



**Biomass energy register
for sustainable site development
for European regions**

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BEn

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for European regions**

Intelligent Energy – Europe (IEE)

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**Deliverable D4.2: SWOT analysis of the biomass market
situation in the model regions**

Authors: Katarzyna Zielewska & WP4 Working Group

Authors of the regional sections: Günter Fritsch (DE/ WIN)
Janusz Krupanek (PL/ IETU)
Beata Michaliszyn (PL/IETU)
Maria Cleofe Merico (IT/ CRB)
Katarzyna Zielewska (UK/ RDI)

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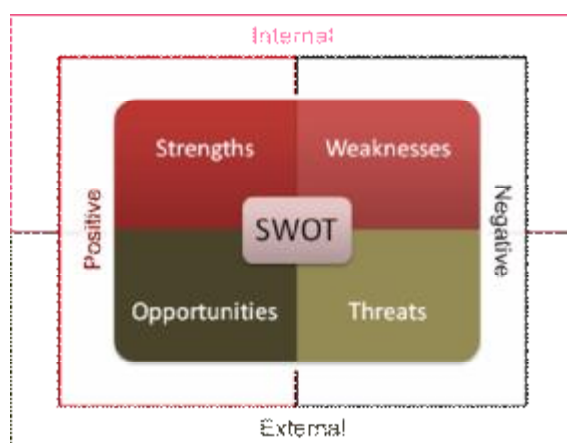
Introduction to SWOT analysis for Ben project

SWOT analysis has been chosen for project Ben to serve as an initial assessment of suitability of the region for bio-energy actions. The analysis aims to identify internal strengths and weaknesses of the biomass markets of 4 project model regions as well as examining the external opportunities and threats which can endanger their biomass supply chains.

SWOT is a flexible concept that can be used in various scenarios from assessing projects or business ventures, making decisions, solving problems to strategy formulation. In the project BEN we use it to analyse the regional situation in regard to bio-energy market in four project model regions.

SWOT analysis helps us to understand the regional strengths and uncover good opportunities that can place our model regions in an advantageous position and lead to achieve the agreed bio-energy targets. It also brings to sight weak sides of our regions and points out external threats. If foreseen in advance, the factors influencing regions in a negative way can be omitted or faced with confidence and preparation. In that case they might not become big obstacles for the development of a strategic master plan and practical bio-energy actions later on during the BEn project and beyond.

Concept of the SWOT analysis, which is presented on the graphic below contains four sections: strengths / weaknesses / opportunities / threats which describe positive or negative, internal or external characteristics of an analysed region.



INTERNAL factors describe the region itself and can be influenced by local decisions and actions.

STRENGTHS are internal attributes that add value to the region. They give a good starting position for establishing or strengthening a biomass supply chain.

WEAKNESSES are internal factors that may detract from regions potential. They are, however, within control and can be influenced by local and regional decisions.

EXTERNAL factors describe broader factors, which are independent from a regional situation but might affect it.

OPPORTUNITIES are external positive factors facing the region like favourable legislation for renewable energies which can uncover a greater potential for development of a bio energy sector.

THREATS are external obstacles that are largely beyond any control. They are characterised by unfavourable trends like price wars or changing technology.

The SWOT analyses for 4 project model regions which were carried out between June and Oct. 2009 are presented below in English and national languages respectively.

1. SWOT analysis of the regional situation in regard to bio-energy market in the North East of England

Model region	North East of England (UK)
Organisation	Northwoods, RDI Ltd
Contact person	Katarzyna Zielewska
Date	10.10.2009

