological transfer concerning new technologies in SRCs and their application in DH.
2. Regional cluster ECOHEAT, created from local administration entities and NGOs, for supporting the idea of developing the use of SRCs in DH.
3. Business cluster SRCH-Business, created in the Scientific and Technological Park TIMSCIENCE Park, for developing the implementation of research solutions in business, together with farmers and private agricultural producers.

**- Poland:**

Perceiving the relevance of renewable sources of energy, growth of efficiency and its influence on the development of the Mazowieckie Voivodeship as a place of innovative investments, as well as taking into consideration the need to increase competitiveness of enterprisers, ESKSPERT-SITR Ltd. as a partner BIO-HEAT project started an initiative to create and develop the working group “Cluster SRC” working within the already existing Mazovian Cluster of Energy Efficiency and Renewable

Energy Sources as a platform of connecting self-government entities, business, land owner, farmers and R&D institutions.

The working group's mission is facilitating joint support of businesses, R&D entities, land owners, farmers and business support organisations operating in the SRC sector by fostering constant cooperation based on knowledge transfer, implementing innovative solutions and improving competitiveness of entities creating the working group "Cluster SRC". The working group "Cluster SRC" will be cooperating for a minimum of 2 years from the date of signing the Letter of Intent. Main dissemination will be done through the website already created for the cluster, <http://www.klaster-biomasa.pl>.

**- Lithuania:**

Understanding the importance of the BIO-HEAT project, the most influential Lithuanian organisations operating in the energy sector, mainly in the areas of renewable energy sources and DH supply, decided to sign the cooperation agreement. They aim at increasing the share of renewable energy sources, mainly biomass, including biomass from SRC plantations in the production of DH and electricity ■

## 3. IMPACT OF THE ACTION

### 3.1. Achieved results and assessment of performance indicators

Specific Objectives / Strategic (long term) objectives	Key Outputs	Result Indicators / Impact indicators	Targets for success	
<p>1. To widespread the existing knowledge, experience and know-how on SRCs application as a source of energy for DH, to further disseminate the results of related previous projects, reaching new targeted groups in Eastern Europe</p> <p>2. To promote SRC biomass production by raising awareness and transferring specific information for key-members of the energy sector</p> <p>3. To create local agricultural value on basis of renewable and CO2 neutral sources of energy throughout Eastern Europe</p> <p>4. To provide access to valuable information of SRCs as a CO2 neutral biomass source for CHP plants to DH operators and to related stakeholders and decision makers – especially from Eastern European countries</p>	<p>Development of suitable training and dissemination strategies according to the country addressed, adapting the strategy to the specific characteristics of each country</p>	<p>Result indicator: Percentage of positive feedbacks received after the training activities</p>	<p>90%</p>	
	<p>Organisation of 20 training workshops for district heating professionals and established municipal energy suppliers</p>	<p>Result indicator: Number of participants from the target group excl. project partners in workshops</p>	<p>100 people per country / workshop</p>	

	Means of monitoring	Result in August 2012 (end of the project)	Previsions for 2014	Previsions for 2020
	<p>1. Questionnaire including quantifiable indicators to measure participant's satisfaction with workshops and seminars, which will be applied across the participants at the end of these events within the framework of WP3</p> <p>2. The conclusions extracted from these questionnaires will serve as a basis for improving the rest of the training activities to be developed within this WP. Therefore, these conclusions will be the basis for including modifications regarding contents, materials, etc for further training activities</p>	<ul style="list-style-type: none"> <li>- CZ: 100%</li> <li>- RO: 95%</li> <li>- PL: 100%</li> <li>- SK: 97%</li> <li>- LT: 100%</li> <li>- Total: between 95-100%</li> </ul>		
	<p>1. List of the project workshops attendees developed by the local partners</p> <p>2. Number of "BIO-HEAT certificates of attendance" distributed by the project coordinator</p>	<ul style="list-style-type: none"> <li>- CZ: 99</li> <li>- RO: 240</li> <li>- PL: 221</li> <li>- SK: 242</li> <li>- LT: 187</li> <li>- Total: 989 attendees</li> </ul>		

<p>- in order to raise awareness and to transfer know-how amongst Eastern European farmers about the potential of biomass as a high efficient, low-cost and sustainable source of combustible and the opportunities their use offers</p> <p>5. To connect all relevant stakeholders through a web based platform to ensure a long-term information flow and to initiate local initiatives and implementation for SRC in combination with DH, as one sustainable outcome even for external parties</p>	<p>Organisation of 10 seminars for stakeholders of the value chain</p>	<p>Result indicator: Number of regional and national authorities attending the local seminars</p>	<p>200 people in total attending the 10 seminars to be organised in the Czech Republic, Romania, Slovakia, Poland and Lithuania (2 seminars per country).</p>	
<p>6. To implement a comprehensive dissemination strategy focused on the transfer of best practices and networking of professionals, decision makers and national support scheme managers. This will run together with a training plan, which will be the guideline and instrument for transferring essential knowledge to the most important groups of key actors - as given in the overview above - in the promotion of SRCs as an energy source for DH</p> <p>7. To transfer the practical oriented information derived from the projects, to end users especially landowners, power plant engineers and municipal energy suppliers. This strategy will initiate or</p>	<p>Awareness-raising of potential end users and relevant stakeholders</p>	<p>Result indicator: Number of hectares in which SRCs starts to be cultivated after the training activities</p>	<p>5 – 10% additional hectares per country</p>	

<p>1. List of the project seminars attendees developed by the local partners</p> <p>2. Number of "BIO-HEAT certificates of attendance" distributed by the project coordinator</p> <p>3. Information gathered by local partners after the training activities regarding potential initiatives to be started both subsidised / financed with own funds in their respective countries</p>	<ul style="list-style-type: none"> <li>- CZ: 41</li> <li>- RO: 47</li> <li>- PL: 51</li> <li>- SK: 68</li> <li>- LT: 86</li> <li>- Total: 293 attendees</li> </ul>		
<p>1. Information gathered by local partners after the training activities</p> <p>2. Establishment of direct contact with those farmers and / or stakeholders aiming to start any SRC initiative.</p> <p>3. Letters of commitment from the different stakeholders of the cluster.</p> <p>4. The partners of their countries (i.e. those that should have contacted them for attending the workshops / seminars) will organise a meeting with the members of the clusters by the end of the project in order to find out the state and / or the progress of new and future initiatives regarding BIO-HEAT project topics</p>	<ul style="list-style-type: none"> <li>- CZ: 105% additional ha</li> <li>- RO: 100% additional ha</li> <li>- PL: <i>not estimated</i></li> <li>- SK: 10% additional ha (600 ha in total)</li> <li>- LT: 30% additional ha (300 additional ha, total: 1300 ha in comparison to 1000 ha by 2010)</li> </ul>	<ul style="list-style-type: none"> <li>- CZ: 200%</li> <li>- RO: <i>not estimated</i></li> <li>- PL: 5% additional hectares SRCs</li> <li>- SK: 700 ha</li> <li>- LT: additional 400 hectares of SRC plantations (total: 1700 ha)</li> </ul>	<ul style="list-style-type: none"> <li>- CZ: 1000%</li> <li>- RO: <i>not estimated</i></li> <li>- PL: <i>not estimated</i></li> <li>- SK: 10000 ha</li> <li>- LT: total SRC plantations: 3500 ha</li> </ul>

<p>strengthen national plans and will increase the number of initiatives regarding the use of SRCs</p> <p>8. Tackling technical and non-technical barriers that hinder implementation of SRCs, or that the end user could encounter. This will be achieved through the organisation of practical workshops reaching more than 3.200 key-members of the Industrial Association Groups participating. During these workshops, DH professionals, policy makers, authorities and other relevant stakeholders will be informed in detail about the SRCs use benefits, and they will be encouraged to support schemes and legal frameworks that affect SRC. Speakers will be, among others, technological practitioners, technology providers, farmers who already produce SRC, and DH operators</p>	<p>Awareness-raising of potential end users and relevant stakeholders</p>	<p>Result indicator: Number of energy clusters (stakeholders aiming to support new initiatives in their respective countries) established at the end of the project by farmers and other professionals of the energy sector in order to establish closer collaboration between the energy production (district heating, co-firing) and farming (SRCs growing) sectors</p>	<p>5 energy clusters submitting agreements to commit to continue the work once the project is finished per targeted country (25 in total)</p>	
<p>9. Statement of future dissemination activities and promotion plans. A common program about attendance to future conferences, trade fairs, seminars, etc will be developed during and after the project timeframe in order to maintain and strengthen the information channels created within and outside the project</p> <p>10. Opening up new markets for renewable energy sources, as well as to assure continuous energy supply from RES</p>	<p>Awareness-raising of potential end users and relevant stakeholders</p>	<p>Result indicator: Number of new installed capacity by the project clusters</p>	<p>5-10% of additional MW per country</p>	

