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Report

from

The Workshop on “The role of cooperatives and cooperation structures of primary producers for mainstreaming the Bioeconomy”

Brussels, 24 June 2019

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I. Introduction

The report follows the structure of the workshop. The different sections contain a summary of the presentations made, focussing on key issues and presenting the benefits of cooperation for deploying the bioeconomy in the context of the different value chains.

The last section draws the main conclusions and summarises the benefits for individual primary producers, resulting from their participation in the different cooperation structures. This section also summaries more broadly, the benefits and the contribution of cooperation to increasing the resilience of farms and tackling climate change.

II. Presentation of different business models illustrating the benefits of cooperation and the support of cooperatives to individual farmers for the deployment of the Bioeconomy (fruits & vegetables, arable crops, oil crops).

1. **Cooperfrutas (Portugal):** *“Fruits production with valorisation of waste and residues as biocompost”*, Mr João PEREIRA DA SILVA, Project Manager

A Portuguese cooperative founded in 1989, which counts now about 95 national producers of apples and pears. The development of the cooperative has made it possible to achieve the four main objectives of cooperation, which eventually has also allowed the creation of additional income for the individual farmers by both creating new value streams and decreasing the costs of production.

- i. Resource efficiency
 - Profitability of assets- energy efficiency and electric photovoltaic production, decreasing energy dependence from outside;
 - Introduction of new technologies;
 - Automation of Production Processes;
- ii. Produce with quality
 - Adoption of good practices and integrated agricultural ecosystems.
- iii. Innovate
 - Innovation projects with other entities;
 - Joint projects.
- iv. Cooperate
 - Development partnerships in product promotion, social inclusion and cooperation.

Circular and sustainable business model for the Bioeconomy, contributing to mitigation of climate change

Non-directly sold produce is transformed into good quality derived products with no added sugar (fruit puree), which decreases waste from the fruits production. All remaining residues are valorised through the production of bio compost.

Cooperation allows the development of new bioeconomy value streams as well as fully circular business model, which would have been impossible at the level of the single primary producer.

Because of the energy efficiencies and renewable energy (RE) production by the cooperative, the carbon footprint of the whole production process has decreased (saving about 85 tons of CO₂, equivalent to planting a forest with the approximate size of 19 football stadiums).

2. Avebe (Netherlands): “Biobased since 1919: Potato starch and potato protein cooperative Avebe”, Mr Peter M. BRUINENBERG, Head of Public Affaires

An international cooperative of starch potato growers established in 1919 to strengthen their position against private industry. It has started as a cooperatives sales office but develop over time to encompass the whole business process and support individual farmers to valorise the totality of biomass produced. As a successful business model, in 1979 the cooperative has taken over the private processing industry and covers now all the value streams with approximately 2300 members and 1300 employees, with production facilities in Northwest Europe and a global sales organisation.

Through new investment, the cooperative focussed on new, innovative products and processing potatoes into:

- a. Potato starch;
- b. Proteins for human food;
- c. Proteins for animal feed.

Key achievements from cooperation

- Higher benefits for individual farmers

After the end of the CAP coupled support for potatoes (2012), the Cooperative Avebe has managed to pay the highest price for the raw material to its farmers. In addition, added value of potato starch and potato proteins is attributed to the cooperative result and results are shared with owners.

- Ensuring sustainable supply of biomass

Through the benefits of cooperation, Avebe also tries to face the main challenges today, namely to ensure sustainable production of potatoes and need to reduce GHG emissions. Achieving the needed economies of scale also allows adding value to all potato components (e.g potato protein).

Sustainable flow of biomass cannot be ensured without breeding of new varieties and providing healthy seed materials. As a result, the starch content of Avebe's varieties is ca. doubled compared to standard potatoes. Improving disease resistance leads to reduced use of pesticides. The development of potato varieties with new functionalities is important to ensure the quality and sustainability of the biomass over time.

