

eip-agri  
AGRICULTURE & INNOVATION



# **EIP-AGRI Workshop**

## **Building new biomass supply chains for the bio-based economy**

FINAL REPORT  
27-28 MAY 2015



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# 1. Introduction

The European Innovation Partnership for Agricultural Productivity and Sustainability (EIP-AGRI) aims to stimulate innovation and contribute to the competitiveness of European agriculture.

Bio-based products can have a lower environmental and climate footprint than products based on non-renewable raw materials. There is a high potential for the production and use of renewable raw materials for industrial applications, notably the use of lignocellulose from agricultural and forestry residues, industrial crops, by-products/co-products and waste. New low-carbon, resource-efficient and sustainable value chains can be set up using this agricultural and forestry biomass to produce biochemicals, biomaterials and bioenergy. These chains will contribute to the diversification of the rural economy and the reinforcement of the industrial base. It will create rural growth and employment, and will help to meet energy and climate policy targets for 2030.

The EIP-AGRI held a workshop 'Building new biomass supply chains for the bio-based economy' on 27 and 28 May 2015 in Sardinia, Italy, with over 80 relevant stakeholders. The overall objective of the workshop was to help set up and foster cooperation mechanisms between agriculture/forestry and industry to guarantee:

- ▶ A steady and reliable supply of renewable raw materials for the industry without compromising sustainability
- ▶ A fair income for the farmer and forest holders.

The specific objectives were:

- ▶ To engage relevant actors including farmers, forest holders, cooperatives, industries, national/regional public authorities, advisers and innovation support services
- ▶ To identify and address technical, economic, regulatory and social barriers for the setting-up of new biomass supply chains
- ▶ To ensure the sustainability of biomass supply chains

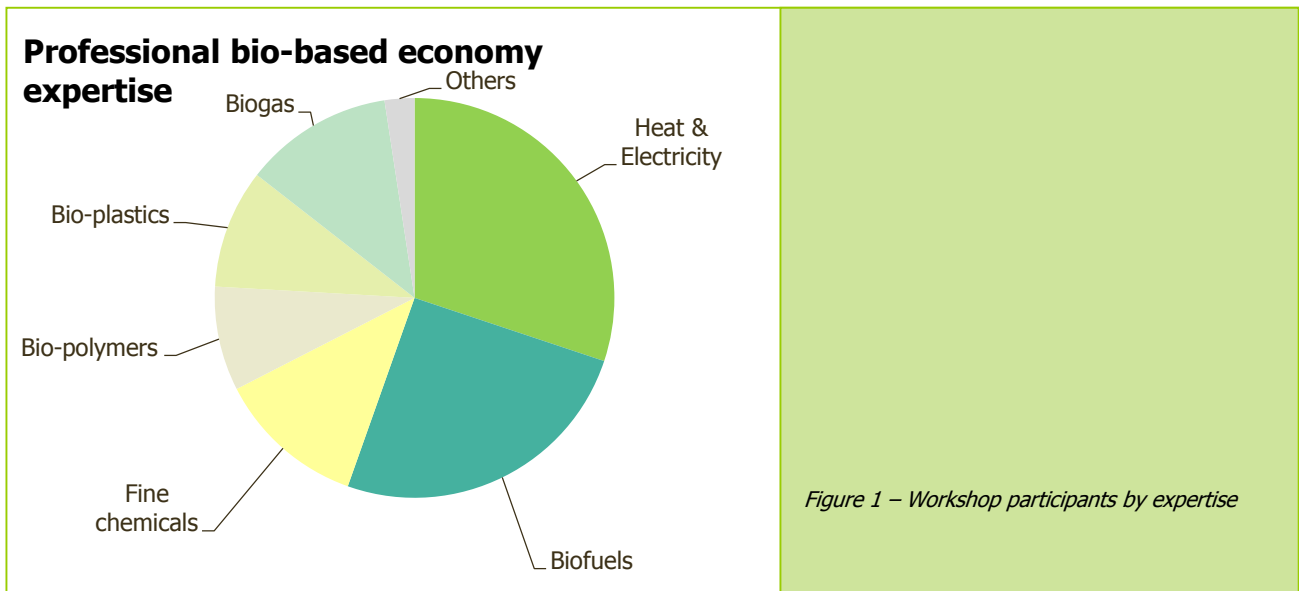
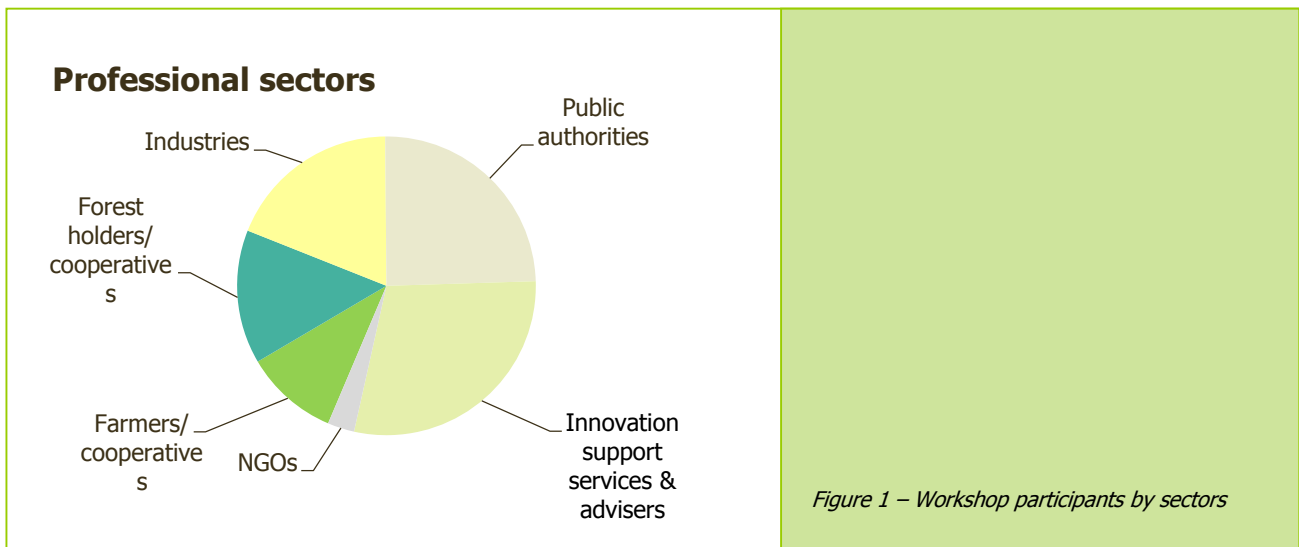
This two-day workshop combined interactive break-out and plenary sessions and a field visit. The plenary sessions and the field visit presented case studies and initiatives as food for thought for the interactive sessions. The objective of the interactive sessions was firstly to identify challenges and driving forces for the setting-up of new biomass supply chains in Europe and secondly to propose solutions and tools to overcome the identified barriers.

This report presents the main outcome of the workshop which includes the results of a questionnaire sent to participants before the event and a summary of the discussions which took place during the interactive and plenary sessions.

## 2. Participants

The workshop participants came from 23 Member States and included farmers, forest holders, cooperatives, national/regional public authorities, advisers and innovation support services (i.e. clusters, researchers), and representatives from different industry sectors. As far as possible, participants with practical experience were invited. The participants list can be downloaded [here](#).

The participants came from a number of professional sectors and had different bio-based economy expertise, as illustrated in figure 1 below.



The dominant professional expertise represented by the participants was in bioenergy (i.e. heat and power, biogas and biofuels), which reflects the current mature market share of this sector. However, the participants also show know-how on other bio-based products.

### 3. Questionnaire

Before the workshop, the participants were requested to fill in an online questionnaire. This allowed the participants to give their first views on the topics which were going to be addressed during the first day of the workshop: the challenges and driving forces for biomass value development. The questionnaire was filled in by 69 participants, around 80% of the whole audience. It gave an interesting picture of the participants' general understanding of the subject and was used as a basis to stimulate further discussion in the first interactive session. The second part of the questionnaire took the analysis further tackling the different lignocellulosic biomass categories: agricultural residues/processing by-products, industrial crops, and forestry residues/processing co-products. The purpose of this second part was mainly to understand what kind of challenges stakeholders are facing.