<p>1. Information gathered by local partners after the training activities</p> <p>2. Establishment of direct contact with those farmers and / or stakeholders aiming to start any SRC initiative.</p> <p>3. Letters of commitment from the different stakeholders of the cluster.</p> <p>4. The partners of their countries (i.e. those that should have contacted them for attending the workshops / seminars) will organise a meeting with the members of the clusters by the end of the project in order to find out the state and / or the progress of new and future initiatives regarding BIO-HEAT project topics</p>	<p>- CZ: 1 cluster with 5 members</p> <p>- RO:</p> <p>3 clusters</p> <p>- PL: 1 working group "Cluster SRC" working within the Mazovian Cluster of Energy Efficiency and Renewable Energy Sources</p> <p>- SK: one working group on SRCs on an already existing bioenergy cluster</p> <p>- LT: cluster members signed an agreement aiming at further developing and promoting biomass from SRC initiatives in Lithuania</p>	<p>- CZ: 1 cluster with 20 members</p> <p>- RO: <i>not estimated</i></p> <p>- PL: <i>not estimated</i></p> <p>- SK: the TU in Zvolen and the Slovak Mechanical Engineering Cluster submitted a project called "Improvement of woodchip production process within a forest or SRC plantation"</p> <p>- LT: <i>not estimated</i></p>	<p>- CZ: 1 cluster with 100 members</p> <p>- RO: <i>not estimated</i></p> <p>- SK: <i>not estimated</i></p> <p>- PL: <i>not estimated</i></p> <p>- SK: <i>not estimated</i></p> <p>- LT: <i>not estimated</i></p>
<p>1. Information gathered by local partners after the training activities</p> <p>2. Establishment of direct contact with those farmers and / or stakeholders aiming to start any SRC initiative.</p> <p>3. Letters of commitment from the different stakeholders of the cluster.</p> <p>4. The partners of their countries (i.e. those that should have contacted them for attending the workshops / seminars) will organise a meeting with the members of the clusters by the end of the project in order to find out the state and / or the progress of new and future initiatives regarding BIO-HEAT project topics</p>	<p>- CZ: 105%</p> <p>- RO: 27%</p> <p>- PL: <i>not estimated</i></p> <p>- SK: <i>not estimated</i></p> <p>- LT: 18% (395 MW of biomass fed boilers by 2010 plus additional 85 MW of biomass fed boilers)</p>	<p>- CZ: 200%</p> <p>- RO: <i>not estimated</i></p> <p>- PL: 5,2% of additional MW</p> <p>- SK: 10% additional MW (data from ASPEK, the association of Industrial Ecology in Slovakia and ASENEM, the association of Energy Managers in Slovakia)</p> <p>- LT: 190% (200 MW of biomass fed boilers will be installed; total: 750 MW)</p>	<p>- CZ: 1000%</p> <p>- RO: not estimated</p> <p>- PL: not estimated</p> <p>- SK: extensive transition from fossil fuels to solid biofuels (woodchips) in 2015 is expected, as a new legislation will be operative from January 2016</p> <p>- LT: 375% (total installed capacity of biomass fed boilers: 1480 MW)</p>

	<p>Creation of dissemination material and translation of the items produced into the targeted countries language</p>	<p>Result indicator: Number of total representatives from the whole value chain (stakeholders, farmers, policy makers, investors, etc) reached by the local information campaigns during the whole project time frame</p>	<p>10000 people in total</p>	
	<p>Creation and maintenance of a project website, including dissemination material and useful information regarding SRCs and its applicability as a source of energy for DH systems, as well as a public forum, lists of relevant actors of the whole value chain in Eastern countries and a platform where other finished and on-going initiatives on SRCs will be included for further consultation</p>	<p>Result indicator: Number of visits to the BIO-HEAT website during the project timeframe</p>	<p>5000 individual visits, 1000 deliverables' downloads</p>	

<p>Estimation of the people reached by the dissemination activities carried out within the project duration and further stages made by the local partners</p>	<p>-- CZ: 1500          - RO: 486          - PL: <i>not estimated</i>          - SK: 24475 visitants to SK-BIOM website          - LT: 25.400          -Total: 51.861 people</p>	<p>- CZ: <i>not estimated</i>          - RO: <i>not estimated</i>          - PL: 4100          - SK: 30000          - LT: <i>not estimated</i></p>	<p>- CZ: <i>not estimated</i>          - RO: not estimated          - PL: <i>not estimated</i>          - SK: 60000          - LT: <i>not estimated</i></p>
<p>1. Website monitoring          2. A market partner search will allow to find possible cooperation companies or providers to initiate new own activities next to BIO-HEAT. Additionally, all participants of the workshops will be listed on the website, to give even all external and interested parties (such as municipalities, investors or other potential clients) an independent expert reference and support the market transparency. As well the public forum and the collection of research results will contribute to start new SRC initiatives</p>	<p>- 6.874 people visited the website 32.889 times, staying an average of 4.29 minutes in the website          - 30 market partners registered on the website          - 10 topics were opened on the forum, receiving 8314 visits          - 4793 people visited UPT website          - In SK, 90000 visitors within 45 days; information regarding workshops and seminars was available at <a href="http://www.tzbportal.sk">www.tzbportal.sk</a>, which belongs to a HVAC-journal in Kosice, and their have around 2000 daily visitors and 60000 monthly visitors</p>	<p>- 10000 people will have visited the website</p>	<p><i>The maintenance of the website will depend on further agreements to be reached in the future</i></p>

<p>1. To increase the share of RES-energy form biomass produced by SRCs, what will contribute to reach the EU target regarding renewable energies use in the upcoming years</p> <p>2. To increase the number of farmers growing SRCs in order to provide energy for different applications</p> <p>3. To improve the support schemes and legal frameworks affecting the biomass growing and harvesting sector, as well as those regulating the use of RES, enabling a wider implementation</p> <p>4. To stabilise the market through the establishment and introduction of new support schemes and policies specifically designed for biomass sector</p> <p>5. To transfer success stories at European level, between researchers and technology providers to end users and policy makers</p> <p>-</p>	<p>Impact indicator: Number of contracts signed between farmers and DH operators</p>	<p>Target of success: 5 per country (25 in total)</p>	
	<p>Impact indicator: Number of activities linked to district heating fed by biomass produced by SRCs have started / are planning to start as a result of the project communication and dissemination programme and the further activities to be carried out after the project's ending</p> <p>Impact indicator: Number of additional energy clusters have been / are planning to be formed as a result of the project communication and dissemination programme and the further activities to be carried out after the project's ending</p>	<p>25 initiatives in total 2 years after the end of the project 10 clusters per country 2 years after the end of the project</p>	

	<ul style="list-style-type: none"> <li>- CZ: 5</li> <li>- RO: 0</li> <li>- PL: 5</li> <li>- SK: 2 contracts (data from DALKIA, MENERT and FORGIM)</li> <li>- LT: due to specific biomass purchase procedures of DH companies, farmers who have SRC are too small to ensure necessary annual supply, therefore they don't have direct contracts with DH companies, but with other biomass suppliers instead. LITBIOMA ensures that ALL farmers will have contracts for supply of their SRC biomass</li> </ul>	<ul style="list-style-type: none"> <li>- CZ: 20</li> <li>- RO: not estimated</li> <li>- PL: not estimated</li> <li>- SK: 4 contracts (data from DALKIA and MENERT)</li> <li>- LT: -</li> </ul>	<ul style="list-style-type: none"> <li>- CZ: 50</li> <li>- RO: <i>not estimated</i></li> <li>- PL: <i>not estimated</i></li> <li>- SK: <i>not estimated</i></li> <li>- LT: -</li> </ul>
	<ul style="list-style-type: none"> <li>- CZ: 1</li> <li>- RO: 4</li> <li>- PL: <i>not estimated</i></li> <li>- SK: <i>not estimated</i></li> <li>- LT: <i>not estimated</i></li> <li>- CZ: 1 cluster with 5 members</li> <li>- RO: 2</li> <li>- PL: <i>not estimated</i></li> <li>- SK: <i>not estimated</i></li> <li>- LT: 1 cluster</li> </ul>	<ul style="list-style-type: none"> <li>- CZ: 2</li> <li>- RO: not estimated</li> <li>- PL: working group meeting, participation at POLEKo fair in Poznan, creation of an association on SRCs in the Mazowieckie voivodship</li> <li>- SK: 25 energy clusters initiatives</li> <li>- LT: <i>not estimated</i></li> <li>- CZ: 1 cluster with 20 members</li> <li>- RO: <i>not estimated</i></li> <li>- PL: <i>not estimated</i></li> <li>- SK: 10 energy clusters</li> <li>- LT: <i>not estimated</i></li> </ul>	<ul style="list-style-type: none"> <li>- CZ: 10</li> <li>- RO: <i>not estimated</i></li> <li>- PL: <i>not estimated</i></li> <li>- SK: <i>not estimated</i></li> <li>- LT: <i>not estimated</i></li> <li>- CZ: 1 cluster with 100 members</li> <li>- RO: <i>not estimated</i></li> <li>- PL: 10 energy clusters</li> <li>- SK: <i>not estimated</i></li> <li>- LT: <i>not estimated</i></li> </ul>