- Sustainable agronomy

Cooperation allows Avebe to have its own agronomy department. The results of its work is to ensure that more yield are harvested from the field using fewer resources, also raising the number of tons of starch per hectare through 'Optimeel'. Very important aspect in this work is to ensure that new varieties are introduced.

- Biomass sustainable production in a fully circular business model

This model of bio refinery allows the full valorisation of the biomass. A valuable by-product is the protein, which is the only plant protein identical to animal protein. Very importantly, the portion of protein per ton and ha is comparable to soy. At the same time, the waste of the processing contains nutrients (mainly potassium) which are vital for farmers and are recycled by being brought back to the farmers.

- Research and Innovation

Research and Innovation are key to foster sustainable development. The innovation Center Groningen has opened in September 2018 on university campus. It brings together researchers, product developers sales and marketing managers to develop new concepts from the potato-based ingredients. The R&D staff is ~10 % of total staff of Avebe.

- Climate and decarbonisation strategy of Avebe

Mainly because of the processing lines, Avebe is a source of CO2 emissions (360.000 tons/y-equivalent to ~120.000 cars). Avebe is subject to the ETS because of requirement for dry products and the co-products process (i.e. proteins). Since 2012, efforts have been deployed, mainly through energy efficiency and new processes, which resulted in a reduction of 25 % CO2 emissions per ton of product. Nevertheless, a big challenge for the future remains to find a new source of sustainable energy.

3. Agro-food Aragón Cooperatives (Spain): LIFE Multibiosol- “Implementation of innovative, economically viable and fully biodegradable plastics in agriculture”

Mr Jesús ABADIAS ULLOD, *Responsible for Environment, Energy and Innovation*

The Agro-food cooperative of Aragón is a regional association of cooperatives. There are several objectives in establishing such a large cooperation structure, namely:

- i. Achieving economies of scale with a territorial impact;
- ii. Development with holistic and multisector vision;
- iii. Creation of important links of trust between cooperative, technical experts and individual farmers;
- iv. Solution to joint problems, agrarian and agro-industrial
- v. Creation of new value chains;
- vi. Improve profitability of existing projects and businesses due to better resource efficiency;
- vii. Improvement of the sector's image due to more efficient and technological business model.

Realising this potential, the cooperatives of Aragón have managed to create new bioeconomy value chains, which would have been difficult to put in place without the cooperatives business infrastructure.

Creation of a biomass logistic centre

The creation of such logistic centre allows the efficient processing of the biomass for food and feed within the normal agro-industrial period of operation (April – October) but at the same time creates new value chain for the production of pellets for bioenergy, based on the residues of the core business lines, which runs from November to March. Apart from creating additional income, this new value chain completes the year working circle of the core business in such a way that brings about more sustainable jobs.

Production of bioenergy

The project U_pruning, implemented in a cross-sectoral way, allowed through the cooperation, to mobilise the biomass from pruning in different agricultural sectors and to transform it into pellets for bioenergy.

Insects breeding with residues of the food and agro-industries

The cooperation of different cooperatives allowed to produce insects feed from food and agro industrial residues.

Development of biodegradable and bio-based films for the fruits and vegetables production (project Multibiosol, financed by the LIFE programme)

This large project is a very good illustration of the benefits of large cooperation involving cooperatives of primary producers but also other business actors and the research community.

The project was implemented to solve concrete problems caused by the waste of conventional plastics in intensive agriculture (5 % of total plastic waste):

- Atmospheric pollution by incineration;
- Soil contaminated by abandonment. HDPE and LDPE can take between 100 and 500 years to degrade. It accumulates in the soil and loses fertility.

Thin plastic films (25-15 µm):

- Generate approximately 80% of agricultural plastic waste.
- Plastics for single use.
- Recycling problems. Plastic waste is highly contaminated with soil, sand and organic material (60-80%).
- High plastic removal costs (time and money).