#### Main barriers

##### Agricultural residues/processing co-products

According to the questionnaire, most of the participants' experience linked to agricultural residues is on straws (wheat and others), stover (corn and others), and cobs. Some minor experience was shown on processing co-products.

The table below summarises the results from the questionnaire on the existing barriers related to agricultural residues/processing co-products which was filled in by participants with experience in this area. The main barriers were economic challenges due to price fluctuations and competition from other uses of the residues. Next came cultural issues, for example due to the lack of communication between industries and the primary sector and the skepticism of farming communities about collecting residues.

Barriers related to agricultural residues/processing co-products				
	Financial/economic barriers	Cultural/structural barriers	Regulatory/policy barriers	Technical/Know-how barriers
<b>Number of YES/NO (it is/is not a significant barrier)</b>	22/2	20/4	19/5	16/8
<b>% of YES</b>	90%	85%	80%	65%
<b>Specific types of barriers (% of answers out of total YES)</b>	<ul style="list-style-type: none"> <li>- Price and price fluctuation of agricultural residues (70%)</li> <li>- Competition with existing uses (animal bedding, mulching, heat &amp; power generation) (55%)</li> <li>- Lack of access to funding such as loans or grants (45%)</li> </ul>	<ul style="list-style-type: none"> <li>- Lack of communication between industry and the agricultural sector (70%)</li> <li>- Skepticism and resistance from local farming communities (65%)</li> <li>- Structure of farms, e.g. size, parcelling out (60%)</li> </ul>	<ul style="list-style-type: none"> <li>- Barriers coming from the existing regulation and policies (55%)</li> <li>- Complexity of traceability and certification schemes for sustainability (40%)</li> <li>- Inappropriate incentives (5%)</li> <li>- Unfavorable context for investors (10%)</li> </ul>	<ul style="list-style-type: none"> <li>- Lack of technologies/equipment for harvesting, collection, transportation, storage, logistics of agricultural residues and processing co-products (90%)</li> <li>- Lack of know-how, competences and experience of supply chain players (80%)</li> <li>- Reliability of agricultural residues and processing co-products suppliers, e.g. availability, seasonality, quality (60%)</li> </ul>

## Industrial crops

The workshop applied the following definition for 'Industrial crops': dedicated crops and multipurpose crops used for industrial applications such as bioenergy (i.e. biofuels, heat & power) or/and bio-based products (e.g. biochemical and biomaterials). According to the questionnaire, the participants mainly had professional experience on cellulosic perennial crops (e.g. miscanthus), oilseeds and sugar/starch crops. A number of participants also had experience on some novel crops, especially for crops growing on marginal lands such as thistle.

The table below summarises the results from the questionnaire on the existing barriers related to industrial crops. Economic barriers were seen as significant because of price fluctuations, as was the lack of long-term purchase agreements. Cultural challenges were also highlighted because of farmers' skepticism and a lack of communication between the industry and the primary sector. The results show that regulatory barriers are more prominent for industrial crops than for agriculture residues, particularly because of the 'biomass versus food' competition for land use. Less concern was given to technical challenges, even if a long list of technical barriers were listed including the productivity of industrial crops yield and the necessary know-how to develop innovative value chains.

Barriers related to industrial crops				
	Financial/economic barriers	Cultural/structural barriers	Regulatory/policy barriers	Technical/Know-how barriers
<b>Number of YES/NO (it is/is not a significant barrier)</b>	18/2	18/2	17/3	12/8
<b>% of YES</b>	90%	90%	85%	60%
<b>Specific types of barriers (% of answers out of total YES)</b>	<ul style="list-style-type: none"> <li>- Price and price fluctuation of industrial crops (85%)</li> <li>- Lack of long-term contracts for biomass (80%)</li> <li>- High investments at plantation set-up (50%)</li> </ul>	<ul style="list-style-type: none"> <li>- Lack of communication between the industry and the agricultural sector (85%)</li> <li>- Scepticism and resistance from local farming communities (75%)</li> <li>- Reduction of food production in favour of industrial crops (70%)</li> </ul>	<ul style="list-style-type: none"> <li>- Land use competition for the production of food vs bio-products and bio-energy (80%)</li> <li>- Barriers coming from the existing regulation and policies (55%)</li> <li>- Lack of knowledge at European Commission and NGO level regarding sustainability issues in agriculture (5%)</li> <li>- ILUC GHG emission not taken into account leading to inefficient use of industrial crops (5%)</li> <li>- Unstable regulatory framework (10%)</li> </ul>	<ul style="list-style-type: none"> <li>- Lack of technologies/equipment for harvesting, collection, transportation, storage, logistics of biomass (85%)</li> <li>- Lack of know-how, competences and experience of supply chain players (75%)</li> <li>- Reliability of suppliers, e.g. availability, seasonality, quality (75%)</li> <li>- Lack of proven know-how on novel farming systems. e.g. agro-forestry, intercropping and industrial crops, e.g. annual crops, perennials (75%)</li> <li>- Uncertain productivity (ton/ha) because of agricultural risk (e.g. pests, diseases, weather conditions (75%)</li> </ul>

## Forestry residues and processing co-products

The main professional experience of the participants related to forestry residues is with slashes and small trees from thinning and clearings, slashes from final fellings and un-merchantable wood.

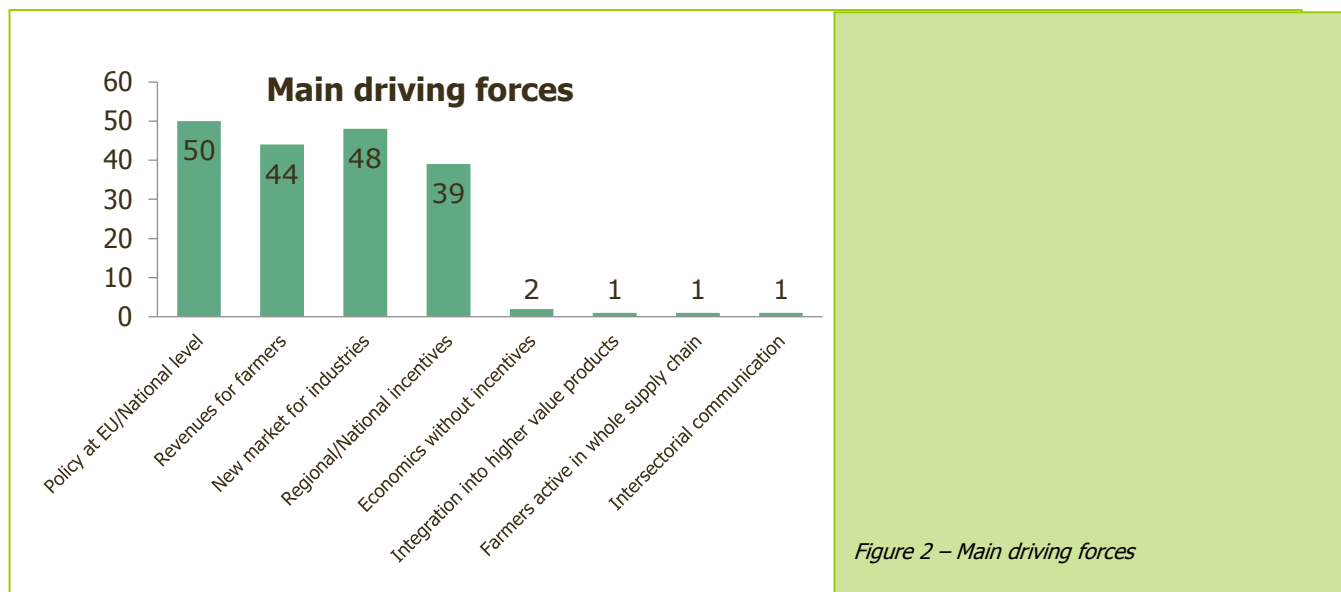
The table below summarises the results from the questionnaire on barriers related to forestry residues and processing co-products. The top barriers were seen as economic and cultural. Woody biomass and forestry residues tend to be expensive in Europe and the competition from imported biomass is high. Existing regulations and policies were also recognised as significant barriers. The structure of forest ownership (public or private) i.e. parcelling out, was seen as the main structural barrier. As was the case in for the agricultural sector above, forestry operators also underlined a lack of communication between industries and the primary sector. Participants acknowledged some technical barriers for using forestry residues and processing co-products even though technologies and know-how are largely available, demonstrating that the sector has reached a certain level of maturity in Europe.