	<p>Impact indicator: Number of additional sustainable actions successfully run in the field of SRCs focused on their application as a source of energy (projects funded or co-funded by national or European programmes e.g. ERDF, collaboration of any organisation trained within the project with any other company, research centre or public administration in order to start running pilot experiences involving SRCs (funded with own and/or public funds), dissemination projects like those that could be framed within the IEE programme regarding the same thematic as BIO-HEAT, etc..). They should be focused on, e.g., doubling the hectares growing SRC 2 years after the end of the project</p>	<p>5 new actions (research projects / collaborations / dissemination projects) involving the targeted countries</p>	
	<p>Impact indicator: Number of hectares on which SRC are cultivated 2 years after the end of the project</p>	<p>15-20% additional hectares per country</p>	
	<p>Impact indicator: MW of new installed capacity of SRC for district heating purposes 2 years after the end of the project</p>	<p>15-20% of additional MW per country</p>	

		<ul style="list-style-type: none"> <li>- CZ: 1</li> <li>- RO: 1</li> <li>- PL: 1 project on SRCs (ROKWOOD project)</li> <li>1 project on RES (including SRCs) (Practical training of professional teachers in RES)</li> <li>- SK: non defined</li> <li>- LT: non defined</li> </ul>	<ul style="list-style-type: none"> <li>- CZ: non defined</li> <li>- RO: non defined</li> <li>- PL: 1 project</li> <li>- SK: non defined</li> <li>- LT: non defined</li> </ul>	<ul style="list-style-type: none"> <li>- CZ: non defined</li> <li>- RO: non defined</li> <li>- PL: 2 projects</li> <li>- SK: non defined</li> <li>- LT: non defined</li> </ul>
		<ul style="list-style-type: none"> <li>- CZ: 100%</li> <li>- RO: 100%</li> <li>- PL: not estimated</li> <li>- SK: 600 ha</li> <li>- LT: 30% additional ha (300 additional ha, total: 1300 ha in comparison to 1000 ha by 2010)</li> </ul>	<ul style="list-style-type: none"> <li>- CZ: 200%</li> <li>- RO: 1000%</li> <li>- PL: 15% additional hectares of SRCs</li> <li>- SK: 800 - 1100 ha</li> <li>- LT: additional 400 hectares of SRC plantations (total: 1700 ha)</li> </ul>	<ul style="list-style-type: none"> <li>- CZ: 1000%</li> <li>- RO: 20000%</li> <li>- PL: not estimated</li> <li>- SK: 10000 ha</li> <li>- LT: total SRC plantations: 3500 ha</li> </ul>
		<ul style="list-style-type: none"> <li>- CZ: 100%</li> <li>- RO: not estimated</li> <li>- PL: not estimated</li> <li>- SK: not estimated</li> <li>- LT: 18% (395 MW of biomass fed boilers by 2010 plus additional 85 MW of biomass fed boilers)</li> </ul>	<ul style="list-style-type: none"> <li>- CZ: 200%</li> <li>- RO: not estimated</li> <li>- PL: 15,5% additional heat from biomass</li> <li>- SK: additional 20% MW</li> <li>- LT: 190% (200 MW of biomass fed boilers will be installed; total: 750 MW)</li> </ul>	<ul style="list-style-type: none"> <li>- CZ: 1000%</li> <li>- RO: not estimated</li> <li>- PL: not estimated</li> <li>- SK: not estimated</li> <li>- LT: 375% (total installed capacity of biomass fed boilers: 1480 MW)</li> </ul>

## 3.2. Specific results achieved in Czech Republic

As already explained, CZ-BIOM organised two workshops, dated on March, 26th – 27th 2012 and March 31st – April 1st 2012, being held in Prague and Brno respectively, being the second one organised within the biggest Czech biomass and agriculture exposition, TechAgro and Biomass 2012, in order to catch as much attention as possible.

In both cases, the workshops were scheduled as two-days events and they were complemented by field trips, concretely to a SRCs plantation at Průhonice and to a DH plant in Žatec in the first workshop and to a SRCs plantation at Bystřice and to a DH plant in Perštýnem in the second one.

The audience reached 34 and 65 attendees respectively (99 in total), being composed by farmers, land owners, scientists, DH companies, researchers and specialists in the field of SRCs planting, amongst others. The results of these workshops could be summarised as follows:

- Awareness-raising regarding SRCs and related legal conditions.
- Presentation of practical solutions regarding the use of biomass from SRCs.
- Introduction of new topics and messages that needed to be discussed with authorities.
- Establishment of new contacts between stakeholders.
- Identification of potential members for the cluster.

On the other hand, CZ-BIOM organised also two seminars, dated on May, 3rd – 4th 2012 and May, 28th 2012 + May, 31st 2012, taking place in Bernartice u Trutnova and Prague respectively.

In both cases, the seminars were scheduled as two-days events (although the second one was not organised in two consecutive days), having both also a field trip.

The audience reached 23 and 9 + 18 attendees respectively (50 in total). In this occasion, they were much more focused on authorities, decision makers, land owners, investors, policy makers and researchers. The main topics addressed were the following:

- Situation of SRC utilisation, current situation and perspectives; necessity of greater development of the field.
- Existing possibilities for the production of heat from biomass.
- Unclearness in the relevant legal conditions for SRCs planting (permission in terms of environmental protection is a specific concern).

- Discussion on the economical aspects and return of investment.
- Existing problems regarding the inconsistent information available in this area.
- Necessity of support in this field, presenting special interest target groups of SRCs planting and investors.
- Treatment of biomass use in the new Biomass Action Plan and Ministry of Agriculture policy.
- Discussion on future perspectives and guarantee of operational support with regards to the new changes in the Czech Renewable Energy Act.
- Introduction of the SRC Cluster in the Czech Republic, discussing its importance, goals and main future tasks of this coalition, having great significance the assurance of clear information (especially concerning legal conditions, economy and investment and about suppliers in this field).

The final conclusions and main interests expressed by the attendees were the following:

- Clear definition of the legal conditions for SRCs planting.
- Position of the Ministry of Agriculture regarding SRCs for energy purposes.
- Unification of the information provided in this area.
- Support of the entire chain, what also includes appropriate marketing of SRC biomass production.
- Changes in the new Renewable Energy Act – perspectives of biomass utilisation, support for producing heat from biomass, guaranty of operational support.
- Importance of Czech SRC Cluster, goals and tasks – quite high interest in its formation (support for producers and simplification of conditions as main aims, being positively welcomed the Cluster position for negotiations with the authorities).

Finally, in order to complete the training strategy and to achieve the main aim of the BIO-HEAT project, CZ-BIOM worked on the Czech Cluster creation, which accounts up to now 5 members. It has been created under the umbrella of the CZ-BIOM, as it is the biggest association in Czech Republic supporting the use of biomass, what will be beneficial for the cluster to use the contacts of the association, and because CZ-BIOM has already developed dissemination channels and web presence, which can be used by the cluster in the future. A special section for the cluster has been created in the association website, [www.biom.cz](http://www.biom.cz). This will enable at once

easy and targeted communication towards general public, as the cluster can use the tools for publishing articles, newsletters, events, etc. in the CZ-BIOM databases. For receiving news and updates about the SRC to DH chain and about the activities within the cluster, the [www.biom.cz](http://www.biom.cz) channel can be used, like tweets or RSS (really Simple Syndication) news feeds. Using RSS, Web content providers can easily create and disseminate feeds of data that include, for example, news links, headlines, and summaries.



***Pictures taken at Czech seminar #2 on May, 31st 2012***

Next steps and activities of the Czech cluster are the following:

- Provide comments on the Czech Biomass Action plan (2012 – 2020), already provided by CZ-BIOM, to which the cluster members are encouraged to provide their comments and recommendations (especially for the SRC/biomass to heat part).
- Cooperate in the preparation of a proposal fostering the allocation of some resources from the Rural Fund to invest in setting SRCs plantations. The cluster members provided their ideas during the preparation stage of the draft.
- Work on the cluster presentation (in conferences, fairs, etc.) and enlargement (recruitment).
- Implementation of the website.
- Work on the quality standards and methodology for SRC planting.
- Assistance in the generation of ideas and comments to the upcoming legislative, financial support of the branch, etc.
- Introduction of the cluster to the relevant authorities – bilateral meetings with representatives from the Ministry of Agriculture, Ministry of the Environment, Ministry of Industry and Trade.
- Other PR activities ■

### 3.3. Specific results achieved in Romania

UPT organised two workshops, dated on November, 25th – 26th 2011 and March, 30th – 31st 2012, being organised in Timisoara and Ghilad and Deta and Ghilad respectively.