Benefits from the project:

- No removal;
- No landfill;
- Manpower reduction;

At the end of the crop cycle biodegradable mulch film must not be removed, but should be worked into the soil, in order to properly biodegrade (through the mineralizing action of soil microorganisms) into CO₂, water and feedstock:

- Lower environmental impact in air, soil and in plastic manufacturing. Recovery of organic waste;
- Elimination of waste management (Lower economic costs, although the price of plastic is higher);
- Increased added value of products (quality and impact stamp);
- Improved quality of physical, chemical and biological soil resources.

Potential for further development

- European, national and regional legislative framework to support the implementation of bioplastics;
- Support for economies of scale in the development of bioplastics;
- Reduction of material cost and aid in its implementation. Increase the provision of POFV aids. Through cooperatives in the new CAP;
- Promote the transfer and training in cooperatives. Increase use of bioplastics thanks to its capillarity and trust;
- Most of the farmers willing to pay more for a biodegradable plastic in order to avoid its removal from the field and management with the associated costs;

- Improves the life`s quality of farmers –less management waste, less work;
- Opportunities for added value products/ organic agriculture. More sustainable agriculture.

Fundamental aspects for the implementation of the Bioeconomy through cooperatives

Based on the practical experience of cooperation in Aragon, we can conclude that:

- Cooperatives have the need to work for mitigation and adaptation to climate change, and generate economic and social value in rural areas, all for their future and that of their partners.
- Cooperatives are fundamental for the reach of R&D and the transfer of knowledge to the sector (capillarity). Individually the sector would not advance in the same way.
- The trust and closeness of the cooperative and its technicians is fundamental when it comes to launching new tools and technologies in the sector.
- In most projects, the technologies and businesses related to the bioeconomy are economically, socially and environmentally sustainable.
- To promote the circular and sustainable Bioeconomy in the business model of the cooperative, it is essential to take advantage of the material and immaterial strengths of the cooperative itself and to solve the cooperative's challenges (added value).

4. Cooperative of Alcamancha (Spain): *“Lavender crop production on marginal lands of “La Mancha”*, Mr Fernando ROMERO, Financial Director

Diversification through the bioeconomy as a way to create more added value and adapt to climate change

The area of the investment is a practically depopulated zone in Spain (4 inhabitants/ km²). It is also characterised by a very low diversity of agricultural production (60% of cereal production 30% legumes and oil crops). At the same time, there is a very low volume of harvest due to climate change (high temperature) and the need for more water. In this difficult context the opportunity to diversify through the Bioeconomy is a way to create more value and fight depopulation.

Key parameters of the project and the business model

It uses natural resources-lavender with a 12 years production cycle (harvesting starts from the 3rd year on). It is a high added value production model, where the final products are essential oils produced by a steam distillation.

The business model entails a multi-actors participative approach, involving all stakeholders in the local community (primary producers, associations, and local administration) with the aim to create a development hub since this is not just a production but a change of mind set.

A sustainable and circular bioeconomy model is put in place, where all co-products and by-products of the production process are valorised either as bioenergy or compost.

The change of crops (from the traditional ones- cereals and sunflower to lavender) has resulted in increase in efficiency per hectare (520 EUR for lavender, compared to 180 EUR for barley).

The new lavender production has a very positive impact on the biodiversity and the ecosystems (i.e. positive for the pollinators). There is no need for irrigation (only point irrigation at the moment of planting) as well as no need for chemical products (even no fertilisers are used on an annual basis).

The production process is not possible to carry out without the shared investment of the cooperative (shared machinery, nursery since it is very important to have a good genome).

The aspect of social responsibility in the rural community is very important. This is the reason why the legal entity chosen is a joint venture between the cooperative (90%) and 10% social capital proposed to the people in the region to ensure a larger participation of the local community.

Job creation: 15 direct sustainable jobs as well as many indirect jobs, including in the tourism sector since this specific crop attracts tourists.

