

Grant Agreement Number: 319956

Project Acronym: ROKWOOD

Project full title: "European regions fostering innovation for sustainable production and efficient use of woody biomass"



D1.6: Obstacles and barriers for wooden biomass production

Due date of deliverable: 31.08.2013

Actual submission date to European Commission: 29.10.2013

Start date of the project: 01.12.2012

Duration: 36 months

Organisation name of the lead beneficiary for this deliverable: European Biomass Industry Association - EUBIA

Project coordinator: ttz Bremerhaven

Project website address: www.rokwood.eu

Project funded by the European Commission within the Seventh Framework Programme (2007 – 2013)		
Dissemination Level		
PU	Public	X
PP	Restricted to other programme participants (including the Commission Services)	
RE	Restricted to a group specified by the consortium (including the Commission Services)	
CO	Confidential, only for members of the consortium (including the Commission Services)	

August 2013



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1. Introduction

The aim of this report is to identify and describe the main obstacles hindering the utilisation of wooden biomass from SRP, seen by the SMEs working in this field.

The starting point has been the creation of a specific questionnaire addressing this group of stakeholders. This questionnaire includes a series of questions aimed to rank and quantify the factors hindering the SRP sector development, reported in Annex I.

The whole ROKWOOD partners' consortium cooperated in the realisation and distribution of the questionnaire. As a results, some tens of SMEs located in various EU countries (Spain, England, Sweden, Germany, Poland and Ireland), have been interviewed.

The following table lists and shortly describes the organisations which participated to the survey.

		Year company began trading	Number of employees	Short description of business activity
Spain	Avebiom	2004	10	Spanish bioenergy association
	Granada Energy Agency	2001	5	The improvement and use of provincial energy resources and awareness of local authorities, businesses and citizens about the shortage of energy resources and the need for a rational and consistent with economic and environmental aspects.
	ASAJA-GRANADA	1988		Farmers association
UK	Crops for Energy	2004 as sole trader (Incorporated in 2012)	2	Crops for Energy is involved in consultancy and project management on all aspects of biomass and energy crops. We help farmers and organisations to plant, supply and use woodfuel and energy crops. We also sell SRC willow cuttings.
	Strawsons Energy (based in Nottinghamshire)	1964	30	Largest grower of SRC willow in the UK with around 400 hectares. Supplies granulated fuel (Koolfuel) to power stations for co-firing and two local heat users. Demonstrates biomass boilers and other renewable energy technologies at the Centre of Renewable Energy.

				http://strawsonenergy.co.uk/ http://www.centreofrenewableenergy.co.uk/
	Mammoth Willow	2008	2	Suppliers of biomass willow and poplar cuttings.
Sweden	Salixenergi Europa AB (SEE)	2010	5 (2 in Sweden, 1 in Latvia, 1 in Germany and 1 in Hungary) + contracted experts on project basis.	Harvest and sell willow biomass in Sweden, production and sale of cuttings of Lantmännen SW Seed willow varieties in Sweden and for export, planting of willow fields in Sweden, licensed production of Lantmännen SW Seed willow varieties in EU, Ukraine, Serbia and Moldavia, sale of the HSAB fully hydraulic head for willow harvesting with the forage harvesters John Deere, Krone and Claas. Contractor services and consultancy services to large plantating projects, “turn-key projects, in east Europe.
	REAB, Rosenhälls Gård Energi AB, S-268 73 Billeberga	1989	5	Agriculture farming, contracting harvesting willows hole stems and with BioBaler. Willow breeding production and propagation.
Germany	Agraligna GmbH	2010	2	Implementation of SRPs – from A to Z. Advising potential customer whether SRP is the right method/concept for them to use; once a decision is being made Agraligna provides machinery, man power, planting material and supports the harvest up to the selling of wooden biomass.
	Bioenergie-Region Altmark	2009	2	Support of biomass/renewables activities in the region, public work and education, support of local actors and value added chains
	DEHO GmbH (Deutsche Holzenergie Nord GmbH)	2006	5	Using wood for Biomass-heating; Produktion of Woodchips and Woodlogs; Delivering wood to privat households and Biomass-heatings; Running Heatcontracting-Models in schools, villages and Industry

Poland	Maciej Szerszeń	2007	none	Producer of willow woodchip, owner of a willow plantation of an area of circa 15-20 hectares. Currently changing production profile.
	Krajnik Krzysztof	2005	none	Producer of willow woodchip, owner of a willow plantation of an area of circa 25-30 hectares.
	Agata Kwietowicz	2007	none	Producer of willow woodchip, owner of a willow plantation of an area of circa 10 hectares.
	Zbigniew Krasńiewski	2004	none	Producer of willow woodchip, owner of a willow plantation of an area of circa 14 hectares.
Ireland	Biotricity	2009	2	Promoter CHP facility that requires supplies of SRC type materials.
	Farrelly Bros	More than 20 years	2	Promoter for planting willow and buyer of willow biomass

The survey provided very interesting inputs for a focussed analysis. All these inputs have been collected and organised in an excel file.

The second paragraph of this report includes some graphics, which allow visualizing the frequency of the answers provided by the SMEs to each question. The y axes of these graphics indicate the number of answers while the x axes indicate the possible answers. The graphics are followed by a short analysis of the main outcomes. Specific issues related to national contexts, are then reported.