In both cases, the workshops were scheduled as two-days events and they were complemented by field trips. In both cases, the visited plantation grew up in the last 2-3 years, having a current surface of circa 100 ha. The plantation is mainly focused on cuttings which are supposed to be commercialised in the West part of the country and surrounding ones, like Serbia and Hungary. The last production was going to be processed to obtain pellets.

The audience reached 119 and 121 attendees respectively (240 in total), being composed by farmers, land owners, private energy suppliers, public energy suppliers, researchers, DH professionals, students and other interested people. The main discussions of these workshops could be summarised as follows:

- Biomass production and its usage, and at a lesser extent its processing. Regarding biomass production, energy willow and sorghum were presented and discussed, and regarding biomass usage the theories behind the electricity heat and cool production were the focus of the discussion, emphasising the efficiency improvement when they are produced together at larger scale (district heating cooling).
- Advantages of biomass as an alternative fuel, being focused on different points: energy independency, air quality, usage of unused or low quality land.
- Characteristics of some small individual heating systems working with biomass.
- Success stories from Romania and from other Eastern and Central European countries.

On the other hand, UPT organised two seminars, dated on April, 26th – 27th 2012 and May, 11th 2012 + May, 19th 2012, being held in Arad and Dudestii Noi, Ghilad and Timisoara respectively. The first seminar took place in Arad at the Expo Arad, in parallel to an exposition on the renewable energies, where an exhibition area was allocated to the BIO-HEAT project.

In both cases, the workshops were scheduled as two-days events (although the second one was not organised in two consecutive days, as the second day was addressed to bank representatives only), and the second one

was complemented by a field trip visit to a SRCs plantation in Ghilad. The audience reached 35 and 49 attendees respectively (84 in total), being composed by villages and cities mayors, banks representatives, power plants representatives, regional authorities, students and other interested people. The main discussions of these seminars could be summarised as follows:

- Cogeneration process.
- Biomass cultivation, harvesting, processing and usage (the main focus was willow plantations).
- Advantages of SRCs for all involved parts: farmers, DH plants, consumers, etc., as well as the environmental advantages of its use.
- Business opportunities.
- Existing success stories from Eastern and Central European countries, especially from Romania.



***Pictures taken at Romanian workshop #2 on March, 30th – 31st 2012***



***Pictures of dissemination material used in Romanian workshops***



***Pictures of dissemination material used in Romanian seminars***

Finally, in order to complete the training strategy and to achieve the main aim of the BIO-HEAT project, UPT worked on the Romanian Clusters creation. In this case, several clusters have been created at “Politehnica” University, under the umbrella of the Research Centre for Machines, Thermal Equipments, Transportation and Pollution Reduction. This was because the “Politehnica” University is the biggest technical University in the West of Romania and there are many researches supporting the use of biomass, and it will be beneficial for the clusters to use the contacts of the University. This will be crucial for the negotiation and general contact with policy makers, but as well with general public during the dissemination stage. In addition, the University has already developed dissemination channels and web presence, which can be used by the cluster in the future. The most important is the website [www.upt.ro](http://www.upt.ro), where a special section for the cluster has been created. In addition, this will enable at once easy and targeted communication towards general public, as the cluster can use the tools for publishing articles, newsletters, events, etc. in the database. For receiving news and updates about the SRC to heat chain and about the activities within the cluster, the web channels can be used, as tweets.

Because of different interests considered, three clusters were created:

- Innovative cluster BIOHEAT, created from universities and researches institutes for researches and technological transfer concerning new technologies in SRCs and their application in DH, , which accounts up to now 7 members.
- Regional cluster ECOHEAT, created from local administration entities and NGOs, for supporting the idea of developing the use of SRCs in

DH, which accounts up to now 8 members.

- Business cluster SRCH-Business, created in the Scientific and Technological Park TIM SCIENCE Park, for developing the implementation of research solutions in business, together with farmers and private agricultural producers, which accounts up to now 8 members.

Next steps and activities of the Romanian clusters are the following:

- Provide comments on the proposed development plan (2012 – 2020). The members of the Cluster received from UPT the draft of the Romanian plan 2012-2020, and had the chance to provide their comments and recommendations, especially regarding the SRC/ biomass field.
- Cooperate in the preparation of a proposal fostering the allocation of some resources from the Rural Fund to invest in setting SRCs plantations. The cluster members provided their ideas during the preparation stage of the draft.
- Work on the cluster presentation (in conferences, fairs, etc.) and enlargement (recruitment).
- Implementation of the website.
- Work on the quality standards and methodology for SRC planting.
- Assistance in the generation of ideas and comments to the upcoming legislative, financial support of the branch, etc.
- Introduction of the cluster to the relevant authorities – bilateral meetings with representatives from the Ministry of Agriculture, Ministry of the Environment, Ministry of Economy.
- Other PR activities ■

### 3.4. Specific results achieved in Poland

SITR organised three workshops, dated on October, 12th 2011, February, 8th – 9th 2012 and February, 28th-29th 2012, taking place in Nowy Sacz, Boguchwała and Płońsk respectively.

The first workshop was a one-day event, while the other two were two-days events, being these two also complemented by field trips to a DH plant in Nowej Dębie + RES laboratory PODR Boguchwała and DH plant in Płońsk + SRCs plantation in Siedlin respectively.

The audience reached 62, 55 and 104 attendees respectively (221 in total), being composed by DH professionals, municipal energy suppliers, land owners, farmers and students. The main problems raised during the discussion were the poor cooperation with local authorities, the lack of training and conferences related to the cultivation of SRCs, the lack of continuity in the supply of biomass for power plants, the length of processes getting grants for the establishment of plantations and the large investment risk, the typical length of the biomass DH projects payback period, the lack of a clear long-term regulatory framework to help the potential investors and of experienced bioenergy professionals, the lack of governmental support

. The results of the workshops could be summarised as follows:

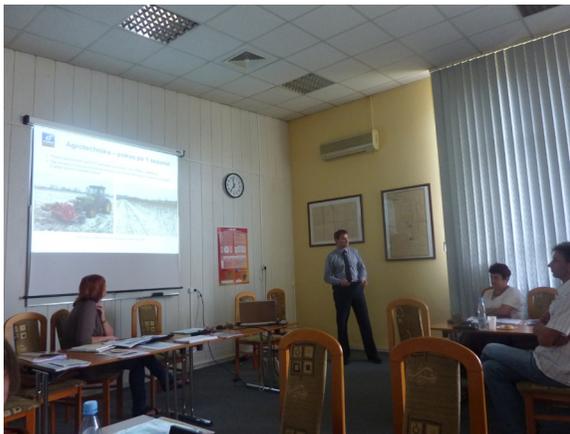
- Raising the level of knowledge on SRCs.
- Increasing the interest in SRCs.
- Promoting technological development in biomass co-firing.
- Supporting the innovation on the SRCs to DH value chain.
- Establishing contacts between stakeholders and defining ways of cooperation (like the collaboration established between farmers and PGNiG TERMIKA).
- Present practical solutions in the use of biomass from SRCs.
- Positive impact on motivation in the work of workshops participants.
- Promoting best practices.
- Getting potential members for the cluster.

In addition, SITR organised two seminars dated on April, 18th – 19th 2012 and June, 19th – 20th 2012, taking place in Koszalin and Płońsk respectively.

Both seminars were schedules as two-days events, including field trips.

The audience reached 25 and 26 attendees respectively (51 attendees), being composed by local and regional authorities, SRCs consultants, land owners, farmers and SRCs planners. The main problems raised during the discussion were the lack of existing legal framework regarding SRCs and its application as a source of energy, the very slow decision-making process in the case of biomass projects, the difficulties in financing the proper preparation of projects, the small number of specialists in this area, the lack government support and the lack of continuity in the supply of biomass for power plants.

- . The results of the seminars could be summarised as follows:
  - Raising the level of knowledge on SRCs.
  - Promoting best practices and success stories.
  - Supporting innovation on the SRCs and DH value chain.
  - Establishment of contacts between stakeholders and collaboration between participants of the seminar (like farmers and PGNiG TERMIKA).
  - Presenting practical solutions in the use of biomass from SRC.
  - Positive impact on motivation in the work of seminars participants.
  - Getting potential members for the cluster.