<b>Barriers related to forestry residues and processing co-products</b>				
	<b>Financial/economic barriers</b>	<b>Cultural/structural barriers</b>	<b>Regulatory/policy barriers</b>	<b>Technical/Know-how barriers</b>
<b>Number of YES/NO (it is/is not a significant barrier)</b>	19/5	19/5	17/7	10/14
<b>% of YES</b>	80%	80%	70%	40%
<b>Specific types of barriers (% of answers out of total YES)</b>	<ul style="list-style-type: none"> <li>- High costs of forestry residues and processing co-products (70%)</li> <li>- Lack of long-term contracts for biomass (60%)</li> <li>- Low prices and large availability of imported woody biomass with disadvantage for EU production (50%)</li> <li>- Lack of public regional, national and European funding support (50%)</li> </ul>	<ul style="list-style-type: none"> <li>- Structure of forest ownership (private vs public, large vs small surface, parcelling out (75%)</li> <li>- Lack of communication between the industry and the agricultural sector (65%)</li> <li>- Lack of organisation of forest holders in cooperatives (50%)</li> </ul>	<ul style="list-style-type: none"> <li>- Barriers coming from the existing regulation and policies (80%)</li> <li>- Regulations shall take into account the fact that forestry residues have peculiar specifications, e.g. high ash content (10%)</li> <li>- Unstable regulatory framework, worrying the investors about possible changes in the forest policy, especially for energy production (5%)</li> <li>- Lack of homogenous sustainability criteria for biofuel production and energy production (5%)</li> </ul>	<ul style="list-style-type: none"> <li>- Lack of technologies/equipment for harvesting, collection, transportation, storage, logistics of forestry residues (80%)</li> <li>- Lack of know-how, competences and experience of supply chain players (70%)</li> <li>- Reliability of forestry residues and processing co-products suppliers, e.g. availability, seasonality, quality (60%)</li> </ul>



## Main driving forces

In the questionnaire the participants were required to indicate the most relevant driving forces for developing new biomass supply chains for the bio-based economy.



According to the questionnaire, policy at European Union (EU) and national level was recognised as the main driving force (75%), in particular regarding energy and climate targets, circular economy, rural development and industrial renaissance. For the primary sector, the increase and diversification of revenues for farmers, forest holders and cooperatives was underlined as key, while for the industrial sector it was access to new markets and the development of new business models. As well as these main four driving forces, other driving forces were also suggested: bio-based materials which are economically profitable compared to fossil alternatives with no need for incentives, development of higher value products (other than biofuels or bioenergy applications), a stronger involvement of farmers in the whole biomass value chain and better communication between the various different actors in the value chain.

## Experience and market understanding

The results of the questionnaire on experience and market understanding related to biomass production and availability can be found in the table below. Concerning agricultural residues, participants identified the greatest potential in Europe to be cereal straws, and also mentioned other agricultural residues and processing co-products with potential. The results of the questionnaire show that the current EU market for residues is of medium size and has a potential of more than 100 million tons; the average price of residues seems in line with industry needs (50-100 €/ton).

The questionnaire shows that industrial crops seem to be well known, especially first generation feedstock such as sugar/starch crops and oilseeds and lignocellulosic feedstock, in particular perennial industrial crops such as miscanthus. The results of the questionnaire show that the market in Europe is of medium size with a potential between 50 and 100 million tons (2-4 million hectares). According to the workshop participants, the average price of industrial crops is greater than 100 €/ton with more challenges for industrial applications compared to agricultural residues.

According to the results of the questionnaire, forestry residues are largely available in Europe. The main sub-categories are slashes, un-merchantable wood and processing co-products. With a potential of more than 100 million tons, the average price of forestry residues make them very appealing for bio-based products (< 50 €/ton).

As for the other biomass categories, the level of knowledge regarding indirect land use change (ILUC) and sustainability issues is high. Wood residues can definitely be sustainable according to the participants.

The questionnaire shows that the participants have a good experience and knowledge on the three biomass categories, which is in line with existing market analyses. The average price, as well as the potential and the availability of various types of biomass in Europe is clear for most of the participants.

Experience and market understanding: biomass production and availability in Europe								
	Feedstock experience	Feedstock available EU	Market size EU	Average price	Profitability	Potential	Availability in EU	Sustainability/Certification
<b>Agricultural residues</b>	Straw, stover, processing co-products	Wheat straw (90%), other straws, stover, cobs, co-products	Medium	50 – 100 €	Medium	High	> 100 million tons	> Good knowledge of ILUC discussion > Medium experience with sustainability certification schemes > High sustainability for agricultural residues.
<b>Industrial crops</b>	Sugar/starch crops, oilseeds, perennial cellulosic	Sugar/starch crops, oilseeds, perennial cellulosic, annual cellulosic	Medium-High	> 150 €	Medium	Medium-High	50-100 million tons	> Medium knowledge of ILUC discussion > Medium/high experience with sustainability certification schemes > Medium/high sustainability for industrial crops.
<b>Forestry residues</b>	Slash and small trees from thinning and clearings, slash from final fellings, un-merchantable wood	Slash and small trees from thinning and clearings, slash from final fellings, un-merchantable wood and processing co-products	High	< 50 €	Medium	Medium-High	> 100 million tons	> Medium knowledge of ILUC discussion > Medium/high experience with sustainability certification schemes > High sustainability for forestry residues.

The results of the questionnaire on experience and market understanding related to bioenergy and bio-based products can be found in the table below. Among the workshop participants who filled in the questionnaire, coming from a range of different Member States, most of them have shown a good understanding of the bioenergy sector (i.e. biofuels, heat & power and biogas), meaning that the values given in the questionnaire correspond to the market price today. For biofuels, the participants did not consider that second generation products should have a higher market price compared to first generation products.

On the contrary, the participants had very limited knowledge regarding the market price of higher value products, such as bioplastics, bio-polymers and fine chemicals. There are a few exceptions in Italy and the Netherlands, where industries have direct experience with such products.

Experience and market understanding: bioenergy and bio-based products						
Country	Bioplastic (€/ton)	Biopolymer (€/ton)	Fine chemicals (€/ton)	Biofuels (€/ton)	Heat & Power (€/MWh)	Biogas (€/MWh)
Austria				1,000-2,500	50-100	100-250
Belgium				500-1,000	100-250	
Croatia						
Czech Republic	2,500-5,000			500-1,000	100-250	
Denmark				500-1,000	< 50	100-250
Estonia					50-100	
Finland				500-1,000	< 50	50-100
France						
Germany				1,000-2,500	50-100	50-100
Hungary				500-1,000	50-100	
Ireland				500-1,000	100-250	100-250
Italy	1,000-2,500			500-1,000	100-250	100-250
Latvia					100-250	< 50
Lithuania				< 500	< 50	100-250
Netherlands	1,000-2,500	1,000-2,500		500-1,000		
Poland						
Romania						
Slovakia				500-1,000	50-100	< 50
Slovenia				< 500	< 50	
Spain					< 50	
Sweden				500-1,000	50-100	50-100

## 4. Workshop programme

### Day 1 – Wednesday, 27 May 2015

**08:30 – 09:00 Registration**

**09:00 – 09:20** Welcome and opening address

*Mr Rob Peters – Directorate-General Agriculture and Rural Development*

**09:20 – 09:50** Setting the Scene

Keynote address on 'Building of new biomass supply chains for the bio-based economy'

*Mr Federico Maria Grati*

**09:50 – 10:30** Presenting business cases

- SÖDRA, based on forestry *Mr Christer Segerstéen*
- NOVAMONT/COLDIRETTI based on industrial crops *Ms Catia Bastioli and Mr Battista Cualbu*