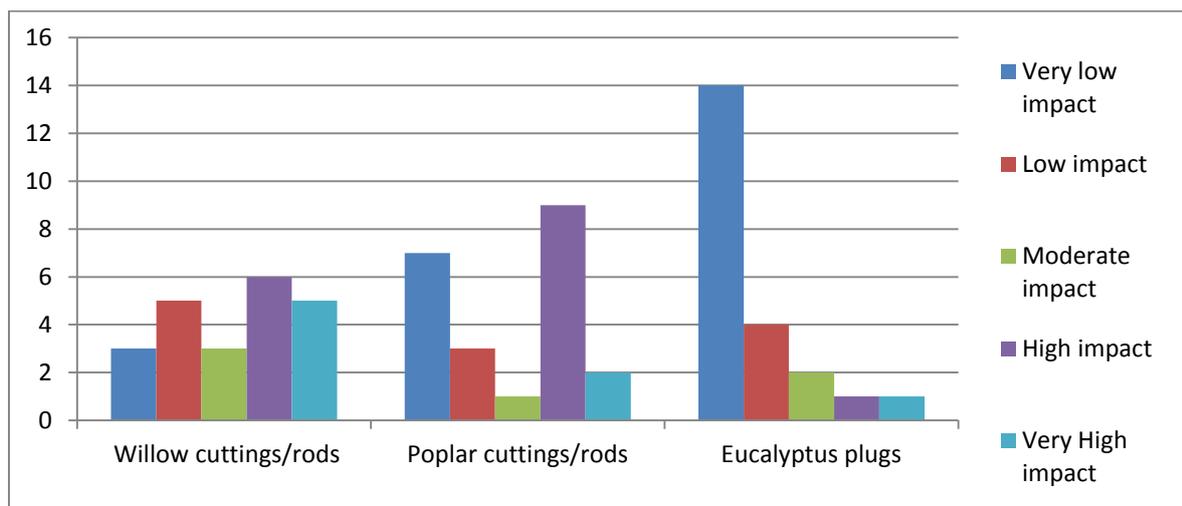
The third and fourth paragraphs comprehensively report the answers given by the SMEs to the questions:

- Which solutions could be found to overcome these obstacles hindering the utilisation of wooden biomass from SRP?
- Who are the key actors in solving the above problems?
- Which are the future perspectives of the sector?

The inputs provided by the survey have been merged and synthesised, considering the peculiarities of each country, in order to extrapolate the main factors hindering the utilisation of wooden biomass from SRP.

2. Factors which obstacle the development of the SRP sector

1) AVAILABILITY/OFFER OF SUITABLE PLANTING MATERIAL



Nowadays, the availability of suitable planting material is not perceived as a problem of major concern. This problem could rise if the SRP market would considerably increase. In this case the availability problem could be overcome through the use of selected genotypes with better yields, disease resistance and combustion characteristics. Anyhow, until the research in this field won't be pushed by a strong market demand, significant developments won't be realised.

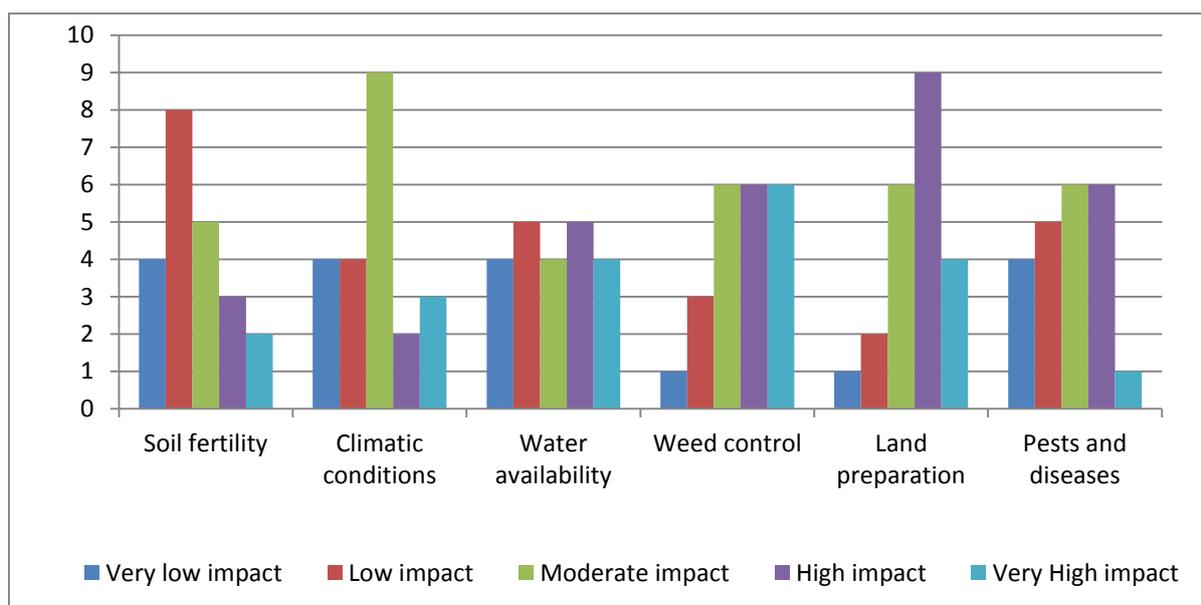
The interviewed SMEs declared that:

 In Spain, the availability of suitable planting material is strictly dependent on the selection of plantation variety, the plantation management and the pest control. Poplar adapts very well to Andalusia environmental conditions, while Willow needs a major quantity of water and Eucalyptus is not an autochthon species.

 In the UK there are sufficient sources of high quality planting stock. The demand for poplar and willow cuttings is usually satisfied. However some larger schemes may have been delayed by the need to prorogue to order. As yet there's no demand for Eucalyptus.

 In Poland, the Eucalyptus is not available due to unsuitable environmental conditions and there is only a small group of poplar producers, so the demand is very low. By contrary, Willow cuttings are easy to get. The only obstacle is that they need to be ordered a long period before purchase due to the lack of a suitable storage system.