***Pictures taken at Polish seminar #2 on June, 19th – 20th 2012***



*Pictures of dissemination material used in Polish training events*

Finally, in order to complete the training strategy and to achieve the main aim of the BIO-HEAT project, SITR worked on the Polish Cluster creation, which accounts up to now 7 members. In this case, perceiving the relevance of renewable sources of energy, growth of efficiency and its influence on the development of the Mazowieckie Voivodeship as a place of innovative investments, as well as taking into consideration the need to increase competitiveness of enterprisers, ESKSPERT-SITR Ltd. as a partner BIO-HEAT project started an initiative to create and develop the working group “Cluster SRC” working within the already existing Mazovian Cluster of Energy Efficiency and Renewable Energy Sources as a platform of connecting self-government entities, business, land owner, farmers and R&D institutions.

The working group’s mission is facilitating joint support of businesses, R&D entities, land owners, farmers and business support organisations operating in the SRC sector by fostering constant cooperation based on knowledge transfer, implementing innovative solutions and improving competitiveness of entities creating the working group “Cluster SRC”. The working group “Cluster SRC” will be cooperating for a minimum of 2 years from the date of signing the Letter of Intent. Main dissemination will be done through the website already created for the cluster, <http://www.klaster-biomasa.pl>.

Next steps and activities of the Polish cluster are the following:

- Preparing and conducting promotional actions dealing with SRS as an energy source in Poland.
- Popularising the knowledge on the methods and ways of increasing energy efficiency by co-firing biomass from SRC in DH systems.

- Disseminating best practices in the use of biomass from SRC in DH systems.
- Exchange of experiences and know-how between contractors.
- Disseminate the knowledge regarding these technologies and applications, its potential and macroeconomic benefits for society.
- Preparation and implementation of efficient mechanisms of financial support for energy efficient companies and those dealing with SRCs.
- Creating an Internet centre for information and consulting (EKSPERT-SITR Ltd. will be responsible for this activity as a coordinator of a working group ■

### 3.5. Specific results achieved in Slovakia

SK-BIOM organised two workshops, dated on May, 29th – 30th 2012 and June 20th – 21st 2012, being held in Zvolen and Kapušany respectively.

In both cases, the workshops were scheduled as two-days events and they were complemented by field trips, concretely to the plantation of SRC-tree species in Kolíňany at the Slovak University of Agriculture (SPU) in Nitra in the first workshop and to wood chips fired boiler at the DH plant in Prešov and the plantation of SRC-willow (*Salix* spp.) in vicinity of Kapušany in the second one.

The audience reached 116 and 116 attendees respectively (232 in total), being composed by farmers, land owners, scientists, DH companies, researchers and members of the regional government, amongst others. The results of these workshops could be summarised as follows:

- Excellent platform for providing information to farmers, biofuels producers and operator of boilers.
- Awareness-raising of stakeholders of the whole value-chain.
- Identification of the limitations and barriers for the utilisation of SRCs as a resource of feedstock for energy sector and solid biofuels (mainly woody chips for DH systems).
- Transferring information, experiences, success stories and know-how derived from European research initiatives to the project target countries, providing access to relevant and valuable information.
- Encouraging authorities to support schemes and legal framework affecting the use of biomass as valuable energy carriers.

SK-BIOM also organised two seminars, dated on October 13th – 14th 2010 and June, 12th – 13th 2012, taking place in Banská Bystrica and Kapušany respectively. The first one organised as part of the International Conference ENEF2010 (ENEF - Energy Efficiency), in order to catch as much attention as possible.

In both cases, the seminars were scheduled as two-days events and they were complemented by field trips, concretely to the integrated energy centre in Detva and the DH plant in Zvolen + a SRCs plantation (willow plantation) in Zvolen in the first seminar and, in the second one, to the wood chips fired boiler at the DH plant in Prešov and the plantation of SRC-willow (*Salix* spp.) in vicinity of Kapušany.

The audience reached 32 and 36 attendees respectively (68 in total), being composed by farmers, land owners, scientists, DH companies, researchers and members of the regional government, amongst others. The results of these seminars could be summarised as follows:

- Excellent platform for providing information to farmers, biofuels producers and operator of boilers.
- Awareness-raising of stakeholders of the whole value-chain.
- Identification of the limitations and barriers for the utilisation of SRCs as a resource of feedstock for energy sector and solid biofuels (mainly woody chips for DH systems).
- Transferring information, experiences, success stories and know-how derived from European research initiatives to the project target countries, providing access to relevant and valuable information.
- Encouraging authorities to support schemes and legal framework affecting the use of biomass as valuable energy carriers.



***Pictures taken at Slovak seminar #1 on May, 28th – 29th 2012***



***Pictures of dissemination material used in Slovak training events***

Finally, in order to complete the training strategy and to achieve the main aim of the BIO-HEAT project, SK-BIOM worked on the Slovak Cluster creation, which accounts up to now 7 members. It has been created under the umbrella of the SK-BIOM, as it is the biggest association in Slovakia supporting the use of biomass, what will be beneficial for the cluster to use the contacts of the association, and because SK-BIOM has already developed dissemination channels and web presence, which can be used by the cluster in the future. A special section for the cluster has been created in the association website, [www.skbiom.sk](http://www.skbiom.sk). This will enable at once easy and targeted communication towards general public, as the cluster can use the tools for publishing articles, newsletters, events, etc. in the SK-BIOM databases. For receiving news and updates about the SRC to DH chain and about the activities within the cluster, the [www.skbiom.sk](http://www.skbiom.sk) channel can be used, like tweets or RSS (really Simple Syndication) news feeds. Using RSS, Web content providers can easily create and disseminate feeds of data that include, for example, news links, headlines, and summaries.

Next steps and activities of the Slovak cluster are the following:

- Provide comments on the Slovak Biomass Action plan (2012 – 2020), already provided by SK-BIOM, to which the cluster members are encouraged to provide their comments and recommendations (especially for the SRC/biomass to DH part).
- Cooperate in the preparation of a proposal fostering the allocation of some resources from the Rural Fund to invest in setting SRCs plantations. The cluster members provided their ideas during the preparation stage of the draft.
- Work on the cluster presentation (in conferences, fairs, etc.) and enlargement (recruitment).
- Implementation of the website.
- Work on the quality standards and methodology for SRC planting.
- Assistance in the generation of ideas and comments to the upcoming legislative, financial support of the branch, etc.
- Introduction of the cluster to the relevant authorities – bilateral meetings with representatives from the Ministry of Agriculture, Ministry of the Environment.
- Other PR activities ■

### 3.6. Specific results achieved in Slovakia

LITBIOMA and LDHA organised two workshops, dated on December, 6th 2011 and February, 15th 2012, taking place at Vilnius and Klaipėda respectively.

In both cases, the workshops were scheduled as one-day events and they were complemented by field trips, concretely to biofuel boilers of Vilnius Power Plant No.2 and Naujoji Vilnia boiler house operated by UAB "Vilniaus energija" in the first workshop and the geothermal power-plant of Klaipėda and the construction site of the new thermal plant.

The audience reached 103 and 85 attendees respectively (188 in total), being composed by representatives of DH sector, biofuel producers and suppliers, SRCs developers, farmers, land owners, engineers, scientists, students, investors and authorities. The results of these workshops could be summarised as follows:

- Provision on data on biomass sources and biomass use possibilities (particularly biomass from SRC) for energy production in the DH sector.
- Revision of the legal commitments of Lithuania in the normative documents of the European Union and Lithuania for using biomass for DH production and power generation.
- Description of the benefits of biofuel use for energy production and the availability of its more than sufficient resources.

In addition, LITBIOMA and LDHA organised two seminars, dated on January, 9th 2012 and April, 20th 2012, being held at Vilnius and Kaunas respectively.

In both cases, the workshops were scheduled as one-day events.

The audience reached 41 and 45 attendees respectively (86 in total), being composed by local and regional authorities, representatives of DH sector, biofuel producers and suppliers, SRCs developers, farmers, land owners, engineers, scientists, students, investors and authorities. The results of these seminars could be summarised as follows:

- Very positive impression from the attendees, as for most of them this was their first seminar related to SRCs plantations. Thus, the information provided during the seminar resulted very useful to the attendees, increasing their awareness on SRCs in general.
- Discussion on the possibilities of using biomass from SRC plantations in DH systems.
- Establishment of contacts between the attendees and declaration

of their particular interests in the field of biomass energy sector and SRC plantations.

- Discussion on legal aspects regarding plantations growing.
- Discussion on financial aspects of SRC plantation business.
- Clarification of potential legal and technical barriers and risks related to SRCs plantations implementation.