STRENGTHS

- Region readily accessible by road (A1, A19, A69)
- 5 deep sea ports including the major ones: Tees, Tyne and Blyth
- Urban areas located relatively close to rural areas, what reduces logistical problems for domestic and small scale biomass supply
- Good regional forestry resources in comparison to the rest of England
- Underutilised straw resources
- Extensive areas of agricultural land
- Extensive high-yield wheat and oilseed rape production
- Big timber processors based in the region - sawmill co-products are an important biomass source, mainly used in Eggers on long term contracts
- Large demand for biomass from 3 existing and 3 planned large biomass end users in the region
- Considerable developments at smaller community CHP level
- The North East has a growing reputation as a leader in the renewables sector with:
 - Active stakeholders & a regional forum for those in the biomass sector
 - Woodfuel suppliers' group & support of woodland initiatives
 - Strong existing biomass users
 - Growing robustness of fuel supply chain - strong timber supply chain based on large forest resource and established industrial markets
 - Large public forestry estate holding 50% of forestry land in the region
 - Growing biomass installation sector
 - Signs of support from RDA, however the ONE's involvement could be much stronger as it is in some other regions in England or in the devolved administrations (Scotland & Wales)
 - Universities in the region involved in bioenergy research and larger projects
- Ignite woodfuel course developed and delivered in the NE
- National Biomass Energy Centre (BEC) portal providing a list of regional woodfuel/biomass suppliers
- CPI Sustainable Processing Centre (SUSPROC) and the national industrial biotechnology facility including technologies like AD, use of algae for carbon capture, development of zero carbon cities (based on bio and waste processing) and low carbon closed loop systems
- Large-scale biodiesel and bioethanol generation facilities
- Access to strong supply chain links via North East Biofuels & NEPIC

WEAKNESSES

- Lack of manufacturers of biomass systems in the region (or UK) – most systems imported from EU
- Lack of large woodfuel producers and suppliers with a well known/trusted household name
- Lack of trained installers including installers for domestic sector registered on grant scheme (LCBP)
- Lack of installers training provision
- Poor supply chain for pellets, patchy access to logs – unclear picture of the regional biomass supply chain
- Limited professional awareness of biomass energy (architects, engineers etc)
- A small number of businesses in the region who are able to do all of the following in one package
 - a. Carry out feasibility studies of properties (which set out simply the total investment required with pay-back times)
 - b. Source appropriate funding
 - c. Source the equipment from reputable manufacturers (boilers etc.)
 - d. Organise certified installers to fit systems and recycle/dispose of old heating systems and to
 - e. Establish long term supply and maintenance contracts
- Need for more support in form of free source of good independent advice and support
- North East not given sufficient credit for its achievement (distance from London)
- Lack of region's own bio-energy centre and web portal, which would promote bio-energy activities in the region and provide wide information and support as e.g. Future Energy Yorkshire biomass portal
- Biomass industry currently dependent on continuous public sector support to maintain growth
- Limited role of public sector procurement due to its structure e.g. no through life cost approach taken, utilities/ facilities management often very separate from the more "strategic" renewables / carbon/ sustainability aspects (albeit this is coming with the CRC and other measures)
- A lack of larger scale end users raises concerns from some potential growers as to the security of market (3 big investments planned in the future so might not be that relevant soon)
- Negative farmers' perception of bio-energy due to pitfalls with planting SRC in NE in the past
- The North East climate only suitable for Short Rotation Coppice (SRC), Miscanthus cannot be grown economically in the region
- Limited resources of organic animal waste due to the domination of extensive free range farming

OPPORTUNITIES

- UK and EU parliaments recognising the need for a strong bio-energy sector. Biomass rapidly moving up political, policy and media agenda
- Governmental support for biomass systems (e.g. Bioenergy Capital Grants Scheme, Feed in Tariffs, Low Carbon Buildings Program)
- Development of the Renewable Heat Incentive provided the plans they lay down are adequate and pre-qualified to avoid potential consumers delaying installation to claim tariff payments
- Energy Crops Scheme funding available to cover part of the establishment costs of biomass crops

- ONE RDA funded RENEW project supporting organisations seeking to invest in Low Carbon Energy and Environmental Technologies
- Need to capitalise on biomass programmes e.g. NewHeat to establish supply chains
- Promotion of biomass systems for new buildings
- Public perception that bio-energy schemes are good for the environment and local economy
- Private and public sector interest in biomass fuelled heating growing strongly. Emerging fire wood market.
- Development of planned big biomass plants could mobilise and establish robust fuel supply chains both local and import-based providing confidence to all players in the market (See also threats)
- Gas and oil supplies exposed to the security and price fluctuations of international markets
- Large areas off gas network that can benefit from switching from oil / LPG
- Sewage sludge, organic waste & recovered fuels currently underutilised for energy production
- Scope for increase and more efficient use of the regional biomass resources
- Extension of the Nitrate Vulnerable Zones (NVZ's) could be a chance to motivate farmers to deal with animal waste in a more efficient and ecological manner e.g. use for AD
- Forestry sector increasingly recognising the benefits of bio-energy to the value of forestry products
- Research expertise in advanced processes for biomass conversion (e.g. gasification and pyrolysis) is available at Newcastle University.
- Research and development services for bio-energy offered by CPI