Total project cost of about 0.5 MEUR

Type of financing (EU funds for the distillery) however for the common machinery and the nursery it is difficult to obtain support due to the cooperative ownership of the assets.

Main challenges in the implementation of the project

Business support is need for market analysis of the essence oils, which is a new and unknown market for the local producers.

The access to finance for development of the new business model not just for the crops production is a challenge as well.

Taking into account the more traditional production and set of mind in the local primary producers, raising awareness among them to overcome the initial scepticism is crucial at the beginning.

III. Presentation of different business models illustrating the benefits of cooperation and the support of cooperatives to individual farmers for the deployment of the Bioeconomy (livestock/ milk, winery sector).

5. Agricultural poultry cooperative “PINDOS” (Greece): “Circular and sustainable business model- full valorization of waste for bioenergy and feed pellets”

Mr Ioannis PATOUNAS, Head of Project Management & Development Department

Circular and sustainable business model

The cooperative Pindos is a leading poultry meat integrator in Greece and the biggest first level cooperative. Established 1958 (with only 7 producers), today it represents 30% of country's chicken meat production. The cooperative entails 600 farmers, 500 employees in the farms and more than 1000 employees in the cooperative.

Turnover (2018): >250million €.

The core production comprises the meat production and processing as well as a feed production.

Main challenges

- Waste from the production (liquid and solid waste);
- Dead chicken due to the intensive production.

This burden is transformed into valuable streams, through:

- Rendering unit;
- Biomass combustion – co-incineration plant (hot water-steam production);
- Compost plant.

This way a fully circular production model is applied, which greatly reduces the negative impact on poultry farms (viruses, bacteria etc.) and the impact on the environment (ammonia, nitrates, etc.).

Benefits from cooperation

Cooperation over the years has brought about economic benefits to individual producer in terms of better buying price of the meat produced. It has also provided other valuable services for the farmers.

A microbiological lab to test quality as well as business support services from the cooperative are available to the individual producers.

In the future, more is planned to be done on the energy production side from incinerated waste.

6. Carbery Group (Ireland): “The role of Carbery in mainstreaming the Bioeconomy”

Mr Enda BUCKLEY, Head of Sustainability.

Key parameters of cooperation and creation of economic value for farmers

The cooperative was founded in 1965. It is owned by 4 dairy cooperatives (representing 1220 individual farmers) in Ireland and has now a total turnover of 424 MEUR (2018) from 50 international markets.

Leading manufacturer in 3 main areas:

- Cheese production;
- Nutritional Ingredients (i.e. protein);
- Flavours.

The main objective of the cooperative is to add as much as possible value to valorise the milk produced by the individual farmers. This is the reason why no milk is directly sold on the market but the totality of the milk of the individual members is processed.

To achieve this objective Carbery has implemented a circular business model, which allows valorising all side streams of the production as well as to play an important social role in the local rural community. As a result, the cooperative managed to give a very high buying price for the litter of milk compared to average market prices.

Ensuring global business sustainability and tackling climate change

The overall vision of Carbery is to be recognised, as a world-class sustainable business leader. As such, the business of Carbery and individual farmers is also affected by the climate change.

Several key challenges to tackle:

- As extreme weather events become more frequent, ensuring a constant supply of high quality grass for dairy cows will become a concern.

Mitigation Measure: enhance soil fertility – Carbery Greener Dairy Farms (CGDF), grass measurement, better use of slurry – better grassland management;

- Increased torrential rainfall events can have significant impact on water quality and grassland management

Mitigation measure: Agricultural Sustainability Support and Advisory Programme (ASSAP), learnings from CGDF, growing trees in close proximity to alleviate flooding – Carbery Trees programme.

- Potential for an increase in the range and occurrence of mycotoxins, particularly given the future climate on the island of Ireland is projected to be warmer and wetter.

Mitigation measure: Carbery rolling out new health & welfare initiative pilot for CGDF with intention to get all farmers on board over coming years.