*Pictures taken at Lithuanian workshop #2 on February, 15th 2012*



*Pictures of dissemination material used in Lithuanian training events*

Finally, in order to complete the training strategy and to achieve the main aim of the BIO-HEAT project, LITBIOMA and LDHA worked on the Slovak Cluster creation, which accounts up to now 5 members. Understanding the importance of the BIO-HEAT project, the most influential Lithuanian organisations operating in the energy sector, mainly in the areas of renewable energy sources and DH supply, decided to sign the cooperation agreement. They aim at increasing the share of renewable energy sources, mainly biomass, including biomass from SRC plantations in the production of DH and electricity. The Lithuanian cluster accounts up to now 5 members ■

### 3.7. BIO-HEAT success stories

- **The project has reached many relevant stakeholders in the target countries.** It has been possible due to the dissemination campaign carried out in each target country, campaigns specifically designed per each of them, taking into account their different necessities and characteristics. The website of the project, together with the websites of each project partner and the dissemination materials created, that were widely distributed during fairs, conferences, workshops, seminars and other dissemination events made possible to attract many interested people from the whole value chain.

In fact, by the time the project finished (August 2012), nearly 7,000 people visited the website around 33,000 times, surpassing the target for success set by the beginning of the project, which was 5,000 visits. The same happens with the expectations regarding amount of people reach through the project activities. The target for success set was 10,000 people, while in the end the project partners' activities reached nearly 52,000 people.

There have been new legal acts under development / already developed in the target countries with major impact on the SRCs to heat chain development. The acts envisage supporting the heat production from biomass, what could lead to a major development of the sector.

- **The training strategy specifically designed per each target country was also really successful.** 1,000 workshops attendees were expected, figure that was nearly reached (989 people attended the workshops). On the other hand, regarding the seminars, 200 attendees were expected and, in the end, 293 people were interested and joined the project partners in these training events. This shows the great interest and expectation the training events had for relevant stakeholders of the value chain.

- **Some high ranking people representing key ministries attended some of the events (mainly the seminars) in the target counties, as well as majors and other public authorities.** In addition, bank representatives were also present, being this of vital importance if we take into account that funding in this kind of initiatives is always a key issue. It is a success story that the BIO-HEAT project managed to attract these types of key stakeholders. There are still some large barriers for a fast development of the SRCs sector and the further application of this type of biomass in the DH sector. Close dialogue with this kind of authorities is essential to address these barriers in an efficient way. In

that process it is crucial that high ranking people are aware of the barriers and the need for changing legislation or framework conditions.

- **All countries have created their clusters** (in the case of Romania, three different clusters have been set up), all of them focused on the SRCs to DH chain. This is the most important and significant output of the whole project, as this ensures the future work on the sector in each of the target countries during the upcoming years. All clusters have from 5 to 8 integrants, number to be incremented during the following months. It has to be highlighted that in many case the clusters integrants are powerful associations, what means that the work carried out by the cluster members will reach and benefit all their associates as well.

The clusters already have a well defined structure, their meetings schedule, their objectives and goals and their action plan, as well as the Memorandums of Understanding to be signer in order to become a member. In addition, next steps and actions have been already defined. They will be definitively a powerful tool for stakeholders in this field.

A clear example of a specific collaboration arisen due to the project training and clustering activities was the association between Ekspert-SITR and the Association of the Development of Renewable Energies in Nowy Sacz. The founder of this association took part in one of the workshops in Poland, and as a result they decided to establish cooperation with Ekspert-SITR focused on the promotion of SRCs as a source of energy.

- The conclusions of the preliminary agreements reached within the clusters created in the target countries goes in the direction of continuing the training and dissemination activities, as well as **encouraging and strengthening the collaboration between the different sectors involved.**

- From the point of view of the BIO-HEAT coordinator it **has been a very successful project.** The challenge was big, as the work had to be done in parallel in five different countries with different problems and needs and different starting points, what made necessary to develop tailor-made strategies. Nevertheless, the main expected outcomes have been achieved, and the visibility of the project has been really big taking into account the strong dissemination work carried out by all project partners. Relevant stakeholders have been appropriately informed and the general sensation is that SRCs are a really convenient option in order to walk towards the increasing use of alternative sources of energy with potential enough for substituting fossil fuels. This may have been the first of many initiatives in this sense in our target countries ■

## 4. COMMUNICATION AND DISSEMINATION

### 4.1. Achievements of national information campaigns

Knowledge transfer regarding SRCs and their use as a source of energy was one of the main targets of the BIO-HEAT project. The local partners are intended to use the information developed during the project duration and introduce BIO-HEAT and its outcomes to their members, associates and other relevant stakeholders. Thus, the dissemination material to be offered had to be carefully prepared. It was vital to design effective dissemination activities and develop adequate training material for the real implementation of these plantations, and their potential use in DH. The dissemination tools specifically prepared for the project, together with the demonstrative summaries, were included in the dissemination events information packages. Furthermore, a **suitable dissemination strategy for each country was intended to be designed in order to establish the basis for promoting the project training and dissemination events and to assure the participants attendance.**

Therefore, in order to reach as many people as possible, dissemination and training activities were prepared in the different languages of the project partners, so that every stakeholder out of the different countries (Czech Republic, Romania, Poland, Slovakia and Lithuania) were able to participate at these events, being addressed all target groups. The training and dissemination strategy compiles a concrete time schedule for the dissemination and training activities, the locations where these activities were meant to take place, potential participants and the topics to be tackled.

From the very beginning of the project, the partners started performing dissemination activities amongst their members and partner associations. They planned and developed (and are still carrying out) national information campaigns.

There are some general dissemination tools that all of them have been using during this time. The first one is the project website. The partners share as main communication tool the website [www.bio-heat.eu](http://www.bio-heat.eu). Project objectives, information, dissemination material and deliverables are available there, as well as the project newsletters, and related news and events.

In addition, **periodic newsletters** have been produced. During the project lifetime, six newsletters were produced (one every four months).

The newsletters are available in English, Czech, Polish, Rumanian, Slovak and Lithuanian, and they are all available at the project website for download, and were distributed among the BIO-HEAT registered members and project partners' associates.

Furthermore, regarding **specific dissemination tools included in each national information campaign**, all project partners included a section regarding BIO-HEAT in their own websites, including a link to [www.bio-heat.eu](http://www.bio-heat.eu). They also used the magazines of their associations to promote the project, as well as their own newsletters, where they included periodic information on BIO-HEAT. Their internal meetings and info days with their associates worked also as a platform to disseminate the project. They also made publications in other relevant platforms, like online journals and other national magazines. The partners also attended to conferences and other dissemination events, where they presented the project, showed the poster, distributed the leaflets, etc. Their visits to farmers were also a powerful tool to provide first-hand information and attract potential attendees to the training events. They also made radio and TV interviews, what helped them a lot to publicise the project in their countries and attract people to join this initiative. These powerful mass tools were of vital importance for us in order to amplify the project scope, as they can reach massively the general public<sup>n</sup>

## 4.2. The BIO-HEAT website

Internet is one of the main sources of information today. For a promotion and training project as ours, having a well-designed project web-site was a first step to out-reach the goals as well as the activities and results of the project. To widespread the existing knowledge, experience and know-how, and connect the relevant stakeholders throughout the value chain, the information and documents generated needed to be publicly accessible, as increasing the project impact was key for the project success.

Therefore, **it was indispensable for the project to set up a web-based market platform**. It was expected to enable a widespread dissemination of the project, its objectives, results, the partners and an approach to SRCs use and their potential in general. It was also meant to be a powerful advertising tool for all activities to be carried out within the project, and the best scenario for publishing the project results. Thus, in the public area, valuable information for all relevant actors in the field of SRCs is provided. On the other hand, the area restricted only for project partners

and the EACI has been a platform where information and work results were exchanged among the consortium partners.

Since December 2010, the BIO-HEAT website is accessible at [www.bio-heat.eu](http://www.bio-heat.eu). The initial version of the website was available in English, but the website versions in the languages of the target countries were immediately prepared, being all of them currently on-line. Thus, apart from the English version, the website is also available in all other languages (Czech, Romanian, Polish, Slovak and Lithuanian).



*Home page of the website*

The structure of the site has been continuously revised taking into account users feedback, and the contents were up-dated according to the project progresses.