2) ENVIRONMENTAL CONDITIONS



The SRP species selection is based on the environmental conditions of a certain area. The species selection is fundamental to optimize the plantation yield. Land preparation, weed control and pest control play a key role as well. The best practice includes the erection of proper animal fencing. Gapping up leaving spaces for weeds to develop is not recommended. Some weeds such as brambles can make harvesting difficult and contaminate woodchip.

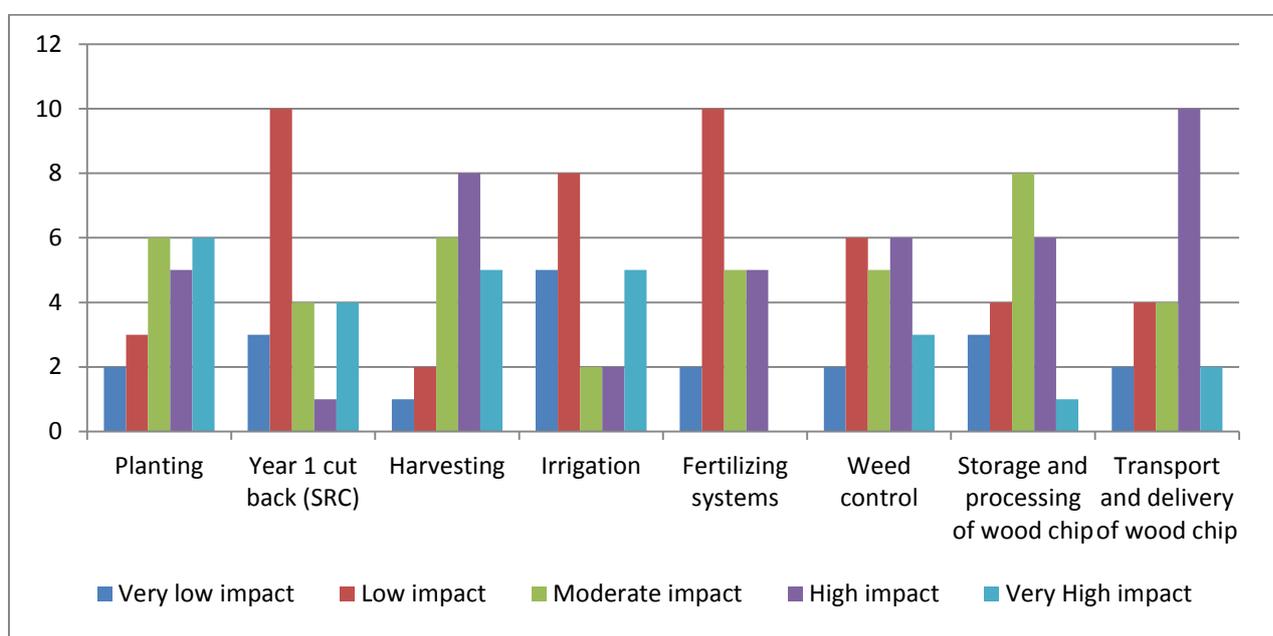
Further information related to country specific conditions has been released by the interviewed producers:

 The quality of SW SRC plantations is low. Generally poor practice has been adopted to cut corners e.g. rabbit fencing not erected. Regularly enquiries from people / organisations wanting to establish SRC on ex pasture are asked. However the carbon balance when spraying and ploughing this type of land means we are unable to advocate conversion. Although there is own evidence to support conversion (taking account of overall land use factors) published guidance generally contradicts this. An opportunity exists here for more extensive study. Whilst energy crops are easiest to plant and manage on ex arable land there is strong case environmental and economic for the use of land previously used for livestock.

 The soil humidity and climate conditions are optimal for SRP. Nevertheless, the production suffers of poor land preparation, weed control and pest control.

 Germany, in particular North and East Germany, has fine environmental conditions for SRP's. There is hardly any danger for diseases or insufficient water supply.

3) AVAILABILITY OF MACHINERY



The results of the survey show that the main bottlenecks at machinery level are represented by the harvesting, transport and delivery facilities. Anyhow, the most critic aspects vary from one country to another depending on the environmental conditions and the extension of the SRC area.

 The lack of harvesting equipment has meant that several growers have allowed their crops to grow beyond the typical rotation length. Also, the lack of storage and processing facilities means that woodchip brokers are not interested in the low quality of woodchip available (e.g. contaminated with mud due to outdoor field storage). This means that the price available for the fuel is low and the nearest suitable end users are a long way away. The poor market means that most growers then don't harvest their crop or spend any money on it. This causes a downward spiral. Low value crop means poor quality feedstock.

The availability of machinery suited to sub optimal land would assist the take up of SRC in the SW of the UK . For example the SRC project at Iggesund Cumbria.



- All necessary machinery for field production is available.
- Irrigation is not needed in Sweden.

- Fertilization is done directly after harvest or after 1 year’s growth with normal machinery, when the plants are not that tall so it is no problem.
- Sludge is spread before planting and directly after harvesting with conventional machinery and since sludge has a slow delivery of nutrients this can in many cases be sufficient for several years nutrient requirement
- Storage and processing are interesting fields to develop but mainly for areas where there is no tradition for burning wet chips (= 50% moisture content), i.e. condensation technology is not common.