**10:30 – 10:35** Introducing interactive session 1

**10:35 – 11:00 Coffee break**

**11:00 – 12:15** Interactive session 1:

Addressing driving forces and barriers

**12:15 – 12:20** Address from Regional Minister for Agriculture in Sardinia *Dr. Elisabetta Falchi*

**12:20 – 12:50** Reporting back to the plenary and discussions

**12:50 – 13:00** Closing morning session and announcing practicalities

**13:00 – 14:00 Lunch**

**14:00 – 18:00 Field visit:** Showing a concrete business case of new biomass supply chain and conversion in the **Matrica plant** in Porto Torres

**19:30 – 22:00** Networking dinner

## Day 2 – Thursday, 28 May 2015

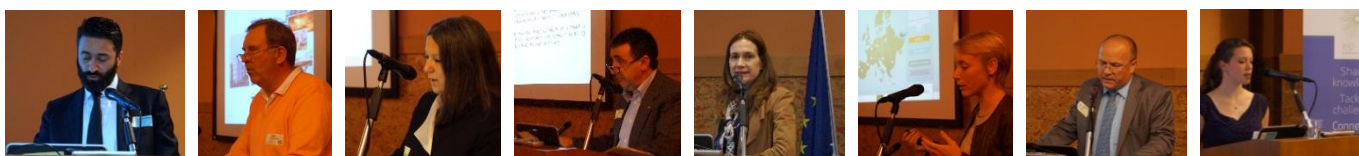
- 09:00 – 09:10** Opening and introducing Day 2
- 09:10 – 09:40** Working further on outcomes of interactive session 1
- 09:40 – 10:40** Presenting support tools
- EIP-AGRI (*Rural development and H2020*) *Ms Virginie Rimbert*
  - National Policy Strategy on bioeconomy in Germany and its implementation *Mr Hans-Jürgen Froese*
  - RMT Biomasse et Territoires: French national network for technical support for building biomass supply chains *Ms Laurie Ducatillon*
- 10:40 – 10:45** Introducing interactive session 2
- 10:45 – 11:00** **Coffee Break**
- 11:00 – 12:10** Interactive session 2:  
Addressing solutions and tools
- 12:10 – 12:45** Reporting back to the plenary and discussions
- 12:45 – 13:00** Wrapping up and closing  
*Mr Rob Peters – Directorate-General Agriculture and Rural Development*
- 13:00** **Lunch**

## 5. Plenary sessions

### Presentations

The first day opened with a keynote presentation on bio-based value chains to set the scene. Two case studies were then presented, one about a forestry-based bio-refinery in Sweden and the other about an agriculture-based bio-refinery in Italy (northern Sardinia). These case studies demonstrated that the development of new bio-based value chains can be led by either primary producers or by industry.

- ▶ **Bio-based economy, setting the scene** - Federico Maria Grati, Bioenergy Expert
- ▶ **Södra case study based on forestry** – initiative from primary producers - Christer Segersteen, Senior Advisor
- ▶ **Novamont/Coldiretti case study, based on a thistle supply chain integrated in the territory – industrial led initiative** - Catia Bastioli CEO Novamont and Battista Cualbu, President of Coldiretti Sardinia - For Novamont's presentation, please contact **Novamont**
- ▶ **Regional Minister for Agriculture in Sardinia** - During the plenary session on the first day, Dr. Elisabetta Falchi, Regional Minister for Agriculture in Sardinia greeted the workshop participants.
- ▶ **EIP-AGRI, Rural Development and Horizon 2020** - Virginie Rimbart, European Commission, Directorate General for Agriculture and Rural Development
- ▶ **German Ministry of Agriculture, National policy strategy on bioeconomy and its implementation** - Hans Jurgen Froese, Head of division Bioeconomy and industrial use of biomass
- ▶ **RMT Biomasse, French national network for technological support for building biomass supply chains** - Laurine Ducatillon, agricultural chamber Seine-Maritime



### Plenary discussions

Presentations and outcomes from the interactive break-out sessions were discussed in the plenary room with a proactive participation from the audience.

After the first interactive session on challenges and driving forces, a rapporteur from each group presented the results of their discussion to the plenary. These presentations were discussed, with a specific emphasis on sustainability, which is both a transversal driving force and a challenge for guaranteeing long-term biomass strategies. Participants have a clear idea about biomass sustainability, sustainability certification, ILUC and greenhouse gas saving. They recognised that the sustainability of biomass value chains should be guaranteed (via certification processes for example) but at the same time, the definition of sustainable biomass value chains should not lead to a situation where farmers and industries encounter unmanageable obstacles to develop supply chains. Sustainability criteria have already been set out for biofuels by the EU (Renewable Energy Directive) but it is uncertain whether these criteria will also apply to other bio-based products in the future.

The following topics, which were validated during the discussion in the plenary session on the first day, were then addressed on the second day of the workshop:

1. Which solutions and tools are needed to increase common understanding and trust between actors (farmers, foresters, industry) to build biomass supply chains?
2. Which solutions and tools are needed to create concrete forms of cooperation between the primary sector and industry? Possibly using existing initiatives, policies and funding opportunities.
3. Which solutions and tools are needed to foster logistics (collection, pre-treatment such as densification, transport, storage) from the field to the industry gate?

DG AGRI explained that the activities of the EIP-AGRI aim to support concrete actions and promote solutions that can be implemented in practice in the short to medium term in the agricultural sector. Therefore, the barriers identified on the first day which were related to policy and market aspects were useful to draw a full picture but were not retained as a topic for the interactive break-out sessions on the second day.

Following the second round of interactive sessions on the second day, the plenary discussion also focused on solutions and actions. All participants had the chance to comment on the outcomes of the interactive sessions.



## Workshop evaluation

The evaluation of the workshop (via a live polling system) was also carried out in the plenary. The results showed that the participants were generally satisfied about the workshop and they feel that that this event:

- helped in making contacts with other actors involved in the bio-based economy
- contributed to identify and address the barriers for setting-up new biomass supply chains
- contributed to foster the cooperation mechanisms between agriculture/forestry and industry
- provided useful information for developing future activities

All participants were encouraged to disseminate the results (especially the solutions and tools identified on the second day) and to act to implement them.

## 6. Interactive break-out sessions

### Challenges and driving forces

On the first and second day, the workshop held interactive break-out sessions where the workshop participants split into three groups to discuss the issues in further detail. Each group focussed on a specific issue and included representatives of the different professional sectors. The interactive sessions ran for an hour and a quarter. Each group was organised into sub-groups of 8-10 people so that every person could contribute to the discussion. Each sub-group nominated a chair person to lead the discussions and present the outcomes to the rest of the group. One rapporteur per break-out group then presented the main points to the plenary. Here below is the summary of the outcomes of the discussion, based on the material produced used during the sessions and notes taken by the rapporteurs and facilitators.

The interactive break-out session on the first day focussed on the challenges and driving forces for setting up biomass supply chains. There was a group for each of the biomass categories listed in the questionnaire: agricultural residues/processing co-products; industrial crops; and forestry residues/processing co-products. The results of the questionnaire were a starting point for discussion. The participants discussed the challenges and driving forces highlighted in the questionnaire and suggested some additional ones. The full list of challenges and driving forces agreed by each of the break-out groups is attached in [annex 1](#).

#### Agricultural residues/processing co-products

This group identified challenges at different levels of the value chain, starting first with the primary sector. Biomass use for producing biofuels and biochemicals is a relatively new business and it faces **resistance from farmers**. The group agreed that this attitude stems from a lack of technical and non-technical know-how, concern about **soil depletion** due to residues collection and problems **accessing funding opportunities**. The different steps in the biomass supply chain are complex, and **logistics, organisation and management** were recognised as main challenges. The **lack of communication and cooperation between the different actors of the value-chain**, and the **lack of information regarding successful business cases** make biomass value chain projects risky and uncertain. For these reasons it is difficult to find tailor-made solutions for industry. The group also decided that **policy coherence and stability** are critical for investors supporting projects based on biomass. The **lack of market pull incentives** such as public procurement was acknowledged as a barrier. The **policy framework** at European, national and regional levels does not currently offer coherent enough support for the integration of the bio-based economy (as biofuels and bioenergy are supported while biochemical and biomaterials are not) into the more general bioeconomy and even broader circular economy.