- Biodiversity loss

Mitigation measure: Growing more trees - Carbery Trees, increase food for pollinators on farm through Carbery Greener Dairy Farm pilot.

- Droughts such as 2018 have major impact.

Adaptation measure: West Cork Coops purchased fodder in Europe and offered it to farmers with significant credit terms (6 to 12 months).

CGDF Digital Stories & Environmental Diploma

Circular Economy comes to life through Carbery farmers

In 2017 launched a digital storytelling project around environmental sustainability with farmers in West Cork. www.carbery.com/digitalstorytelling

CGDF programme recognised- farmers got conferred with Diploma in Environmental Science in Nov. 2018.

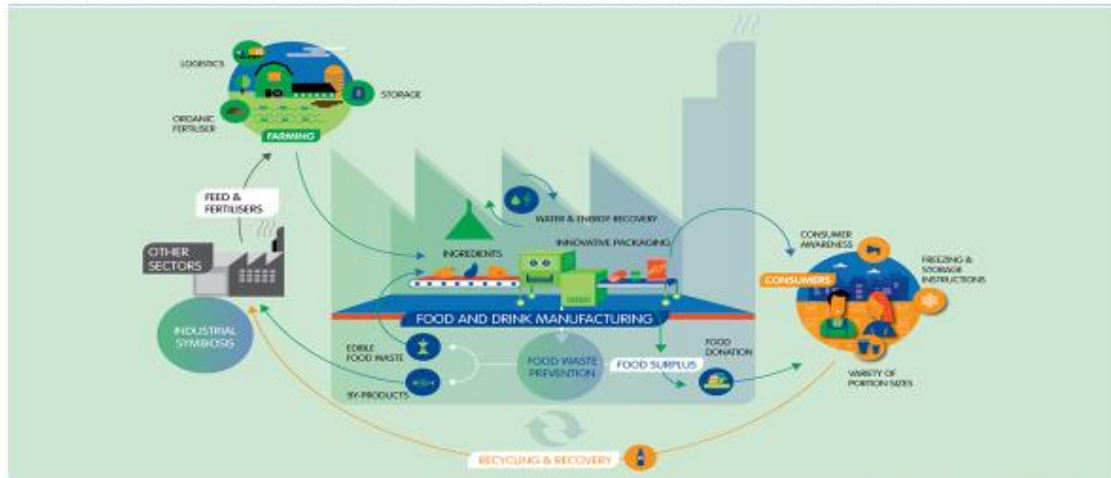
Carbery's Sustainability Achievement

- Sustainability is core element of new group strategy, with stand alone 'sustainability' strategy
- Inaugural CSR report for the group published in the Autumn 2018;
- Ballineen site procuring 100% renewable electricity as of June 2018;
- On farm initiatives with emphasis on H&S, low carbon milk, animal health & welfare, developing 'sustainability' model farm nearby in Shinagh
- Becoming significant player in the Bioeconomy – it joined the Bio-based Industries Consortium (BIC) in 2017.

Sustainability Plan

- Continue to develop on-farm initiatives, emphasising low carbon milk, health & welfare and farm safety.
- Achieve carbon neutral status across all sites by 2033.
- Attain major water conservation across the group.
- Zero waste to landfill across all sites by 2023

Concept of circular and sustainable bioeconomy



Major Bioeconomy projects at Carbery

Carbery pioneered the operation of an industrial-scale whey-to-ethanol plant in 1978. In Irish context it equates to avoided CO₂ emissions of 16,321 tonnes of CO₂ compared to standard petrol - very beneficial impact on Ireland meeting its 2020 transport targets.

The plant currently produces about 12 million litres of bioethanol/annum. Significant GHG emissions saving – 85% less carbon intensive than petrol.