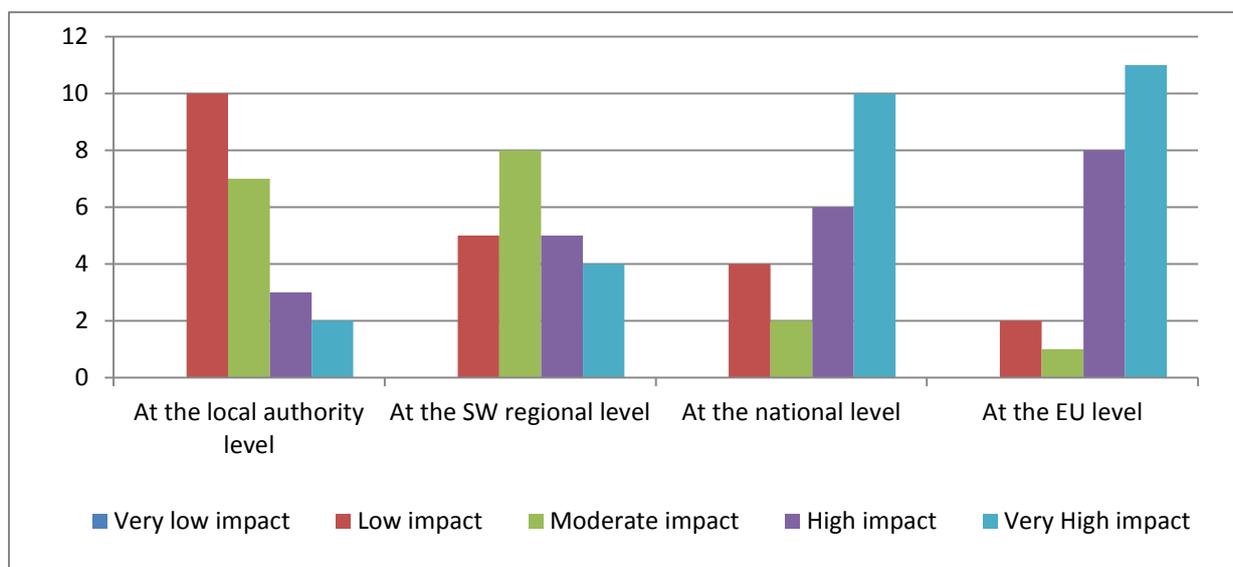


The machinery and tools commonly used by SRP growers are usually modifications of machines and tools conceived for different use. Most of the work is made by hand. A few retailers sell SRP dedicated machineries but their number is increasing, and some facilities are also imported from Germany.



There is no lack of availability for machinery/resources in regards to planting or harvesting. One of the biggest problems is logistic; so there is a lot of volume with low weight, especially if the material is still wet. Also the storing will be a problem if the material is wet; extra-drying is expensive and long transport will lower the price for the farmer. From technical point of view there are enough possibilities to dry technical, also to do transport, for example by truck-trailer.

4) SUITABILITY OF THE LEGISLATIVE FRAMEWORK



The modifications to the EU environmental regulations have been in progress for a long period. As a consequence of the uncertain situation, the stagnation of both investments and innovations have had a negative impact on the SRP sector. Many SME are waiting for significant developments in this field. It is hoped that CAP reform provides an opportunity to implement additional support measures for SRPs based on their biodiversity benefits and applications for water treatment and flood prevention. The protection against imported unsustainably harvested and managed biomass is inadequate.

The policy line should be stronger especially on national and EU levels. A clearer framework is considered as a fundamental basis for the development of the SRP sector.



In Spain, the current economic situation requires legislative intervention by both national and EU authorities.



Energy crops should be grown for local markets so local authorities are key to making future policies work. However, at the present time these crops do not figure in their plans due to higher quality wood fuel resources being available. There is no longer any regional Government in the SW. However Rural Development Plans in England are rolled out regionally so this could have some impact – however again SRPs did not figure at all in incentive schemes. Most legislation for energy crops has focussed on large plots grown for co-firing and dedicated biomass plants. This has meant that without these markets there has been low activity in the SW. Future national policy needs to encourage energy crop planting rather than having too many bureaucratic rules.

Over reliance on oversight of legislative framework by bodies with vested interests for example FSC certificating bodies that also advise industry how to "comply". Direct parallels can be drawn with tax avoidance and the role of big accountancy firms who have advised both government and industry.



The Swedish biomass market is totally dependent on the Swedish carbon dioxide tax system. The planting of willow on agricultural land depends totally on the regulations in CAP, mainly because if willow is not regarded as an agricultural crop, farmers will be unwilling to plant it. If the CAP restricts the agricultural production on individual farms, for example does not allow a large proportion of the farm to grow biomass, the land of poorer quality, on which willow is an economic alternative to grain or pasture, cannot be used efficiently.