The site is currently divided in the following sections:

- **Market place:** this section aims to be a contact point for companies and professionals of the BIO-HEAT value chain. Companies can

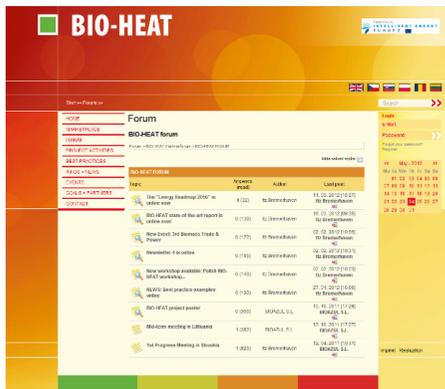
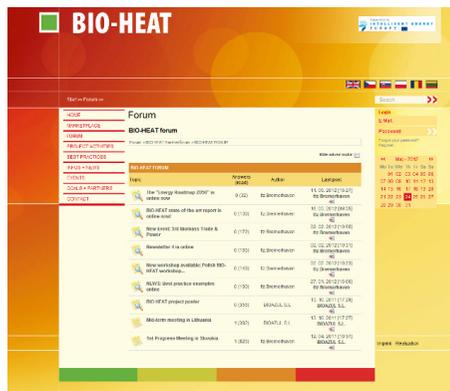
register and set-up their company profile, creating a data base of related companies: pellet suppliers, engineering services providers, land owners, DH operators, etc.

Companies this way easily find appropriate partners for new business and can also place job-offers, creating a network platform on the complete SRC to DH value chain. Also, registered members automatically receive the newsletters by e-mail.

During the different workshops, the website was presented and participants were invited to register.

- **Forum:** The forum is a space to create debate on related topics, exchange experiences and questions between the actors of the sector.
- **Project Activities:** In this section the work carried out in the frame of the project is presented, giving an overview of the workshops and seminars carried out in the different countries, dissemination activities conducted by all the project partners, and drawing together the impact the project has and relevant outcomes.
- **Best Practices:** In this section, case-studies of relevant success stories and examples are presented, showing the feasibility and possibilities of the SCR to DH value chain on the different target countries. All the case studies can be downloaded from the website.
- **Infos+News:** This is the download section of the web-site. Project newsletters and leaflets, deliverables and other related material can be found here ready to read or download by everyone interested on the BIO-HEAT topic.
- **Events:** An agenda of the relevant national and international events and conferences related to SRC and DH is constantly up-dated here.
- **Goals and partners:** The goals of the project and the partners' background are presented in this section.

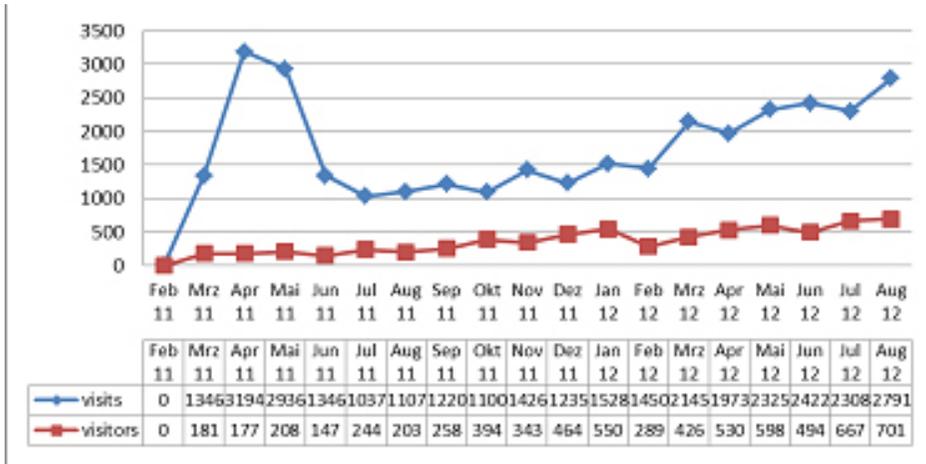
BIO-HEAT – Promotion of Short Rotation Coppice for District Heating Systems in Eastern Europe



Pictures of some of the website sections

This website therefore makes possible for general public to get information and to raise the knowledge concerning the BIO-HEAT subjects, DH and SRCs, in a very fast way, what increases the chances of acquiring new members and get people involved in BIO-HEAT issues.

It was revealed as a very successful dissemination tool, as up to August 31st, 2012, 6,874 people visited it 32,889 times, staying an average of 4.29 minutes in the website.



*Number of visits and visitors received by the BIO-HEAT website*

### 4.3. Dissemination material

As the project is focused on promotion and dissemination, the **creation of a self-image for BIO-HEAT** was really important for the project aims. This way, the receptors of this promotion and dissemination campaign would be able to recognise the material related to the project at first sight. Therefore, the design of the BIO-HEAT official logo was the first step in this sense, together with the website launching.



*Project official logo*

A **set of printed materials** was prepared in order to support the project presentations and inform on the project and its main results to the general public, relevant stakeholders and decision makers, authorities at all levels, biomass / DH networks and farmers associations, among other potential project receptors. The BIO-HEAT website is a massive dissemination tool, but it was necessary to emphasise the role of printed material for this project. Many documents related to the project are available in the website, but it had to be assumed that not all stakeholders have easy

access to the internet. Thus, the great importance of printed materials was considered within the project development.

This set of printed materials is composed by:

- The **first project leaflet**, comprising general information on the BIO-HEAT project (BIO-HEAT project description, specific BIO-HEAT objectives, target groups, workplan and the consortium contact details).
- The **second project leaflet**, comprising the BIO-HEAT project description and information on SRCs concepts (SRCs basics, planting, harvesting, wood drying and storage) and the barriers and resulting needs in Eastern and Central Europe, as well as the consortium contact details.
- The **project poster**, comprising general information on the BIO-HEAT project (BIO-HEAT project description, expected impacts, target groups, workplan and the consortium contact details), as well as the training activities schedule.

The preparation of the BIO-HEAT dissemination material was possible due to the joint efforts of the whole consortium. It was conceived as a first approximation to the project for those people interested in the SRCs sector in connection with heat production, as it was intended to be distributed in all dissemination events to which the project partners were going to attend during the project and even after its ending. Therefore, this material could be used whenever the project was presented in conferences or seminars, as well as in local workshops, seminars, interviews, etc.

The design was intended to be as accurate as possible to the website layout, in order to create an image of the project which could be easily recognisable by all potential receptors. On the other hand, the text was drawn up in a concise way easily understandable by all kinds of audiences, using therefore a direct and clear language. Once the materials layout was finally agreed and the English texts were finished, the partners' translations into their local languages were requested. These translations had great importance, as locals may be more receptive if they received this information translated into their own languages. The materials were uploaded to the website with dissemination purposes. The English versions of the materials produced are shown below:

## 4. Communication and Dissemination

<p><b>CONSORTIUM CONTACT DETAILS</b></p> <p><b>RDCA</b> (RDCA) is a non-profit organization that provides technical assistance to the governments of Eastern Europe and Central Asia. RDCA is a member of the European Union's Eastern Europe and Central Asia Regional Office (EECA). RDCA is also a member of the European Union's Eastern Europe and Central Asia Regional Office (EECA).</p> <p><b>RDCA</b> (RDCA) is a non-profit organization that provides technical assistance to the governments of Eastern Europe and Central Asia. RDCA is a member of the European Union's Eastern Europe and Central Asia Regional Office (EECA). RDCA is also a member of the European Union's Eastern Europe and Central Asia Regional Office (EECA).</p>	<p><b>WORKPLAN</b></p> <p><b>RDCA</b> (RDCA) is a non-profit organization that provides technical assistance to the governments of Eastern Europe and Central Asia. RDCA is a member of the European Union's Eastern Europe and Central Asia Regional Office (EECA). RDCA is also a member of the European Union's Eastern Europe and Central Asia Regional Office (EECA).</p>	<p><b>BIO-HEAT</b></p> <p>Promotion of Short Rotation Coppice for District Heating Systems in Eastern Europe</p> <p><a href="http://www.bio-heat.eu">www.bio-heat.eu</a></p> <p>Co-funded by the European Union</p>	<p><b>PROJECT DESCRIPTION</b></p> <p>As a result of the growing energy crisis, there is a need to find alternative sources of energy. Short rotation coppice (SRC) is a fast-growing energy crop that can be used for district heating systems. The project aims to promote SRC in Eastern Europe and Central Asia.</p>	<p><b>SPECIFIC BIO-HEAT OBJECTIVES</b></p> <ul style="list-style-type: none"> <li>1) Increase the energy efficiency of district heating systems.</li> <li>2) Promote the use of renewable energy sources.</li> <li>3) Increase the energy efficiency of district heating systems.</li> <li>4) Promote the use of renewable energy sources.</li> </ul>	<p><b>TARGET GROUPS</b></p> <p>The project targets the following groups:</p> <ul style="list-style-type: none"> <li>Government officials</li> <li>Local authorities</li> <li>Energy companies</li> <li>Investors</li> <li>Local communities</li> </ul>
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1st BIO-HEAT project leaflet (English version)