Grass Bio-refinery Project

Introduction of the grass bio refining through small movable bio refineries is an upcoming project. This project is an extension of the Grassa project developed in the Netherland and financed through EU EIP AGRI, aiming at the production of animal feed. This business model is very beneficial to the environment and climate since contributes to cutting GHG emissions by processing the available biomass on-site. The empirical evidence shows a 50% cut in GHG per hectare. As a result, there are 4 main end-products, namely:

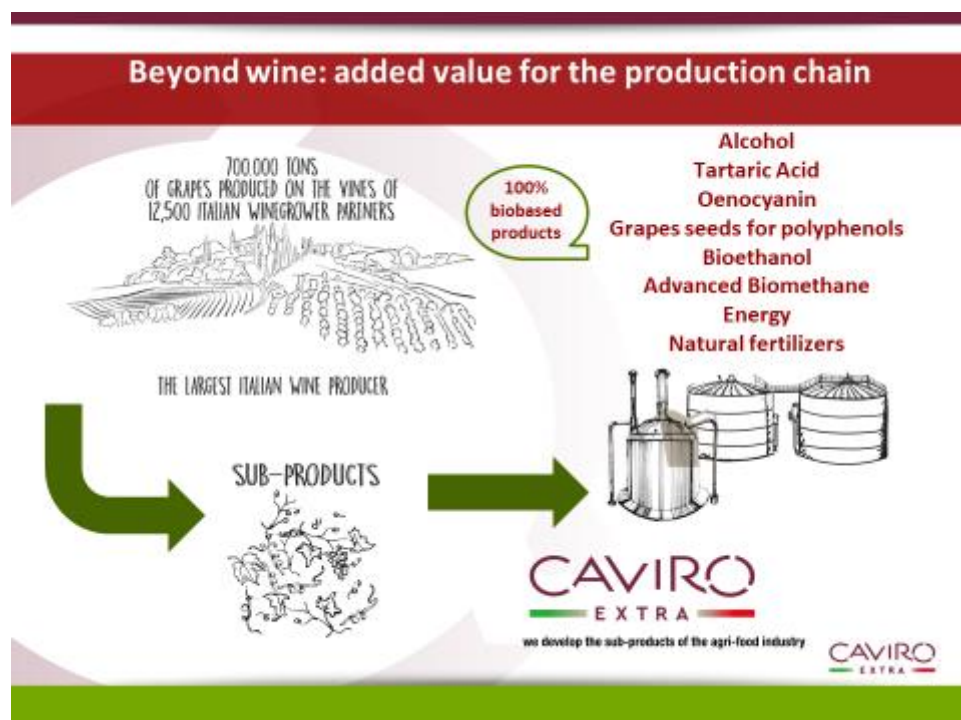
- Cattle feed (Hay);
- Fructooligosaccharide (FOS) used as feed and food;
- Residue as bio-fertiliser;
- Extracted protein feed (for mono gastric animals).