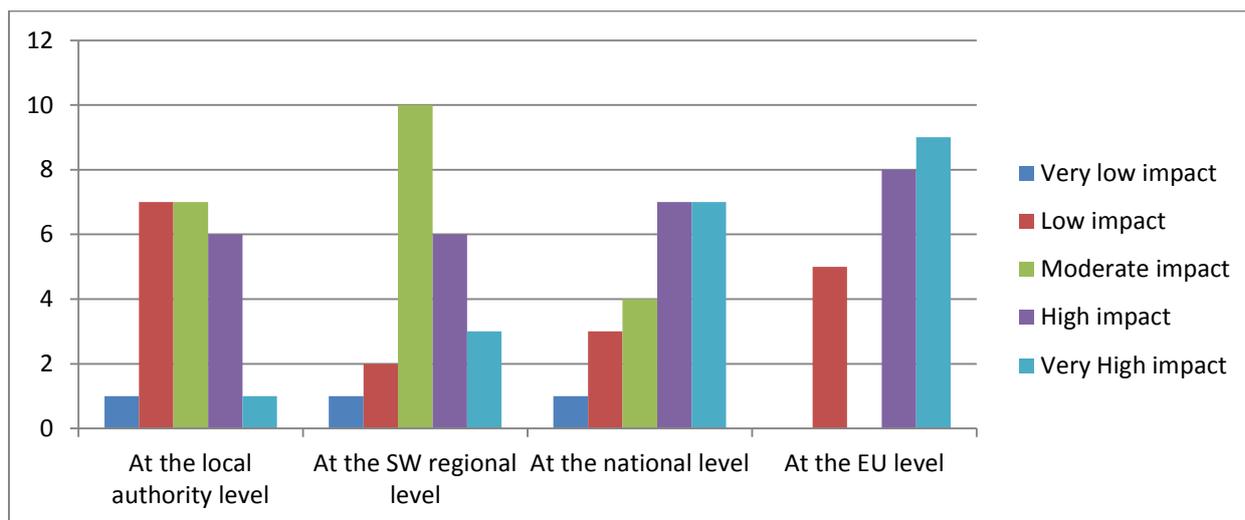


Unfortunately the present legislative framework clearly ignores SRP production as well as its meaning and influence on the energy industry. In Poland there is any tool of support for farmers.



The German legislative framework is clear, but there is nearly no support for this kind of wood production. Things like pending discussions about greening in the EU are hindering a lot of moving market-partners.

5) SUPPORT BY INSTITUTIONS



The SRP market could be considerably strengthened by institutions at different levels. In particular, the EU plays a key role in designing the most efficient tools of support. The incentives should be granted proportionally to biodiversity benefits and potential to reduce water pollution and alleviate flooding. The respect of clearly established sustainability criteria has to be ensured, setting up proper anti-dumping measures. Local institutions could facilitate the SRP sector uptake through informative actions, encouraging the share of know how or technological solutions on dedicated platforms, providing free pre-feasibility studies for farmers.



The main support to the Spain SRP sector should be given by EU. In particular, it is necessary to create a link between the EU support and the local authority for the maximisation of final result.



Not realistic or expect support from LAs. Regional support is invisible. National and EU are hoped.



Local: local authorities do not grant any support for willow production. However they can support local biomass production using this feedstock material to fuel municipal heating plants.

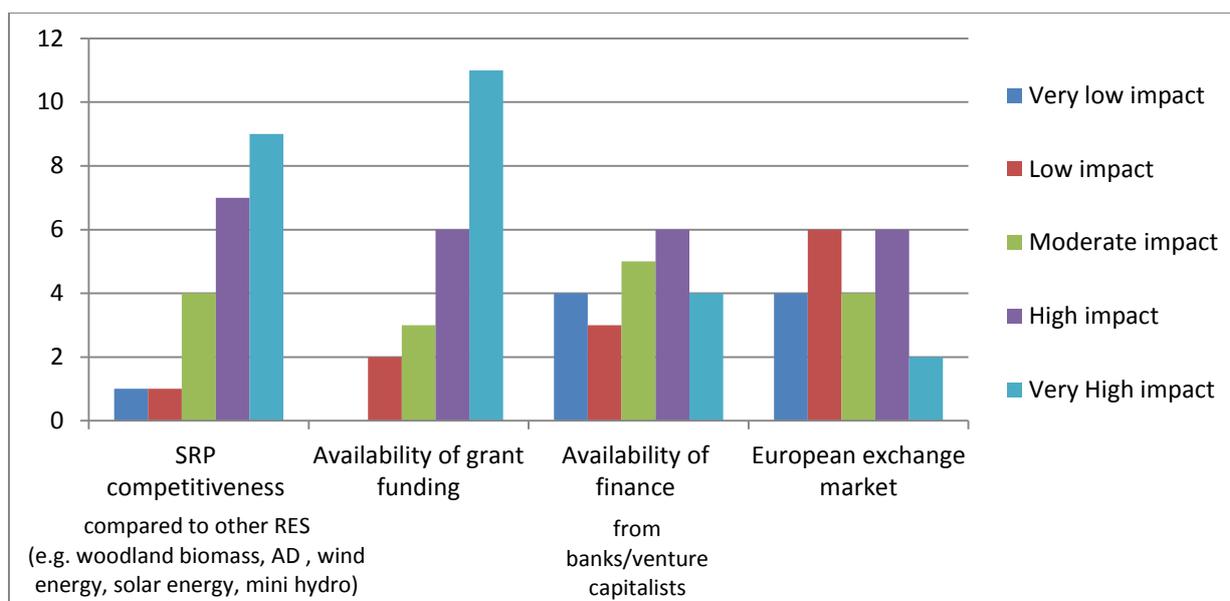
Regional: there is a risk that the allocation of grants for investments in agriculture, of which planting of willow is one - can depend on personal preferences among the responsible persons in the regional authority.

National: carbon dioxide taxation.

National and EU: Economic support for planting helps since it is a long term investment, in Sweden it takes until the second harvest (7-8 years) until breakeven of planting cost and income from biomass sales.

 Institutions do not pave the way to the SRP sector uptake. There’s no measure to encourage newcomers into this sector, farmers do not receive any informative support nor any guidance.

6) MARKET COMPETITIVENESS



Woody biomass from SRP has to compete with many other biomass products, both locally produced and imported. Waste wood and other biomass waste or by-products are increasing their competitiveness on national and international markets (North and South America, Africa and Asia). Furthermore, woody biomass produced by extra EU countries, is not subjected to sustainability criteria. America and potentially Africa are the main competitors.

European biomass producers, which have to comply with strict sustainability requirements and allow a true lowering of the GHG emissions, have to be supported by governmental institutions in order to prevent disloyal competition. The most interviewed SMEs recognise the availability of grant funding as a vital issue to keep the market competitiveness of the SRP sector. The grant funding should be available to all the EU 27 according to a homogeneous regulatory basis.

 African national governments are leasing existing natural forests to be cleared for teak plantations funded by European investors. The cleared biomass is then going to be imported to the UK. Because the underlying business model is based on the teak investment the African biomass is a low value by product that undermines home grown biomass as well as being unsustainable (it is being cropped on a one off basis).

