Overall Project

Key data:

- **Funding Program:** Life +
- **Total budget:** 3.908.518 €
- **EC financial contribution requested:** 1,792,844 € (= 46,33% of total eligible budget)
- **Duration of the project:** 01/09 - 12/11

Fraunhofer Institute for Factory Operation and Automation IFF
Sandtorstr.22
39106 Magdeburg

Dr. Ina Ehrhardt
Project Management

Christian Blobner
International Project Coordination

Best4VarioUse@fraunhofer.de

The Best4VarioUse project entered its final stage and preliminary results, outputs and valuable insights for best practice and technologies for the use of biomass residues are now available.

The project tries to increase the material and energy use of woody biomass wastes and residues from forest works, agricultural prunings and landscape conservation operations. Different perspectives are analysed with respect to e.g. the quantification of residues through the analysis of improved methods for harvesting, storing and transporting them and finally determining which are potential and feasible alternatives for use.

Moreover, the Best4VarioUse project studied how regional framework conditions influence the use of biomass residues and additionally provided valuable results on economic and ecologic best practice, taking into account economic, social and environmental factors to ensure a sustainable development of regions.

The project has covered two very different regions and scenarios for the mobilization and use of residual woody biomass; the Valencian Community in Spain and Saxony-Anhalt region in Germany. This regional approach was demonstrated to be very useful when trying to obtain guidelines on the European level and a joint perspective and impact. However, regional peculiarities had to be taken into account as they will ultimately define the best practice at a regional level. Nevertheless, having a common foundation will serve to set the baseline on which to build up and support new biomass material flows, which will use what today is still considered as “woody biomass wastes and residues”.

Best4VarioUse gathers the knowledge, experience and insights of forest owners, service providers, researchers, forest engineers, environmental and forest administrations, industries, chamber of commerce, policy makers, etc. to take a big step towards the creation of new knowledge on how to better use woody biomass residues as raw material for different variants of use. The project pursues a cascading form of woody biomass residues use. This means that in the context of the project, material use of biomass is preferred to energy use as this better exploits the natural CO2 storage characteristics of the material.

Photo by LFB and AIDIMA

Life07 ENV/D/000240

Best4VarioUse is co-finaced by the European Commission's Life+ Program

Results

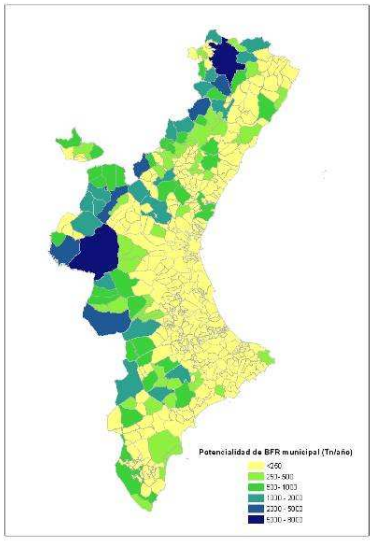
Spanish results

As result of Action 1 of the Best4VarioUse project, AIDIMA together with other project partners developed an assessment system for the quantification of residual biomass coming from forest operations and agricultural annual prunings. This assessment system provides a methodology for estimating the quantity of available biomass residues and their annual potential in order to plan different uses at a regional scale. A set list of site parameters influencing harvestable biomass potential was developed and the influence of these site parameters was analyzed with respect to harvesting methods.

Additionally, different field test were carried out. The individual field tests were characterized according to different forest areas and according to different fruit trees for the agriculture field tests. The aim was to analyze and obtain best practice for biomass harvesting and associated logistics. With respect to the field test carried out in the Valencian Community, different technologies, processes, productivity and costs were assessed for two plots for the forest tree species *Pinus halepensis* and *Pinus pinaster* and three agricultural plots of almond tree, young olive and mature olive tree culture.

From these plots, residual biomass was obtained and characterized thorough physical properties test, chemical characterization and combustion tests performed by IBERDROLA.

Requirement specifications for different material use processes and final uses were also defined. This resulted in a description of attributes for biomass characterization and a collection of industry requirements for different first transformation industries.



Residual forest biomass potential (Tn/year) by municipalities in the Valencian Community

Branches of Pinus in a forest plot in Valencian Region (Photo by AIDIMA)

Residual forest biomass chips (Photo by AIDIMA)

Finally, CAMARA together with AIDIMA contributed to the development of a catalogue of regional site factors influencing the economically and ecologically viable utilization of biomass residues and waste. This catalogue serves as compilation of a guideline for the collection of relevant site factors for different planning and assessment levels.