<p><b>CONSORTIUM CONTACT DETAILS</b></p> <p><b>RDCA</b> (RDCA) is a non-profit organization that provides technical assistance to the governments of Eastern Europe and Central Asia. RDCA is a member of the European Union's Eastern Europe and Central Asia Regional Office (EECA). RDCA is also a member of the European Union's Eastern Europe and Central Asia Regional Office (EECA).</p>	<p><b>BARRIERS AND RESULTING NEEDS IN EASTERN EUROPE</b></p> <p>The main barriers to the development of SRC in Eastern Europe are:</p> <ul style="list-style-type: none"> <li>Lack of information</li> <li>Lack of financial resources</li> <li>Lack of technical expertise</li> <li>Lack of political support</li> </ul>	<p><b>BIO-HEAT</b></p> <p>Promotion of Short Rotation Coppice for District Heating Systems in Eastern Europe</p> <p><a href="http://www.bio-heat.eu">www.bio-heat.eu</a></p> <p>Co-funded by the European Union</p>	<p><b>PROJECT DESCRIPTION</b></p> <p>As a result of the growing energy crisis, there is a need to find alternative sources of energy. Short rotation coppice (SRC) is a fast-growing energy crop that can be used for district heating systems. The project aims to promote SRC in Eastern Europe and Central Asia.</p>	<p><b>SRCS CONCEPT</b></p> <p>Short Rotation Coppice (SRC) is a fast-growing energy crop that can be used for district heating systems. SRC is a renewable energy source that can be used to generate heat for district heating systems.</p>	<p><b>SRCS CONCEPT</b></p> <p>The project aims to promote SRC in Eastern Europe and Central Asia. The project will provide technical assistance to the governments of Eastern Europe and Central Asia. The project will also provide financial support to the governments of Eastern Europe and Central Asia.</p>
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2nd BIO-HEAT project leaflet (English version)

**BIO-HEAT**

Promotion of Short Rotation Coppice for District Heating Systems in Eastern Europe

<p><b>PROJECT DESCRIPTION</b></p> <p>The project aims to promote SRC in Eastern Europe and Central Asia. The project will provide technical assistance to the governments of Eastern Europe and Central Asia. The project will also provide financial support to the governments of Eastern Europe and Central Asia.</p>	<p><b>EFFECTOR IMPACTS</b></p> <ul style="list-style-type: none"> <li>1) Increase the energy efficiency of district heating systems.</li> <li>2) Promote the use of renewable energy sources.</li> <li>3) Increase the energy efficiency of district heating systems.</li> <li>4) Promote the use of renewable energy sources.</li> </ul>																					
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<p><b>TRAINING ACTIVITIES - WORKSHOPS AND SEMINARS SCHEDULE</b></p> <table border="1"> <thead> <tr> <th>Activity</th> <th>Location</th> <th>Date</th> </tr> </thead> <tbody> <tr> <td>Workshop on SRC</td> <td>Poland</td> <td>2010</td> </tr> <tr> <td>Seminar on SRC</td> <td>Czech Republic</td> <td>2011</td> </tr> <tr> <td>Workshop on SRC</td> <td>Slovakia</td> <td>2012</td> </tr> <tr> <td>Seminar on SRC</td> <td>Hungary</td> <td>2013</td> </tr> <tr> <td>Workshop on SRC</td> <td>Romania</td> <td>2014</td> </tr> <tr> <td>Seminar on SRC</td> <td>Bulgaria</td> <td>2015</td> </tr> </tbody> </table>		Activity	Location	Date	Workshop on SRC	Poland	2010	Seminar on SRC	Czech Republic	2011	Workshop on SRC	Slovakia	2012	Seminar on SRC	Hungary	2013	Workshop on SRC	Romania	2014	Seminar on SRC	Bulgaria	2015
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Workshop on SRC	Romania	2014																				
Seminar on SRC	Bulgaria	2015																				
<p><b>PROJECT COORDINATION</b></p> <p>The project is coordinated by the following organizations:</p> <ul style="list-style-type: none"> <li>RDCA (RDCA)</li> <li>EECA (EECA)</li> <li>EU (EU)</li> </ul>																						

[www.bio-heat.eu](http://www.bio-heat.eu)

BIO-HEAT project poster (English version)

This material evaluated during the entire project duration. One of the ways in which this evaluation was carried out was through a questionnaire that was completed at the end of each workshop and seminar. This permitted to easily compile the feedback of the participants in the training series. In general, despite the variety of profiles composing the audience and their different backgrounds and sectors, the satisfaction level was quite high.

In addition, the project newsletters were designed according to the project website in order to maintain the self-image created for the project



Examples of project newsletters (issue #1, English version)

## 5. CHALLENGES ENCOUNTERED

During the project, the project partners identified some challenges that slow down the sector development. They are quite similar from one country to another, although there are some peculiarities.

### Non-technical barriers

**It was necessary to create a general interest in sustainable development in local administrations.** Additionally, **there is a lack of agricultural/forest professional associations** which could provide interested parties business systems to gather the energy resources and deliver them to energy producers. Furthermore, **these systems have to be disseminated in target and rural areas** where demonstration and information materials are needed. **Stakeholders need proven economic and technical evidence** to enter the new biomass production schemes. In Eastern Europe, most of land is privately owned, thus the central governments lack the power to influence the biomass production, at least based on the present legal status. Moreover, **most Eastern European Countries give no effective support or incentives to agricultural producers** (such as for grains/seeds/fuel used). To allow market access for small plants and SRC in the future, specific support measures are needed. Additionally, no organised expert networks are working actively in rural areas to spread existing knowledge so far.

### Technical barriers

Firstly, **there is a lack of effective support schemes for heat.** Green certificates - which are already used in some Eastern European Countries such as Poland and Romania – are only offered for electric energy produced from biomass, not for heat production. Therefore, there is still the need to improve legislation affecting RE. Here are still legislative potentials and questions open. Secondly, **there is a need of agricultural machines for direct, on-site conversion of the biomass as it is harvested.** This transformation into direct deliverable products could be easily achieved by using modern harvesters. The chips or pellets obtained are more stable and easier to handle for the energy producers ■

## 6. LESSONS LEARNT

The list of participants joining the workshops and seminars in the five target countries demonstrate that **the consortium implemented an effective strategy for informing key stakeholders about these training events**, thereby attracting many key actors to take part in the national clusters. The BIO-HEAT project website will be updated with new relevant information related to the clusters activities and agreements, etc.

- The lack of cooperation from the stakeholder site at the beginning made difficult to convince farmers and other SRCs to DH chain members of the advantages of the cooperation, due to its partly negative initial opinion on biomass use. Nevertheless, **once some initial barriers were removed, the cooperation and enthusiasm of stakeholders has been very good**. The result is proven by the clusters establishment and the plan for further activities of its members.

- It was intended to create a common structure and schedule for the workshops, seminars and clusters in all counties, but the singularities of each country made necessary to organise them differently according to their characteristics. The **addressability is extremely important and must be prioritised when defining an initiative such as our project**. The way of approaching the authorities, decision makers and other stakeholders, the kind of information to be provided, the structure of a concrete event, etc. must be considered and specifically chosen per each concrete situation ■

## 7. CONCLUSIONS

The BIO-HEAT project started in September, 2010 with the high ambition of promoting SRCs for DH systems in Eastern and Central Europe (the specific countries were Czech Republic, Romania, Poland, Slovakia and Lithuania) and the creation of SRCs to DH chains that would go on working together even after the project ending.

In order to reach this aim, the RE systems for DH currently used in Eastern Europe were assessed, as well as the limitations and barriers for its wider utilisation. Once the most important facts regarding the SRCs plantations state and DH sector (being specially focused on their energy sources) in the target countries were revised, success stories were identified. These success stories had to combine the SRCs growing and their further use as energy source for DH plants. Some of these stories were identified, but it was more frequent to find partial stories (i.e., stories in which the SRCs to DH chain was not fully covered) in which the energy source was simply biomass, without any kind of specification of its precedence. This drove us to believe that the sector could actually grow, as all these partial stories were obviously prepared to use SRCs, as they already used biomass. There are roads and possibilities to implement the exploitation of this field, and the partners worked on this direction.

In order to foster this work, the partners organised informative workshops and seminars in their respective countries, which final aim was to set up new regional SRCs to DH chains through the creation of national clusters. In addition, the inclusion of decision makers, policy makers, governmental authorities and other stakeholders made possible to highlight the need of improving the support schemes and legal frameworks affection the biomass growing and harvesting sectors, as well as those regulating the use of RES. Stakeholders in charge of improving this situation were present at the project events and it was possible to discuss directly with them, enabling a wider implementation. This work was strongly supported by the national information campaigns and other dissemination activities carried out during this time, all of them scheduled and defined in a communication and dissemination programme

**The main aim of the project was therefore successfully achieved**, as all these dissemination and training activities ended with the creation of national clusters in all target countries (3 in the case of Romania), having all of them some scheduled activities for the near future and the wish of growing and bringing together more stakeholders of the sector ■

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