The group decided on a number of driving forces which can encourage and support the development of value chains based on agricultural residues. **The awareness of end-users about the benefits of bio-based products** and the awareness of land managers about the opportunities, creates a common vision from all value chain stakeholders, from the primary sector, to industry and to final users. The participants advocated that long-term economic profitability of the value chains based on agricultural residues needs to be addressed. They felt it is also necessary to look at **successful existing examples and share information on the best practices put in place**. The participants also pointed out that closing loops for biomass production and the use and re-use of by-products and co-products is an essential part of the **circular economy**. In addition, **cross sectorial innovation, research and development (R&D), regional development policy and financial instruments** help in the implementation of innovative technologies, the promotion of knowledge-sharing, the development of pilot projects to put residual biomass to use and generally increase the productivity of the value chain..

#### Industrial crops

First of all, according to the group participants, the term 'industrial crops' is not ideal and can cause confusion since it has a negative connotation associated to Genetically Modified Organisms (GMOs). However in the context of this workshop, industrial crops refers to dedicated or multipurpose crops (as described above). The group recognised that these crops face a **lack of market pull** and **few opportunities for off-take agreements**. The participants highlighted **limited R&D support** for the development of value-chains based on industrial crops. There is also a



**lack of knowledge transfer and sharing between the different stakeholders** in the value chain due to cultural barriers, different mind-sets and lack of trust. Moreover, the participants pointed out that policy-makers and the general public have access to very little information on the potential of new value-chains based on industrial crops. Policy does not help in defining what, how and where industrial crops could be cultivated. The competition of land-use between food and non-food products guides the political debate towards the use of marginal lands for non-food crops without clear specifications and localisation. The group also highlighted several technical challenges especially regarding **supply chain logistics** to increase flexibility (e.g. field storage, densification, moisture content control, handling and transportation) and **agronomic practices**.

The driving forces identified by the group to develop value chains based on industrial crops were **income increases for farmers**. In order to achieve this, good and stable **agronomic performances of industrial crops** in terms of yield need to be promoted. The **creation of jobs** especially in less developed areas of Europe and **policies supporting a low-carbon and sustainable economy** are also driving forces. The Common Agricultural Policy, notably via its support of value chains based on local biomass, is also a driving force. Participants highlighted that clusters and R&D help to transfer information directly and indirectly among various stakeholders and this can promote the growing of industrial crops on a sufficient scale.

### Forestry residues/processing co-products

According to the participants, there is a **lack of demand for forestry products**, even though industries need reliable and sufficient supply. Forestry resources are distributed unevenly in Europe, production is poorly organised in some countries, and the **structure of the ownership of forests** can be an issue (e.g. parcelling out, small size of exploitations). **Technological barriers** exist, in some EU Countries in particular, and this limits the use of forestry biomass (e.g. lack of harvesting techniques), of side-products and of co-products. Moreover, the use of woody biomass for the bio-based economy suffers from **competition with cheaper, non-renewable alternatives and with cheaper imported woody biomass**; so that in some cases in Europe, forestry residues are not even collected. In the forestry sector there is still a lack of acceptance by civil society and a **lack of understanding and communication** about co-products. People do not generally know what forests can bring to society; what economic value and other services can be generated, notably carbon sinks.

The participants advocated that the main driving forces are economic and market-driven, with industry leaders and forest holders as the main players. The **increase and diversification of revenues for forest holders** can boost new bio-based value chains, as well as the identification of economically viable innovations and **business models**. In addition, **stable and coherent regulations and policies** dealing with energy, climate change and environment are necessary to stimulate investments.



## 7. Interactive break-out sessions

### Solutions and actions

On the second day, each of the three interactive break-out groups addressed one of the following questions:

1. Which solutions and tools are needed to increase common understanding and trust between actors (farmers, foresters, industry) to build biomass supply chains?
2. Which solutions and tools are needed to create concrete forms of cooperation between the primary sector and industry? Possibly using existing initiatives, policies and funding opportunities.
3. Which solutions and tools are needed to foster logistics (collection, pre-treatment such as densification, transport, storage) from the field to the industry gate?

The full list of solutions and tools agreed by each of the break-out groups is attached in [annex 2](#).

#### Common understanding

The participants discussed some general framework aspects that are crucial for efficient communication and information regarding biomass supply chains and identified concrete tools to achieve this.

The building up of **bioeconomy strategies and visions** at regional level is important for reaching a common understanding between the different actors of a value chain. These **strategies and visions** as well as **success stories and databases of relevant information** (e.g. innovation support services, available conversion technologies, logistical costs), are also a starting point for communication and dissemination and are have not yet been sufficiently developed in Europe. Participants pointed out that **political leadership** is needed in creating and implementing bio-based strategies, in order to surpass the fragmentation of national policies and strategies on biomass.

Investment in biomass supply chains is to a great extent a question of trust, and this is difficult to develop. Markets today have to work to create trust. Leadership is needed in creating markets for bioeconomy. EU policies are still fragmented and a barrier to this development.

For communication, it is critical to **identify the different audiences and to adapt communication and information tools to their specific needs**. For example, within primary producers there is not only one group of farmers or foresters, there are different categories of land owners with different motivations, attitudes and goals on managing their land. Different communication tools and approaches are therefore needed to target each of these different types of audience.

In some countries, the bioeconomy is not a priority for the farming community but it is for industry and this represents a driving force for developing the bioeconomy and establishing biomass supply chains. In other countries, for example, foresters are quite interested in establishing new value chains with new bio-based products, and it is the forest cooperatives which are the driving force.

Information gaps exist. The participants felt that national, and in particular regional, authorities should establish solid cooperation between primary producers and industry to fill these gaps. Regions have to play an important role.

Funding opportunities for communication and information should be more accessible. Long-term communication platforms for all of the different stakeholders involved in biomass supply chains would help ensure a continuous exchange of information. Funding is therefore required to sustain these platforms in the long-term. A successful case was identified in Sweden, where experts participating in such platforms are paid for their contributions (and not only get their travel cost reimbursed), and are requested to deliver input to websites and databases.

The group proposed the following communication tools and instruments:

1. conferences and workshops with all stakeholders such as this EIP-AGRI event
2. regional round table discussions organised on specific topics with experts from different areas and specific sectors
3. thematic networks and EIP-AGRI Focus Groups
4. Meeting places at national and regional level organised by institutions
5. information campaigns to all relevant stakeholders and the general public
6. open days
7. learning from the neighbour approach- i.e. use local knowledge
8. web-based information platforms and market transparency systems offering neutral and unbiased data on biomass, products, markets and prices like the [European Bioeconomy Observatory](#)
9. advisory services which could, for example, organise activities between primary producers, industry and other stakeholders
10. existing European and national Rural Development Networks- they should be better used

Selection of the right attendees is crucial. For this, a broad approach to communication is needed to avoid a too narrow range of audiences.



## Forms of cooperation between the primary sector and industry

The group participants decided that a long-term approach is needed to set up sustainable biomass value chains. The starting point for collaboration is a joint interest of various actors. In addition, cooperation should be based on a common understanding of the bio-based value chains regarding economic, environmental and social aspects.

It is important to define clear roles, make agreements and bring together financial support for bio-based projects. The participants recognised the key role of **facilitators** to support the different actors in making these **agreements**, helping in the elaboration of projects by showing business cases, helping to find the right partners and assessing the financial feasibility of projects. The organisation of conferences, workshops, and also social media can help in setting up new cooperation mechanisms.

The diversity of projects requires a diversity of cooperation models. **Cooperation networks** should be strengthened (e.g. national/regional platforms, clusters, Local Action Groups) around specific themes involving all relevant actors. Different forms of cooperation such as **joint ventures, private-public partnerships** have to be developed accordingly. Participants acknowledged that Rural Development Programmes via notably the EIP-AGRI measures (Operational Groups) and also Local Action Groups are relevant tools to support concrete multi-actor projects.

To guarantee the support of the primary sector in such projects, farmers and forestry owners need to be involved from the early stage of project elaboration. **Sharing risks and profits was recognised as key for successful cooperation** between the actors along the value-chain. Participants also suggested other tools such as setting up

**demonstration farms and creating producers groups** who work on relevant topics (e.g. biomass collection, waste management).

**Investors, access to finance and public support** were also identified as key aspects for implementing projects on the ground.