 Bank financing is not a problem for Swedish agricultural producers with sound economy, while venture capitalists are not an option due to our long established agricultural community. However venture capitalists are essential for the large planting projects which we think will be developed especially in the eastern countries.

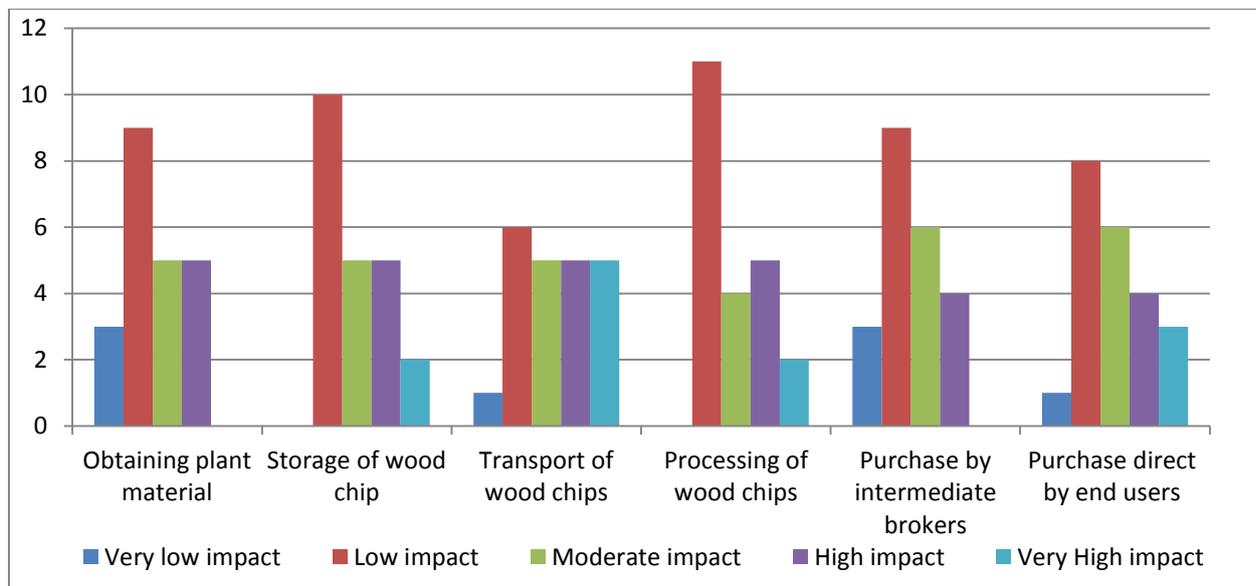
There is a big competition from imported wood biomass from Russia, Poland and the Baltic countries. Grants for machinery development have been available for 20 years in Sweden and technology is not limiting the Swedish biomass production anymore. Grants for research are available and not limiting.

 There is no financial support destined for this type of production. The initial investments and the standard production costs are covered by privates, or with the support of bank loans. Other renewable energy sources (e.g. woodland biomass, anaerobic digestion, wind energy, solar energy, and small scale hydro) have more possibilities to get grants from government than biomass. According to a report concerning the impact of wind energy on the Polish energy market published by Ernst & Young in cooperation with the Polish Wind Energy Association and the European Wind Energy Association, biomass is the cheapest RES. The cost of 1 MWh of bioenergy (including additional revenue from cogeneration and heat sales) is 396 zł. This is followed by onshore wind farms - 466 zł / MWh, agricultural biogas (including additional revenue from cogeneration and heat sales) - 470 zł / MWh, hydro energy - 484 zł / MWh. Offshore wind farm rate is estimated at 713 zł / MWh. The most expensive RES is photovoltaic, whose ratio can arrive at 1091 zł / MWh. Furthermore, the biomass environmental benefits are considered.

 No grant funding from the government. European Exchange market has no influence. SRP competitiveness compared to other renewable energy is high (biogas) because of land use impact.

 Pricing structures available from support initiatives have had a detrimental effect on the viability of SRC primarily because of high licencing costs. Modular licensing agreements should be sought with the main cultivar owners.

7) CO-ORDINATION OF THE DIFFERENT ACTORS IN THE SUPPLY CHAIN



 A proper promotional campaign, including both information and concrete demonstrations, should be designed and set up. This initiative should support the diffusion of local supply chains: from the crop cultivation to the final distribution of the chip, providing a direct benefit to rural regions.

 There is currently no SRP supply chain in the SW. Most of the ~150 hectares of SRC planted do not have a market. As most of the SRC is not grown and managed to best practice standards the quality is poor. As a result there has been little interest from woodfuel suppliers. A few new entrants are beginning to plant SRC willow for their own use. Any transport, storing and processing barriers compared to oil and gas put off potential end users. Coordination is not in itself a barrier at the moment.

 In Sweden there is a functioning biomass market on which willow biomass has to compete. The infrastructures for production, sale and transport of biomass are available.

 In Poland this kind of production is driven by individual units with no specific connections between them. The whole production from planting, through plant care, harvesting to storage and transport are organized by the grower with a support of the main purchaser, which are in our situation mainly CHPs. So the whole production chain is simple, and there are no interactions between different producers, so there is no coordination needed.

3. Some solutions proposed by the SMEs

The lack of private investments has to be counterbalanced by suitable incentive systems that ensure an efficient resources allocation. The policy side should be aware of the needs and potentialities of the biomass sector, in order to design an optimal regulatory framework that truly supports the biomass from SRP market. For this reason, policy makers should take into account inputs from both industrial and research environments. Furthermore, the cooperation and coordination of policy makers on European, national and local levels is here seen as fundamental. Industrial stakeholders also need to coordinate. The stronger the interconnections between industrial stakeholders are, the stronger the biomass supply chain is.