THREATS

- Large users of biomass such as the proposed projects on Teesside and beyond consuming a large proportion of the regions biomass could result in limited supplies and rising prices for smaller consumers (see also opportunities!)
- Co-firing with waste biomass from abroad raises ecological concerns what can have of negative influence on local biomass supply chain. (Ecological and sustainability standards are under development. They are expected to be published in the next couple of months to solve that debate.)
- Concerns over air-quality impact from biomass heating applications need some clear-headed thinking
- Unstable global economic situation leading to funding difficulties
- Biomass & fossil fuel price fluctuations difficult to predict
- Exchange rates fluctuations (£ vs. €)
- Lack of leadership from Government in plugging gap before introduction of Renewable Heat Incentive
- Lack of biomass systems manufacturers compared to other EU countries
- Process of applying for grants and funding too complex
- Lack of good financial incentives & assistance for investors to meet initial capital cost of installing biomass boilers. Difficult access to capital for investment
- Unclear security of local fuel supply e.g. logs
- Waste wood resources overestimated by up to 50% (depending on data source) according to the new WRAP report

- Competition for biomass resources with other sectors e.g. liquid fuels & chemicals. (NEPIC currently developing recommendations for the NE Regional Transport Fuel Strategy re. biomass utilization)
- Competition for land with crop based oilseed rape/corn/sugar beet used for biofuels and food
- The current strength of the agricultural economy with strong arable and livestock prices means that SRC is not particularly competitive
- Public opposition to the construction of 'new' biomass thermochemical processing technologies (gasification, pyrolysis, torrefaction) on the grounds of NIMBY-ism (Not In My Back Yard) which is widespread in the UK - Lack of understanding of biomass technologies
- The delay in seeing a return from land planted with SRC for 3-4 years following planting does not encourage land managers to consider growing this crop on a large scale
- The misconception by land managers that SRC will render land unusable for any future conventional cropping due to the cost of reinstating land to arable production
- EA regulations and planning processes not very helpful for farmers
- Landowners are slow to take up the challenge and opportunity of growing more trees in upland area

Document based on contributions from:

D. Maunder (RES), J. Karthaus (ConFor), C. McDonald (Energy Saving Trust), D. Clubb (Northwoods), D. Roddy (Newcastle University), A. Price (PB World), R. Lord (Teeside University), G. Hillier (CPI), M. Usher (Natural England), A. Collingwood-Cameron (CLA)

2. SWOT analysis of the regional situation in regard to bio-energy market in the Gostynin Lake District

Model region	Gostynin Lake District (Poland)
Organisation	StowGmin, IETU
Contact person	Janusz Krupanek, Beata Michaliszyn
Date	27.10.2009

STRENGTHS

- Good examples and experience in the field of biomass use for energetic purposes in the region – biomass boiler room in Łąck
- High potential of local animal farming and agriculture
- Available, unused biomass resources (forest, agricultural)
- The need for further farms' development
- Potentially high possibilities of biomass resources (wooden biomass) development - forestation plans of private grounds
- High possibilities of joining of animal farming and agriculture with energy production – diversity of organic material
- High potential of wood (for silvers production) and business activities development
- Changes in agrarian structure - it is sensible to implement biomass solutions in big farms
- High possibilities of the use of existing potential of biomass production (farming land)
- Possibilities of joined farmers' activities (nearness of biomass producers)
- Possibilities of cooperation between biomass producers and local administrative bodies – local partnership for energy supply
- Need for stabilisation of local income earnings – diversification of activities and lowering of agricultural production costs
- Stable possibilities of local use of silvers
- Insufficient use of wooden biomass potential
- Creativity of local society
- Labour force with different qualifications
- Support of Polish State Forests in forestation of private grounds
- High possibilities of local use of biomass in small individual boilers
- Development of wood (for energetic purposes) wholesale and retail market
- Sensible and rational possibilities of the use of biomass from Polish State Forests, private forests, roadsides and grasslands plantings

WEAKNESSES

- Biomass as very “demanding” fuel in the respect of utilitarian aspect – logistic problems connected with the use of biomass
- Difficulties connected with infrastructure – logistic aspects of biomass utilisation (biomass

gaining from roads, grounds etc.)