### Logistics from the field to the industry gate

Group participants concluded that there are potentially many options for biomass value chains across Europe depending on biomass availability, conversion technologies and markets, therefore **tailored-made solutions** need to be developed. To build biomass supply chains, solutions for sustainable biomass logistics are needed with **technological innovations** (e.g. for transport, storage and densification) but also with **skilled people** (via education and training) who are willing to work in this sector due to attractive conditions. To reduce the logistics costs, participants suggested that **small/medium scale bio-refineries with short supply chains** may be an option for profitable and sustainable models; while it was recognised that large-scale plants can also coexist with the small-scale ones using biomass with high density. Finally, the **economic, environmental and social benefits of bio-based value chains shall be demonstrated** and promoted notably via successful case studies. Some examples of solutions found in Spain, France and UK are presented in Annex B.

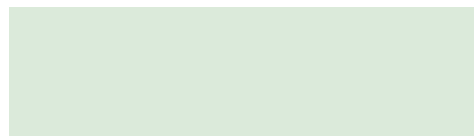
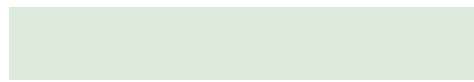
## 8. Field visit

**Novamont** (an industrial company) and **Coldiretti** (a farmers' organisation) invited the participants to visit the Matrica project and the activities related to a new local biomass supply chain.

The visit started in the **Matrica bio-refinery**, a joint venture between Versalis (part of ENI, a global leader in the manufacture and marketing of petrochemical products) and Novamont, a company at the forefront of the bio-plastics industry. The Matrica project has reconverted a former petrochemical facility at Porto Torres into an integrated green chemistry plant. Starting from selected vegetable raw materials with low levels of environmental impact, Matrica produces a series of innovative intermediates using an integrated agricultural production chain. They are used in various different industries: bio-plastics, bio-lubricants, home and personal care products, plant protection, additives for the rubber and plastics industry, and food fragrances.

Participants had the chance to visit the pilot facilities and had a guided tour given by Mr. Lugi Capuzzi, Director of R&D for Novamont. During the visit, the participants learnt about the Matrica production lines, the strategy to source raw materials locally and details about the increase in production in the short term. The visit inside Matrica bio-refinery continued with a bus tour inside the commercial facilities where bio-based products are produced from vegetable oils at this stage.

After the visit of the Matrica plant, the participants went to one of the nearby farms (**Az. Agricola Magantia**), where thistles are cultivated, collected and stored. The farm is part of an extensive agronomic R&D programme, using approximately 500 hectares. Thistle is a perennial crop, cultivated on marginal lands and requires limited agronomic inputs. It can be defined as a multi-purpose feedstock, able to produce vegetable oil, press-cake for animal feeding and cellulosic biomass for energy. The participants saw the thistle cultivation, specially modified machinery for harvesting thistles and managing its cultivation and examples of baled biomass storage. Dr Michele Falce and Novamont agronomists gave technical presentations on the tests they are carrying out to process thistles in a pilot project. The second stop took place at the farm of a sheep breeder (**Az. Agricola Cualbu**) who uses thistle press cake to feed sheep. At finish the visit, a networking buffet was kindly offered by Coldiretti.



## 9. General conclusions

This workshop was the first round of discussions to identify concrete solutions and tools to be implemented by stakeholders at regional, national and European levels to improve the cooperation between primary sector and industry for building new biomass supply chains for the bio-based economy.

It was acknowledged that better cooperation between primary and industry sectors was crucial but was only one part of the solution for building successful bio-based value-chains. Other aspects such as the establishment of a stable and coherent regulatory framework and market pull measures are also necessary. At the end of the workshop, the different participants showed willingness to share the knowledge and information gathered and to follow up on the solutions and tools identified. The workshop concluded that there is a potential in Europe to build value chains based on renewable raw materials to produce bio-based products, but there are still important barriers which need to be removed.



## 10. More information

### Workshop information

All information related the EIP-AGRI Workshop 'Building new biomass supply chains for the bio-based economy' can be found on the [EIP-AGRI website/events/EIP-AGRI events/Past events](#).

[Participants list](#)

[Final programme](#)

[CVs of the speakers](#)

[Presentation Federico Grati](#)

[Presentation Christer Segersteen](#)

[Presentation Battista Cualbu](#)

[Presentation Hans-Jurgen Froese](#)

[Presentation Laurie Ducatillon](#)

[Presentation European Commission](#)

### Related EIP-AGRI information

[EIP-AGRI brochure: Creating diverse forests with multiple benefits](#)

[EIP-AGRI brochure: EIP-AGRI network](#)

[EIP-AGRI brochure: A service point for the EIP-AGRI network](#)

[EIP-AGRI brochure: Operational Groups](#)

[EIP-AGRI brochure: Innovation support services](#)

[EIP-AGRI brochure: Funding opportunities under Horizon 2020 Calls 2015](#)

### Information for the workshop participants

Participants who have registered to the EIP-AGRI website have access to the [collaborative area](#) of the workshop. This area includes files that reflect the discussions in the break-out groups. You can register to the website [here](#).

## 11. List of Annexes

Annex 1: Reports from the interactive session 1: Addressing driving forces and obstacles

Annex 2: Reports from the interactive session 2: addressing solutions and tools

## Annex 1: Reports from the interactive session 1: Addressing driving forces and obstacles

The following summaries have been prepared by the facilitators and rapporteurs involved in three break-out sessions on the first day:

- Agricultural residues / processing co-products
- Industrial crops
- Forestry residues / processing co-products

### Agricultural residues/processing co-products

#### Main challenges

##### Reported to the plenary:

- Political leadership + stable strategy (EU - national - regional)
- Diversity of biomass versus tailored solutions
- Integrate the bioeconomy with the circular economy

##### Referred by table hosts during break-out group session:

###### At farm level:

- Lack of good overview about funding opportunities at EU level, although there are many
- Lack of knowledge on the technical side
- Resistance from farmers to new business
- Imports of cheap raw materials outside the EU
- Lack of knowledge, mostly among producers in primary sector

###### At value chain level:

- Complexity of biomass supply chain
- Lack of logistics in place
- Lack of organisations willing to build a common business
- Lack of instruments/tools to identify what is feasible
- Lack of good business cases as examples
- Need for a better balance between supply and demand
- Lack of cooperation
- Uncertainty (in funding, etc.)

###### At policy level:

- Not coherent policy
- Need to promote new products, new tools
- Lack of the right market driven incentives (such as public procurement)
- Lack of political leadership (at all levels) in promoting it
- Need for better communication with experts and to the outside world
- Lack of knowledge on what is best for the environment
- Mindset
- Lack of knowledge on how to collect biomass
- Risk of soil depletion

#### Main driving forces

##### Reported to the plenary:

- Raise awareness (to promote the benefits for consumers)
- Long term stability on economic return
- Common vision – industry, primary producers, ... of the whole value chain
- Bioeconomy and its contribution to the circular economy



### Referred by table hosts during break-out group session:

- Raising awareness in consumers about existing options
- Standardisation of products (although it can become a barrier as well)
- Creating awareness among land managers
- Best practices and good examples
- Incentives from the market side
- Branding - potential for industry and farmers
- Cross-sectorial innovation
- Gives independence + stability on primary sector's supply material
- Strategy + leadership
- Closing loops for biomass production
- Price stability – long-term contracts
- R&D policy + regional development policy – financial instruments for investments and to implement innovative technologies, to promote knowledge exchange and pilot projects in order to increase productivity, to better use resources and biomass.