Policy makers can facilitate the harmonious development of this sector through the creation of a horizontal playing field, excluding any kind of favouritism. The possibility of accessing funds should be as uniform as possible across the EU and newcomers in the field should be encouraged. To this end, the financial tipping point needs to be found so that most farmers believe SRP is a financially viable crop option for their land.

These considerations have to be a starting point to develop a dedicated grant scheme for energy crops infrastructure and processing projects. Grants for initial infrastructure projects should be up to 75% of the capital costs. The initial phase of an SRP business is the most critical one (1-3 years) and the farmers need to be financially supported during this period. An efficient grant aid system can enable crop producers to multiply stocks with less financial risk and achieve greater economies of scale which ultimately lead to lower establishment costs. Nevertheless, a well-structured policy to stimulate energy crop growing needs to be implemented.

Land availability is not a limiting factor. SRP is a potential business opportunity for many regions including wide unexploited lands. The role played by research is rather very important: the identification of new species, advances in cloning and the optimization of adaptive capacity to climate will increase the size of the potential market of woody biomass from SRP. This process requires an expansion of the market demand to be started.

It's necessary to identify a market space for woody biomass from SRP, where this product is not subjected to an extremely aggressive competition from other types of biomass or other biofuels. Furthermore, the supply chain should take account of the sustainability of imported biomass vs. locally produced SRP thus ensuring a competitive advantage in the marketplace through:

- Financial incentives to use locally sourced sustainable fuels
- Regulations requiring fuels to be sourced from within a certain radius
- Financial incentives that reward the biodiversity benefits of SRPs

Practical advices

- Woody biomass produced by SRP has to be promoted as eco-friendly fuel through dedicated information campaigns. Local adviser, boiler attendants and heating suppliers should be involved.

- Demonstration schemes can provide a critical mass which legitimises investments in infrastructures and illustrates field to furnace best practice.
- Cooperation/long term contracts between the local heat plants and the growers of SRP biomass should be established, in order to concentrate the SRP production around and near the heat plants.
- Modular licensing agreements should be sought with the main cultivar owners.
- Waste products should be used as near to the source as possible.
- Installations for utilising waste wood should be constructed in all countries.
- Public sector organisations should be encouraged to look at their own estates for opportunities for growing energy crops for their own use.
- Energy managers of public sector buildings that already have biomass boilers or plan to install them should be encouraged to begin a dialogue with local farmers with a view to setting up a long term supply partnership.
- Individual companies should negotiate longer term contractual arrangements that are backed by solid support mechanisms so that forward pricing mechanisms can be put in place.
- National certification systems for stopping illegal propagation of crop varieties.
- National sector bodies need to be set up to fight for the interests of SRPs.
- The unfavourable economic conditions of the SRP sector may be alleviated through efficient carbon taxation.
- Full establishment grant for willow, poplar and eucalyptus.
- Bioenergy crop should be compulsory for greening policy in CAP reform.

Naional responsible bodies



Regional and National governments are responsible.



- Government Departments (DEFRA and DECC)
- NGO's (Environment Agency and Natural England)
- Local authorities (which could potentially commission local farmers to grow SRPs on their behalf)
- Renewable Energy Agencies (if they will receive more lobbying support in particular from Regen SW)



- Swedish Ministry of Agriculture and the Board of Agriculture. (the national agricultural authorities)
- Swedish Ministry of Environment and the Board of Environment.
- Swedish local/municipal heat plants owners.
- The Swedish regional authorities.
- The energy policies in the neighbouring countries (the Baltic States, Poland)
- The Ministries of agriculture in all countries where willow is grown as an SRP (certification systems) and especially in the former communist countries.



- The Ministry of Economy, Director of the Energy Department,
- The Ministry of Agriculture and Rural Development, Director of the Agricultural Markets Department,
- The Ministry of Environment,
- The President of Energy Regulatory Office.



Regional public institutions are responsible.



- DAFM
- Teagasc
- IFA.

4. Future perspectives seen by the SMEs

The environmental benefits produced by SRP are of big relevance in terms of:

- reduction of wind-erosion and improvement of ground water management
- sustainable energy production (heat and electricity)
- CO₂ emissions reduction

A growth of this sector seems necessary in order safeguard our environment. Despite the unfavourable financial situation, the European biomass industry has to follow a positive trend of growth to comply with the R&D objectives. As a consequence, all the SMEs have to calibrate their own biomass production capacity to satisfy the biomass demand. This process will be pushed by the GHG emission reduction target. Otherwise the EU will swap fossil fuel imports for biomass imports. Sustainability criteria have to be assumed as common ground for international trade.

Through appropriate measures, the area of woody biomass from SRP can overcome the current impasse and disclose its potential. A system of efficient incentives should boost the supply chain to until it would become completely independent.



Woody biomass from SRPs is currently competitive in the industrial sector. In the next future it will face the competition of second generation biofuels. SRPs is not likely to gain market space as fuel for households heating in the short term. The future perspectives are highly dependent on the policy choices determined by regional and national governments.



The growth of the biomass sector depends on the policy actions. The industry itself plays a key role in designing a bright future for SRP.



Expected investments in new biomass plants in the Baltic States and Poland will probably decrease the flow of biomass from these countries to Sweden in the next 5-10 years.

The licensed production and export of cuttings to EU and other European countries will likely keep on increase. Especially in the former communist countries, these businesses are facilitated by the large areas of agricultural land available, good agricultural infrastructure (large agricultural holdings) and a growing interest from international investors.

The future of the sector depends on the competition of other crops and the profit per ha. The long term perspectives are good but currently the market and hence the biomass price is decreasing due to the competition of waste products and imported biomass from Russia and the Baltic countries.