- Special requirements connected with the use of biomass for energetic purposes – for instance: storage, fire protection
- Difficulties with providing of good quality biomass fuel and biomass processing
- Risk connected with biomass utilisation – high possibility of fire
- Difficulties connected with planning and implementation of investments - the lack of financial resources
- Difficulties connected with time schedule of activities – the barrier: cumulation of expenses
- The low rate of the EU funds use in the region
- The lack of safety in the context of biomass availability - uncertain stability of energy resources delivery (preferred gas and coal) (periods of overproduction and fuel shortage, irregularity of production)
- Risk of fuel shortage
- Competitive use of biomass (cellulose production, households, agriculture)
- Low reliability of biomass installations
- Lack of certain and continuous biomass delivery (for instance for the needs of heating of buildings)
- High diversity of wooden material with different specification (in the context of technical parameters of boilers). Requirements with reference to the use of the pre-processed material (briquette) for individual consumers
- Insufficient forest area
- No tradition in the field of biomass use on large scale
- Popular practices: straw burning, wooden remains burning
- The lack of knowledge about the amount of biomass to be used for energetic purposes in the region
- Poor knowledge about technologies based on the use of biomass in the region (available appliances, fuel preparation process)
- The lack of biomass market
- The lack of diagnosis on the biomass production potential in the region
- The lack of strategy (programme) in the field of the biomass use for energetic purposes
- The lack of coordination of undertaking actions
- The lack of the procedures which could regulate the delivery of biomass for the needs of boiler room in Łąck
- Poor interest of local community in biomass sector development
- Insufficient supply of biomass processing technologies addressed to small households (< 10 ha)

OPPORTUNITIES

- Legal aspects as an essential factor of the use of wastes for energetic purposes
- The need for diversification of energy resources in the national perspective
- Growing costs of traditional sources of energy (oil, coal)
- Polish forest policy
- Instability of the energy sector in the national perspective

- Participation in Ben project
- Possibilities of increasing of efficiency by the use of semi-industrial methods
- Favourable political conditions (local, regional, national)
- The use of available sources of financing (for instance offered by the Voivodeship Fund of Environmental Protection)
- There are leaders in the region, who could create a biomass market
- Policy of local administrative bodies based on tourism development and the tendency to creating an ecological image (region as a health resort) of the region (RES promotion)
- Occasional risk to the environment (low emission during winter time)
- The lack of management of existing biomass resources

THREATS

- Present principles of financing limit the possibilities of gaining these funds by small territorial units
- The lack of reliable information about economic profitability of solutions based on biomass and practical aspects of their implementation
- High pressure for gaining biomass from neighbouring territorial units (industrial needs).
- Existing market conditionings and competition
- Dynamic changes in local market (local, regional)
- Competition on energy resources market - utilitarian goods from the wood
- Competitiveness of energy sector in gaining of biomass resources
- High demand on biomass from outside the region – the biomass “is getting away” from the region
- Risk connected with business activity – uncertainty of the biomass national market, some risk factors of business activity
- Principles of the market – contracts, tenders
- Procedural requirements connected with public procurement law
- Formalised (administration) sale of wood by the State Forest - there is no possibility to make long- term contracts by forest offices in Poland
- The lack of certainty in the case of long-term contracts, especially during taking decisions on forestation
- Bureaucracy in realisation of tenders supporting forestations
- The lack of execution of spatial management plans
- Instability of law (permanent changes)
- Economical crisis which doesn't foster new projects/investments
- The lack of consulting and poor availability of small and effective boilers
- Limitations connected with growing requirements of environmental protection
- Instability of structural and legal conditions, prices and biomass market - prices depends on the type of the wood's utilisation
- High investment costs of biomass installations comparing to solutions based on coal, oil and gas
- Difficulties in application for external financial support
- Difficulties (inconvenience) connected with operation of some of biomass installations

- Insufficient biomass (agricultural) production
- The lack of government's interest in development of the use of biomass for energetic purposes in housing and communal sector

3. SWOT analysis of the regional situation in regard to bio-energy market in the Emscher-Lippe region

Model region	Emscher-Lippe (Germany)
Organisation	WiN
Contact person	Günter Fritsch
Date	29.06.2009