German results

In Germany the field tests focused on forestry and landscape conservation measures, while the Spanish ones focused on mobilization of woody biomass from forestry and agriculture. Different types of operations were taken into account, for instance in forestry operations such as regular thinning, clearing. In a first step, a general methodology was established to be followed in all project's field test. This methodology included the selection and characterization of appropriate sites and the stands. Furthermore, in the subsequent planning phase for the field tests, project partners developed individual test alternatives to be able to compare different processes, process chains and technologies in the final analysis of the tests. The aim of the field tests was to derive best practice and technologies for the efficient mobilization of woody biomass wastes and residues, taking into account the individual process steps of harvesting, skidding, chipping and transport as well as an overarching perspective on the whole biomass supply chain.

The field test activities also included the monitoring of operations with respect interruptions and disturbances, general analysis of time efforts, indirect and direct costs occurred as well as environmental impact of operations, e.g. damages to the remaining stand or soil from the technology used.

An important element for the economic evaluation was a cost-benefit analysis, which aimed to evaluate the profitability of the overall biomass supply chain. For this, the inclusion of indirect costs, especially in the planning phase, of operations is not to be underestimated in determining the profitability of biomass mobilization. These indirect costs are often hidden costs as they are either not calculated at all or underestimated by the actors in the supply chain. Furthermore, the choice of non-adequate and often oversized technology for individual process steps, for example in harvesting or chipping, significantly influences the cost structure of the overall operation.

Life07 ENV/D/000240

Best4VarioUse is co-finaced by the European Commission's Life+ Program

Project meetings in Berlin and Valencia

In the last period there have been two project meetings with both German and Spanish participation. The first meeting was held in Berlin, on November 2 and 3, while the second meeting was held in Valencia during the ECOFIRA 2012, on March 1. The first meeting addressed several issues related to administrative and financial issues, as well public relations (current activities, video and further dissemination material, and the organization in Brussels of the Final Conference). Also there were points on the agenda dealing with discussions related to different work packages and their finalization (overall current status, current deliverables, field test evaluation, logistics prototype, feasibility and best practice). The Valencia meeting was marked by a review of the German Steering Committee Meeting as well as providing an overview of the implementation of the German project efforts. Furthermore, an important discussion point was the preparation of the project's final conference. The Saxony-Anhalt Ministry of Agriculture and the Environment as Steering Committee Member supported these preparations. The final conference will be held in Brussels on May 23, 2012.

Best4VarioUse at ECOFIRA 2012

On March 1 at the 2012 ECOFIRA fair, the Fundación Comunidad Valenciana-Región Europea (FCVRE) opened the seminar "Interregional Cooperation for a Sustainable Development. Opportunities for the forest and agricultural biomass to generate raw materials and renewable energies".

Victoria Palau, Director General of EU Affairs, and Juan Viesca, Director General of European Funds and Projects participated in the opening of the seminar jointly with Mathias Willenbockel, Coordinator of Interregional Cooperation, from the Ministry of Agriculture and the Environment of Saxony-Anhalt. The first part of the seminar addressed the role of European Programs and Interregional Cooperation as key tools in the strategy for sustainable development of organizations and regional governments. Panel 1 demonstrated Valencian and German results and experiences with respect to the Best4VarioUse project. It, will have its Final Conference in Brussels, on 23rd May, at the Representation of Saxony-Anhalt to the EU. Finally there were presented other European initiatives as examples for using European funds. Furthermore a forum corner for ideas exchanges and contacts was established.

Mr. Muñoz, Mr. Bogdan, Mr. Willenbockel, Mr. Blobner, Mr. Viesca, Ms. Palau, Mr. Rauschenbach, Ms. Alvaro, Mr. Micka, Mr. Fricke and Ms. Esteve.