Considering the level of share and the technical potential of the renewable energy sources in Poland, one may say that the use of biomass for heating and co-combustion in large plants is going to rapidly increase. In fact this is a very cost-effective option. Also in the mid-term,

bioenergy production will play a crucial role in the development of renewable energy in Poland. It is expected that bioenergy will be the main contributor (more than wind and hydro) to the green electricity target in Poland. Furthermore, in the nearest future the regulatory framework is likely to be simplified, increasing the attractiveness of biogas investments. This is linked with the implementation of the governmental program "Innovative Energy Sector - Agricultural Energy", which aims to create on average one biogas plant using biomass of agricultural origin in every municipality by 2020. The share of biomass and biogas plants in the renewable energy sources market is capable of significant growth.

Anyhow, if important changes at regulatory level won't be made, the biomass sector won't develop, or it may even start drawing back. Even now there is a large number of farmers changing their production, leaving the wooden biomass production, into something different. There was only a slight boom a couple of years ago, once many CHPs producers decided to involve wooden biomass furnaces technology into their energy creation process, but unfortunately the demand on wooden biomass was smaller than the predictions.

 The demand of woody biomass will increase. Several local/regional scale projects will be developed. The perspective of this sector depends not only by the policy actions, but also by the adaptive capacity of the market actors.

 The sector in Ireland is in danger from various angles, primarily driven by access to finance and regulatory degradation because of the current economic conditions, if a number of large scale users of biomass can be supported under an RHI type of incentive as is proposed by DCENR then small local supply cooperatives will become prevalent, but this is dependent upon EU approval and economic conditions that may be alleviated through efficient carbon taxation

Annex I:

Obstacles and barriers for wooden biomass production from SRPs

Questionnaire

SME information:

Name of organisation	
Country	
Year company began trading	
Number of employees	
Short description of business activity	

This questionnaire is designed to help the ROKWOOD consortium answer the following question: What are the main obstacles and barriers hindering the utilisation of wooden biomass from short rotation plantations (SRP)?

Please note SRP includes woody crops grown in short rotations under 10 years and includes short rotation coppice (SRC) e.g. willow and short rotation forestry (SRF) e.g. single stem poplar and eucalyptus. The ROKWOOD project does not consider herbaceous energy crops such as miscanthus although we understand that many of the obstacles and barriers will be the same.

Below is a list of factors which impact on the utilisation of wooden biomass from SRP: please rank each main barrier by putting a score inside the box on the left hand side. **Please rank the factors according to the following scoring system:**



- 1 Factor is of very high importance
- 2 Factor is of high importance
- 3 Factor is of moderate importance
- 4 Factor is of low importance
- 5 Factor is of very low importance

For each individual sub topic click the red box “Choose one option” and choose one of the following descriptions from the drop down menu:

- Very high impact
- High impact
- Moderate impact
- Low impact
- Very low impact

Please provide additional information to explain your reasons .

Rank AVAILABILITY/OFFER OF SUITABLE PLANTING MATERIAL

- 1. Willow cuttings/rods Choose one option
- 2. Poplar cuttings/rods Choose one option
- 3. Eucalyptus plugs Choose one option

Further details...

Rank ENVIRONMENTAL CONDITIONS SUCH AS:

- 1. Soil fertility Choose one option
- 2. Climatic conditions Choose one option
- 3. Water availability Choose one option

- 4. Weed control Choose one option
- 5. Land preparation Choose one option
- 6. Pests and diseases Choose one option

Further details...

Rank

AVAILABILITY OF MACHINERY FOR:

- 1. Planting Choose one option
- 2. Year 1 cut back (SRC) Choose one option
- 3. Harvesting Choose one option
- 4. Irrigation Choose one option
- 5. Fertilizing systems Choose one option
- 6. Weed control Choose one option
- 7. Storage and processing of wood chip Choose one option
- 8. Transport and delivery of wood chip Choose one option

Further details...

Rank

SUITABILITY OF THE LEGISLATIVE FRAMEWORK:

- 1. At the local authority level Choose one option
- 2. At the SW regional level Choose one option
- 3. At the national level Choose one option
- 4. At the EU level Choose one option

Further details...

Rank

SUPPORT BY INSTITUTIONAL BODIES

- 1. At the local authority level Choose one option
- 2. At the SW regional level e.g. Rural Focus, Silvanus Trust etc Choose one option
- 3. At the national level e.g. DEFRA, DECC, Natural England, Environment Agency etc Choose one option
- 4. At the EU level Choose one option

Further details...

Rank

MARKET COMPETITIVENESS

- 1. SRP competitiveness compared to other renewable energy sources (e.g. woodland biomass, anaerobic digestion , wind energy, solar energy, small scale hydro , Choose one option
- 2. Availability of grant funding Choose one option
- 3. Availability of finance from banks/venture capitalists Choose one option
- 4. European exchange market Choose one option

Further details...

Rank

COORDINATION OF THE DIFFERENT ACTORS IN THE SUPPLY CHAIN

- 1. Obtaining plant material Choose one option
- 2. Storage of wood chip Choose one option
- 3. Transport of wood chips Choose one option
- 4. Processing of wood chips Choose one option
- 5. Purchase by intermediate brokers Choose one option
- 6. Purchase direct by end users Choose one option

Further details...



Rank

ARE THERE ANY OTHER ISSUES ?

Further details...

Which solutions could be found to overcome these obstacles hindering the utilisation of wooden biomass from SRP?

Who are the key actors in solving the above problems?

Which are the future perspectives of the sector?

Many thanks for your contribution in identifying the main obstacles and barriers hindering the utilisation of wooden biomass from SRP!