## Industrial crops

### Main challenges

- Lack of knowledge transfer, knowledge sharing and peer learning between all stakeholders in the value chain: among other causes there are cultural barriers, different mindsets, lack of trust...
- Too few off-takers
- Not enough Research & Development projects
- Policy makers and general public have a poor understanding of the agricultural potential
- Where to find (marginal) land for industrial crops
- The name "industrial crops" has a bad image, is often linked to GMOs
- How to manage logistics, scale, time of biomass production ("agility")
- Lack of supporting policy / over-legislation: differences per country, type of legislation, type of product (i.e. list of crops which are eligible for funding)
- Lack of taking into account externalities in the price of fossil based products
- Lack of market pull
- Different crops need different technologies

### Main driving forces

- New income source for farmers
- Develop effective clusters with stakeholders
- Policies (low carbon, sustainability, ...)
- CAP regulation
- Meeting the demand of the new (mentality of) the consumer: focus on locally produced, sustainable products
- Learning spaces & transfer of information (direct or indirect)
- Creating next to farm jobs also non-farm jobs
- Yield and incentives
- Looking for complementarities (lowest developed areas)
- Research & development and creativity

## Forestry residues/processing co-products

### Main challenges

- Regulations needed to provide long term benefits and stability
- Also: Long-term regulations and policies needed to enable investments (e.g. fuel)
- Competition from cheaper non-renewable alternatives

- Lack of demand for forestry products
- Uneven distribution of forestry resources
- Lack of acceptance by civil society
- Need to have a systematic approach which is sustainable in the long term
- A systemic approach is needed to better understand the best sustainable solutions in long term perspective
- Structure and ownership of forests is a major issue in some parts of the EU (e.g. many private unorganised forest owners in some countries)
- Industry needs reliable supply
- There is a need for new technologies for harvesting and innovative side products
- The low cost imports of waste provides a market challenge – result can for example be that forest residues suitable for bioenergy is left unused, instead house hold waste is imported and burnt, as energy providers get paid to take care of the waste.
- Lack of understanding and communication is a major issue. People overall have too little knowledge about how forests can be used, the positive CO2 impact etc.
- Optimising the cascading use of biomass is an issue of the market, not of regulations
- Some participants said there is a lack of lobby for forestry at EU level, but other participants disagreed with this statement

### Main driving forces

- Market is the main driving force and the main players are the industry leaders and the land owners
- Raw materials & energy security
- Environmental awareness of customers
- Increase and diversify revenues
- Political vision on the long-term
- Recognition
- Economically viable innovations
- Climate change risks
- Wild fires
- Knowledge transfer

## Annex 2: Reports from the interactive session 2: addressing solutions and tools

The following summaries have been prepared by the facilitators and rapporteurs involved in break-out sessions on the second day:

- Common understanding
- Forms of cooperation between the primary sector and industry
- Logistics from the field to the industry gate

### Common understanding (including communication between primary sector and industry, building trust)

The group discussed some general framework aspects that are crucial for efficient communication and information regarding biomass supply chains and identified concrete tools. Strategy and vision on bioeconomy at regional level are important for building up a common understanding as a starting point for communication and information. This is not happening sufficiently in the EU. About 10 Member States have national bioeconomy strategies, in addition several European Regions have developed their own strategies. Leadership is needed in creating and implementing such strategies.

Investment in biomass supply chains is to a great extent a question of trust that is difficult to develop. Markets today have to work to create trust. Leadership is needed in creating the markets for bioeconomy. EU policies are still fragmented and a barrier to this development.

For communication it is important to identify the different audiences and to adapt communication and information tools to their specific needs. Taking only the group of primary producers, there is not only one group of farmers or foresters. There are different categories of land owners with different motivation, attitudes and goals on managing their land. This includes for example innovative traditional farmers, but also new types of urban forest owners with very little knowledge about forest management and the forestry sector. Different communication tools and approaches are needed for these different groups of primary producers.

In some countries, for the farming community the bioeconomy is not a priority, but it is for industry. Consequently, industry is the driving force in developing the bioeconomy and in establishing biomass supply chains. In other countries, for examples foresters are quite interested in establishing new value chains with new bio-based products, as the example of SÖDRA in Sweden shows, where the forest cooperatives are a driving force. The local and regional level is of particular importance in improving and building up cooperatives of primary producers.

An information gaps exist. National and in particular regional authorities should establish solid cooperation between primary producers and industry also to fill these gaps. Regions have to play an important role.

Funding opportunities for communication and information should be more accessible. Communication between different stakeholders involved in biomass supply chains long term platforms. Consequently funding has to be long term to sustain these networks. In Sweden, experts participating in such platforms are paid for their contributions (and not only get their travel cost reimbursed) and are requested to deliver input to the websites and information pool.

Communication tools are:

- conferences and workshops with all stakeholders like such as this EIP-AGRI event
- regional round table discussions with experts from different areas for specific sectors
- thematic networks and Focus Groups;
- Arranged/institutionalised meeting places at national and regional level;
- information campaigns to all stakeholders and the general public;
- open days;
- learning from the neighbour approach;

- web-based information platforms and market transparency systems offering neutral and unbiased data on biomass, products and markets/prices like the European Bioeconomy Observatory;
- Advisory services (for example, they could organise activities of primary producers together with industry and other stakeholders);
- existing European and national Rural Development Networks should be better used.

Selection of the right participants is crucial. For this, a broad approach is needed to avoid a too narrow selection of involved audiences. For example, producers of fire alarm system should be invited to get informed about new fire prevention approaches for wood in construction.

## Forms of cooperation between primary production and industry

### Solutions and tools

- Use model of Operational Group or Local Action Groups (LAGs) at national level or strengthen other platforms where people can work together using technology/information sharing.
- Long-term approach needed
- Organise conferences/workshops to share knowledge
- Make use of networks and social media
- Install demonstration farms and set up demonstration projects for farmers
- Start producer groups who work together on different topics (waste management, processing, collecting)
- Good practice from Austria: cooperation platform in forestry sector covering different topics/sectors and where all relevant actors (with different interests) become member of the platform
- Starting point for collaboration is a joint interest! From there define clear roles, make agreements and bring together financing (which means sharing risks).
- Sustainability can be a driving force in the economy and in the cooperation
- Project interfaces/facilitators are needed to support making agreements, business cases, and assess overall financial benefits & quality, establish early involvement of stakeholders and do an early check on profitability (i.e. big biomass sites)
- The primary sector feels that they are left behind. They need to be involved in the early stage of planning of supply chains and they should be able to have a share in the economic revenue
- Diversity of projects requires a diversity of tools: what are actor's needs and constraints? Develop accordingly appropriate networks, cooperation, joint ventures, etc.
- EU direct payments
- Investments at national level

Actions to be taken in short term			
Actors	Local level	Regional/national level	European level
<i>(no specific actor mentioned)</i>		<ul style="list-style-type: none"> <li>• National &amp; regional bioeconomy strategies, regional bioeconomy forums, cooperation groups on different clusters of bioeconomy</li> </ul>	
<i>Farmers</i>	<ul style="list-style-type: none"> <li>• Traditional way (training, meetings, conferences, workshops, newspapers, ...)</li> <li>• To be interested in getting knowledge about new possible bioeconomy projects and value chains</li> <li>• Transfer of knowledge: direct meetings, field trips, studies...</li> <li>• Demo projects &amp; local meetings</li> <li>• Farmer offers his product</li> </ul>	<ul style="list-style-type: none"> <li>• Incentivise farmers to create collaboration mechanisms (if not there yet)</li> <li>• Quantify biomass potential (2x)</li> <li>• Impose (sign + test) agreements to give farmers / foresters a share in the revenues of bio-based industrial plants (through local NGOs or public authorities)</li> <li>• Build farmers' communities with same interests in establishing participation in a specific bioeconomy value chain</li> <li>• All parties in value chain should benefit. Farmers in cooperative</li> </ul>	<ul style="list-style-type: none"> <li>• Ensure funding of the right programmes</li> <li>• Summarising policy demand for efficient incentives that farmers can make revenues through participating in bioeconomy value-chains</li> <li>• Inform what we do on our farms</li> </ul>