Life07 ENV/D/000240

Best4VarioUse is co-finaced by the European Commission's Life+ Program

BIOMASS: GENERATION OF WEALTH LIES WITHIN OUR REACH*

* Jose A. Arrieta (Head of the IBERDROLA RENEWABLES Biomass Division)

Biomass thermal power stations are production plants that use known technology to transform local resources and waste that we continuously throw out into renewable energy. They generate wealth through the creation of jobs and a considerable and sustainable agricultural and forestry network. All of this usually occurs in rural environments, which in recent decades have been very depressed and depopulated.
All the central and regional administrations, most environmental and social organisations and parts of society support this growth and implementation.
More specifically, producing renewable energy from forest biomass is gaining a strategic role in recent years from the economic and ecological perspective, causing a change in the mentality of sustainable forest management practices or our forestry systems.
The use of forest biomass would improve management for the prevention of forest fires and could even be a profitable use that would offer an opportunity to the forestry industry for the sustainable management of millions of hectares of forests where the current absence of management is leading to their decline and/or an increased risk of fires, plagues and serious diseases and soil erosion.

Unfortunately, biomass plants are not as common as they should be for this. This is mainly due to the low profitability of these projects (which are subject in Spain to special provisions and are not subsidised by Royal Decree in a sufficiently attractive manner) and due to the risks that must be assumed by the sponsors when ensuring fuel availability. Such fuel is a raw material to be valued that depends on the owners of estates or woodlands, cooperatives and the agroforestry service companies in the area.

There is also an obvious lack of coordination between the public administrations in charge of forest and power management, and also between these and local bodies, which makes it difficult to start up public and/or private initiatives.

Nevertheless, a key idea that is already consolidated is that there is enough forest biomass in Spain to supply the power industry, as stated in the 2011-2020 Renewable Energies Plan.
It is necessary for us all to become involved in order to create projects for the generation of clean electrical and thermal energy based on solid biofuels, such as the forest waste from woodland management and forest fire prevention. We must be able to find tools to value and assess its eco-nomic, social and environmental profita-bility within the same scope, so that its viability becomes a fact in the short term.

The planet's health may depend on many small actions, and one of them may be that we are able to use products and waste that lies within our reach (and that we normally destroy or send to landfills) in order to recycle them or turn them into clean energy through biomass plants.

Location:
Charlemagne Building
European Commission
Rue de la Loi 170

The Registration Desk will be open at the following times:
Tuesday 22 May 13:00 to 18:00
Wednesday 23 May 08:30 to 18:00
Thursday 24 May 08:30 to 18:00

Green Week 2012-Brussels 22-25 May 2012
GREEN WEEK
Register now at: http://www.greenweek-2012.eu/

Partners

Rittergut Vergunst is an ecological business with 170 ha of lands managed in Saxony-Anhalt and certified in accordance with EU ordinances as well as by Bio Suisse, Anbauverband Gäa e.V. (1999 to 2004) and Verbund Ökohöfe (since 2005).
The forestry operation covers 995 ha of privately managed and owned lands in Saxony-Anhalt and Saxony, of which 192 ha lie within an FFH designated preserve, Forst Buktum.
The object of analysis in the project is located in the catchment area of Burgstall state forestry agency's Angern district and has a total area of 202 ha, of which 192 ha is forest land and 10 ha non-forest land. The object is located in the growth district of the central north German old moraine region.

LUS GmbH, a test lab accredited by DAP, is a capable partner for environmental protection and chemical analysis as well as complex research and development of innovative products and processes. LUS GmbH has also been an affiliated Institute of Otto von Guericke University Magdeburg since 1997.LUS GmbH has a highly qualified and capable staff with many years of professional experience in the fields of water, wastewater and soil analysis, water supply and wastewater treatment and research.

The foundation of the **Landschaftsplegehofs** as a charitable limited company (gGmbH) was made in 2000 in Abtsdorf (Saxony-Anhalt, north-east of Wittenberg). Since the year 2008 and its headquartered in Dabrun-a district of Kemberg, one km from the River Elbe, on a reconstructed and protected farmyard. The company´s goal is the prevention of nature and is making its contribution to safeguarding and dissemination of natural resources and conservation of natural habitats. The activities of LPH are the implementation of landscape maintenance services for industrial and public clients and the environmental land management on their own land.

The non-profit **Fundación Comunidad Valenciana-Región Europea FCVRE** was created by the government of the Valencian Region to promote the region's participation in European Union actions and policies and raise awareness of these actions and policies. FCVRE has participated as a partner in several outstanding projects and disseminated their results internationally. FCVRE functions as an active partner to facilitate the formation of European consortiums and publicize Valencian initiatives among European regions through active networking or as a partner to organize and implement individually tailored comprehensive communications campaigns to internationally disseminate the results of European projects.

Life07 ENV/D/000240

Best4VarioUse is co-finaced by the European Commission's Life+ Program