STRENGTHS

- Almost all the technologies needed to generate energy from biomass are already present in the region
- Reactivated network of highly motivated partners
- Numerous model projects
- Technology centers (IWG – Innovation Center at Wiesenbusch-Gladbeck, WIPA – Science Park in Gelsenkirchen, ZZH – Future Center in Herten, TechnoMarl – Technology Center in Marl)
- Experience in dealing with energy generation, transportation, use etc.
- Technical University at Gelsenkirchen
- Central business promotion agency (WiN); future energies competence center added in 2001
- Good opportunities for grants (EEG – Renewable Energy Law, etc.); subsidies from German federal government and state of North Rhine-Westphalia (NRW)
- Good information inventory (guides, technology information etc.)
- Potentials for biomass have been cataloged (2004)
- Good infrastructures
- Know-how available in SMEs
- Broad diversity of resources including agriculture, forestry; high volumes of waste due to population density and food industry generating biomass waste

WEAKNESSES

- Business promotion and urban development agencies with narrow local focus
- Lack of an “umbrella” brand for the region and agreed joint approach
- Region is politically fragmented
- No central, common education and training strategy in regard to (bio)energetic needs of the future, e.g. biogeneration technician, bio-process technicians
- Disagreement among the municipalities and their representatives
- Disinterest among decision makers regarding implementation of a joint strategy for using biomass
- Local banks cannot assess the opportunities and risks associated with biomass technologies, resulting in insufficient interest and expertise
- No exchange of information among managers of public properties in the municipalities

OPPORTUNITIES

- Backlog of renovation needs in individual buildings and real estate (municipal and private)
- Keeping biomass in the region in order to keep real net output (economic benefits) in the region
- Keeping biomass in the region in order to create new jobs
- Good potential workforce (retraining required)
- High population density
- High potentials in biomass
- Biomass potentials close to energy sinks
- More biomasses to gather from re-foresting industrial brownfields with fast-growing trees providing early energy harvests
- Climate protection and change

THREATS

- Budget caps for all the region's municipalities
- Lack of strategic cooperation among municipalities and businesses (manufacturers, energy utilities, housing associations, etc.)
- Shortage of skilled workers
- WiN cannot itself take decisions or launch projects
- No common approach to evaluating the use of renewable energies in public buildings, including amortization periods, service lives etc.
- Demographic change
- Municipalities bound by contracts (some through 2017) to deliver all types of waste to a central incineration plant

4. SWOT analysis of the regional situation in regard to bio-energy market in the Umbria region

Model region	Umbria
Organisation	CRB
Contact person	Maria Cleofe Merico
Date	21.09.2009

STRENGTHS

- Region location in the centre of Italy allows to have a favourable soil and climatic conditions for the biomass production;
- Rural settlement pattern is widespread in the region;
- Familiarity with the bio-energy generation technologies in the region;
- Lifestyle trends, wood fuel in fashion;
- Qualified staff, work labour available;
- Available education programs in the field of energy: financed or co-financed training opportunities;
- Local energy agencies;
- Abundant and accessible biomass resources;
- Biomass production/supply chain best practice examples: wine and viticulture company lungarotti, logistics platform montemalbe (wood chip production);
- Cooperation between biomass producers within communities;
- Presence of biomass technologies in the region;
- Easy accessible technical informations;
- Research and development activities in the region, cooperation between research centre and biomass business from the region.

WEAKNESSES

- Confusion between biomass and waste: biomass plants construction opposition;
- Specific energy infrastructure deficiency for the coverage of energy demand;
- Great distance from the sea and consequent lack of shipping links. Deficit road connected to the low efficiency primary road network; moreover secondary road network (forest type) is a problem for the transfer of biomass truckload;
- Local authorities inaction in biomass field: complicated procedures to obtain funding and grants. There are several advantages but not completed from bureaucratic point of view;
- The construction of income statement for a biomass plant is very difficult: all the items are sure except the cost of raw material. It's impossible to carry out an assessment on the progress of biomass price;
- Few events and training for public and decision makers;
- Excessive sensitivity to environmental issues involving many requests for additional information and tests.

OPPORTUNITIES

- Energy industry trends, competitive market;
- Good quality of available biomass;
- Good average sizes of agricultural fields and forests;
- New concept for the farmer: energy becomes a product of agricultural activity;
- Realization of bio-energy platforms for the biofuel production.

THREATS

- Inaction to obtain results to regulate procedures for financing and lending for new biomass plants;
- National problem: significant dependence on foreign energy market;
- Biomass price: extremely variable.