<b>Actions to be taken in short term</b>			
<b>Actors</b>	<b>Local level</b>	<b>Regional/national level</b>	<b>European level</b>
		should be part of processing activities.	
<i>Forest holders</i>	<ul style="list-style-type: none"> <li>Public-private forest partnerships</li> <li>Public land/forest owners: through planning let know the contribution to biomass supply</li> </ul>	<ul style="list-style-type: none"> <li>Business cases: create a flyer explaining when, what and costs / gains of the business case</li> <li>Forest holder: quantify biomass potential at regional level</li> </ul>	
<i>Cooperatives</i>	<ul style="list-style-type: none"> <li>Demo farm: best practice/ best project for demonstration</li> <li>Involve them in Operational Groups focusing on demonstrative actions</li> <li>Identify leaders / leadership</li> <li>Identify the leadership / interface for biomass bioeconomy projects</li> <li>Implementation of regional cluster activities: "cluster management" has to incorporate bottom-up processes =&gt; Need for subsidies for support of cluster management and demonstration projects</li> </ul>	<ul style="list-style-type: none"> <li>Integrate farmers sharing common business interests on bio-based products</li> <li>Promotion &amp; lobbying &amp; (conferences) ...</li> <li>Cooperation with NGOs and other local and governmental members / institutions</li> <li>Fostering "joint ventures" between cooperatives and chemical companies, sharing profits and risks</li> <li>Networking: social media, traditional media, massive media campaign, preparing and implementing cooperation projects</li> </ul>	<ul style="list-style-type: none"> <li>Promotion &amp; lobbying &amp; (conferences) ...</li> <li>Trying to involve better big cooperatives in the new bioeconomy, further than traditional food chain</li> <li>Regional networks / clusters working together and initiate CROSS-BORDER demonstration projects / best practice examples</li> </ul>
<i>Innovation support services (advisors, clusters, researchers)</i>	<ul style="list-style-type: none"> <li>Stimulate farmers / forest holders to communicate ideas to Innovation Support Services</li> <li>Targeted animation</li> <li>Animation</li> <li>Write in journal / newsletter for farmers about what bio-based means for them</li> <li>Collect ideas for local initiatives for BBE business cases</li> </ul>	<ul style="list-style-type: none"> <li>Advisors offer professional advice on law, economic &amp; business plan)</li> <li>Innovation Support Services: support model of Operational Group</li> <li>Provide best practices of information / involvement of local producers within bioeconomy projects</li> <li>Clusters: create local and national networks</li> <li>Systematic advising by top experts in the long-term</li> </ul>	<ul style="list-style-type: none"> <li>Exempt to comply with regulation as long as experimental / small scale (within limits)</li> </ul>
<i>Public authorities</i>	<ul style="list-style-type: none"> <li>Support network / cluster set-up</li> <li>Understand the bioeconomy objectives and challenges, mobilise key actors, act as facilitator in making local/regional business cases with industries/farmers</li> </ul>	<ul style="list-style-type: none"> <li>Public financial support to stimulate cooperation (incentives for actors)</li> <li>Public financial support to increase awareness of existing opportunities of a bio-based economy among farmers / local communities including success stories</li> <li>Provide best practices of information / involvement of local producers within bioeconomy projects</li> <li>Understand the bioeconomy objectives and challenges, mobilise key actors, act as facilitator in making local/regional business cases with industries/farmers</li> </ul>	<ul style="list-style-type: none"> <li>Public financial support to stimulate cooperation (incentives for actors)</li> <li>Finance demo projects on biomass supply chains</li> <li>Smart Specialisation Strategy – demo PPP: identify each actor's potential contribution</li> </ul>

<b>Actions to be taken in short term</b>			
<b>Actors</b>	<b>Local level</b>	<b>Regional/national level</b>	<b>European level</b>
		<ul style="list-style-type: none"> <li>Public-private partnerships and financing schemes to support pilot bioeconomy businesses</li> <li>Farmers need to be informed about tailored diversification activities</li> <li>Creating networks/clusters</li> <li>Local &amp; regional meetings of farmers, forest owners, ..., SMEs, ... on the question of biomass</li> <li>Provide strategy and perfect communication</li> </ul>	
<i>NGOs</i>	<ul style="list-style-type: none"> <li>Local Action Groups (LAGs): National Rural Network create bioeconomy group in IT</li> <li>LAGs provide information about EIP-AGRI's support for farmers, forest holders and enterprises</li> <li>Contribute to bioeconomy project set-up</li> <li>Finance Action Group activities, making compulsory meetings and reports about results for each thematic issue (cork, residues, biofuels, ...)</li> </ul>		<ul style="list-style-type: none"> <li>Constructive analysis</li> </ul>
<i>Financial bodies</i>	<ul style="list-style-type: none"> <li>European Investment Bank (EIB): more guaranties for local projects (not providing money AFTER the guarantee of local bank)</li> </ul>	<ul style="list-style-type: none"> <li>Provide a specific financial service for bioeconomy / biomass initiatives</li> <li>Finance investments for shared business plans that emerge from agreements of stakeholders of one sector (economic driving force)</li> <li>Targeted instruments</li> <li>Present business cases to farmers they want to invest in</li> <li>Develop with cooperatives business models</li> </ul>	<ul style="list-style-type: none"> <li>EIB &amp; others: provide funding guarantees for projects to be accessible</li> <li>EIB: programme for bio-based economy</li> </ul>
<i>Industries</i>	<ul style="list-style-type: none"> <li>Price development for feedstock between farmer and industry</li> <li>Quantity / quality of subsidies on renewable energies can block use of renewable feedstocks to industry</li> <li>Farmer outreach on local level</li> <li>Create more smaller (demonstration) projects</li> </ul>	<ul style="list-style-type: none"> <li>Create projects with independent but connected Unit Operations</li> </ul>	<ul style="list-style-type: none"> <li>Defining business cases and identifying barriers and ways to tackle them</li> </ul>

## Logistics from the field to the industry gate (including collection, pre-treatment such as densification, transport, storage)

### Solutions and Tools

- There is a diversity of situations = no unique solution possible
- Need to set up new technologies, skills and vocation
- Solutions for storage and densification of biomass
- Transport problems – what new solutions can be found here (in particular to cut costs and limit emissions)?
- Small units which are located closer to biomass collection points could be a solution but bigger units are also needed.
- People can adapt logistics solutions depending on the specific situation
- People need to be trained to use the new technologies
- Managing the input cost to the final processor/user is the key, whether in relation to the global market or to a local off-take market
- Better and cheaper densification and storage is needed for biomass supply chains
- Demonstrate, recognise and give value to additional environmental and social services
- An alternative approach may be to intervene to shorten supply chains – by creating demand at small and medium scale

### Examples:

#### Catalonia

##### Small forest / woodland

- In both Mediterranean and temperate climates, this traditional source of wood heat is now uneconomic
- Need EIP-AGRI to help spread the use of small scale extraction technology (harvesting and forwarding machinery, and woodland management training)
- Demonstration of technology needs a "Forest living lab"

#### France

##### Miscanthus/coppice

- Shelter belts against erosion in Normandy demonstrate the additional environmental services that new biomass supply chains can offer to farmers
- Greening of Common Agricultural Policy needs to more explicitly recognise this
- Address logistical problems, e.g. too few harvesters are available

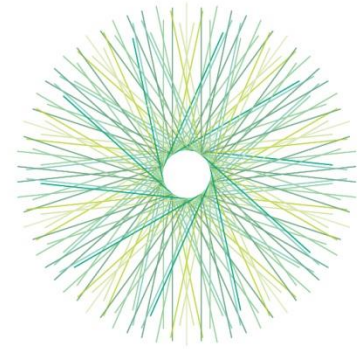
#### Aberystwyth, UK

##### Miscanthus breeding and upstream propagation/supply

- Demonstration to farmer groups of improved propagation and planting to reduce establishment costs
- Plug planting of seedlings
- Direct seed drilling
- Possible expansion to large areas of poorer quality land

### Actions

- Skills, training and vocational development
- Better integrated cascading statistics, from local/regional to national/EU level
- More homogenous market information on biomass potential
- Get officials out of the office and into the field to see for themselves



eip-agri  
AGRICULTURE & INNOVATION



**The European Innovation Partnership 'Agricultural Productivity and Sustainability' (EIP-AGRI)** is one of five EIPs launched by the European Commission in a bid to promote rapid modernisation by stepping up innovation efforts.

The **EIP-AGRI** aims to catalyse the innovation process in the **agricultural and forestry sectors** by bringing **research and practice closer together** – in research and innovation projects as well as *through* the EIP-AGRI network.

**EIPs aim** to streamline, simplify and better coordinate existing instruments and initiatives and complement them with actions where necessary. Two specific funding sources are particularly important for the EIP-AGRI:

- ▶ the EU Research and Innovation framework, Horizon 2020
- ▶ the EU Rural Development Policy

funded by  European Commission



Join the EIP-AGRI Network & Register via [www.eip-agri.eu](http://www.eip-agri.eu)

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