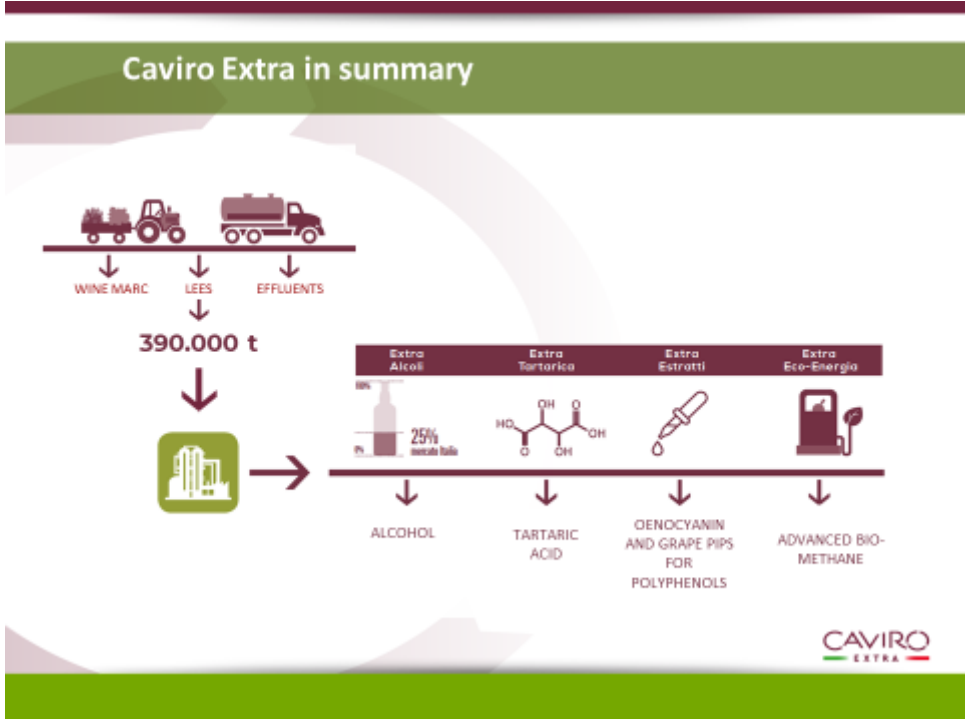
Main benefits

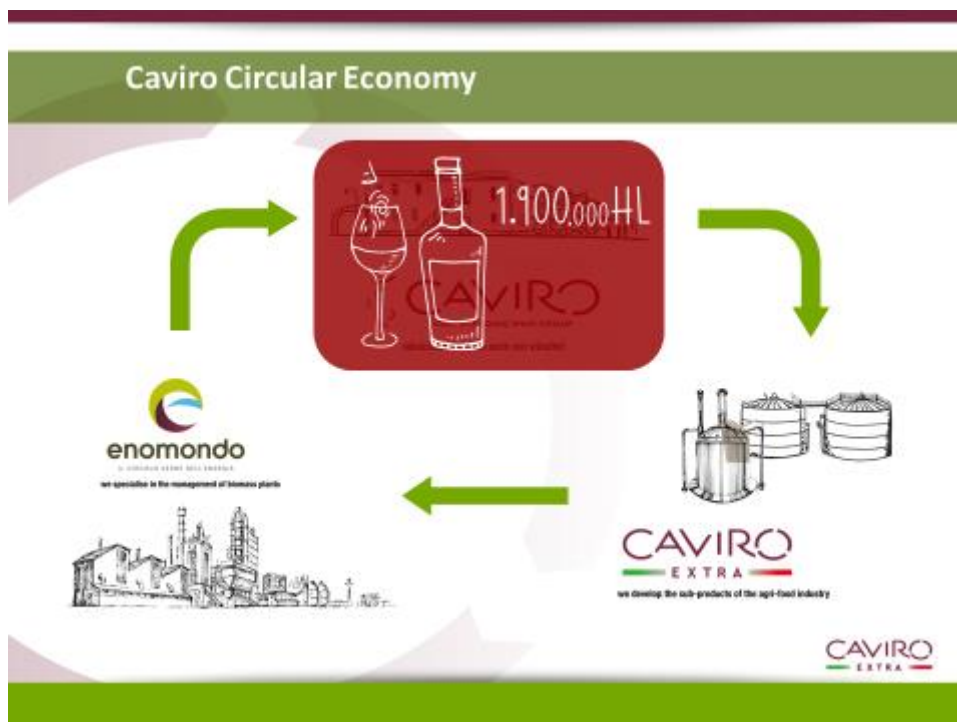
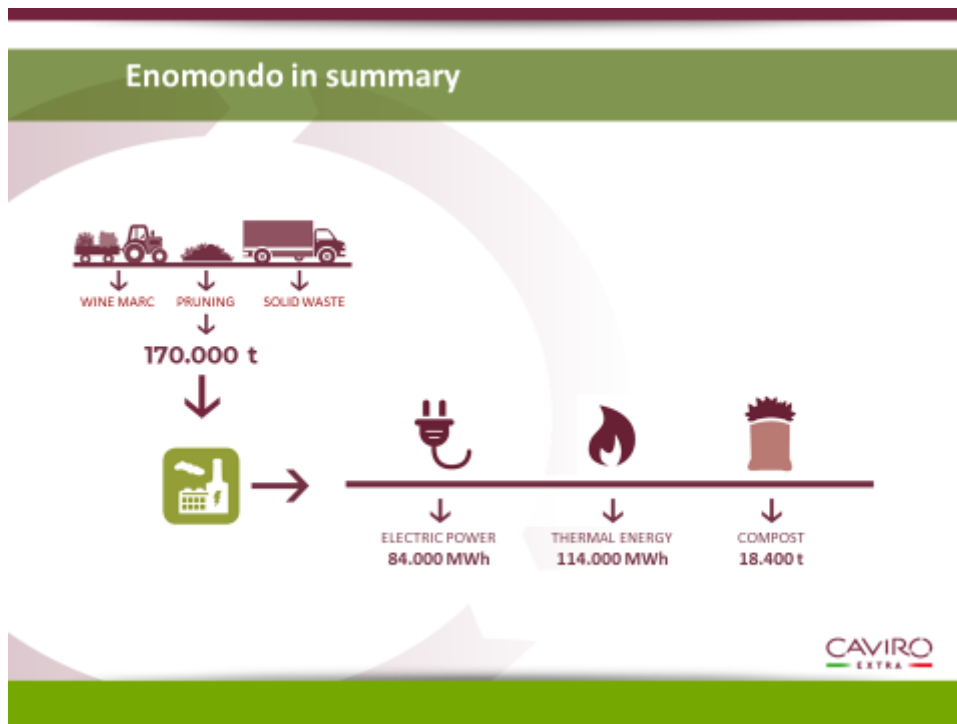
- Adding value to grass through extra side streams
- Potential for farmers to earn extra income from their grass
- Potential to cut silage all year round – no effluent issues
- Potential environmental benefits will enhance image of dairy industry
- If successful would mean Ireland less dependant on imported protein
- Ultimately make West Cork/rural Ireland more sustainable and resilient.

7. **Caviro (Italy):** “A circular bioeconomy business model with energy self-sufficiency “
 Mr Lorenzo VALTIERI, Energy Manager

The largest Italian production chain owned by an agricultural cooperative, founded in 1966. It represents 29 member wineries with 12 500 winegrower partners in 8 regions (10% of total Italian grapes 36.000 ha 86% of raw material from winegrower partners).
Caviro Extra- the branch of Caviro Group for the Bio economy
Enomondo- a joint venture for renewable energy production.







Main benefits from cooperation

- v. Achieving economies of scale in supply of raw materials (including waste and residues) and size of production units.
- vi. Efficient transfer of know-how and development of R&I units.
- vii. Strong link with local communities.
- viii. Cooperation combined with a circular (zero waste) business model ensures resilience (sustainable flow of inputs and outputs over time).

8. Cavale Cooperative (France): *“Bio-refinery in winery sector in France : a model of sustainable and circular bioeconomy”*

Mr Christophe BONNEMORT, Director-General

The CAVALE cooperative has been created in 1921 to ensure the production, processing, sale, and conservation of agricultural products. It has today 600 members (mostly winegrowers), 17 administrators, 45 employees and a turnover of about 10 MEUR.

The cooperative covers 5 business sectors:

- i. Supply (fertilizer, animal feed, compost ...)
- ii. Cereals (Collection and sale)
- iii. Distribution (5 Gamm Vert)
- iv. Oil mill (Moulin du Soud)
- v. Distillery

Main Benefits from cooperation

For the individual cooperative member:

- vi. Storage, logistic
- vii. Distillery : collective waste management and valorisation of residues.
- viii. Technical advice from the cooperative.

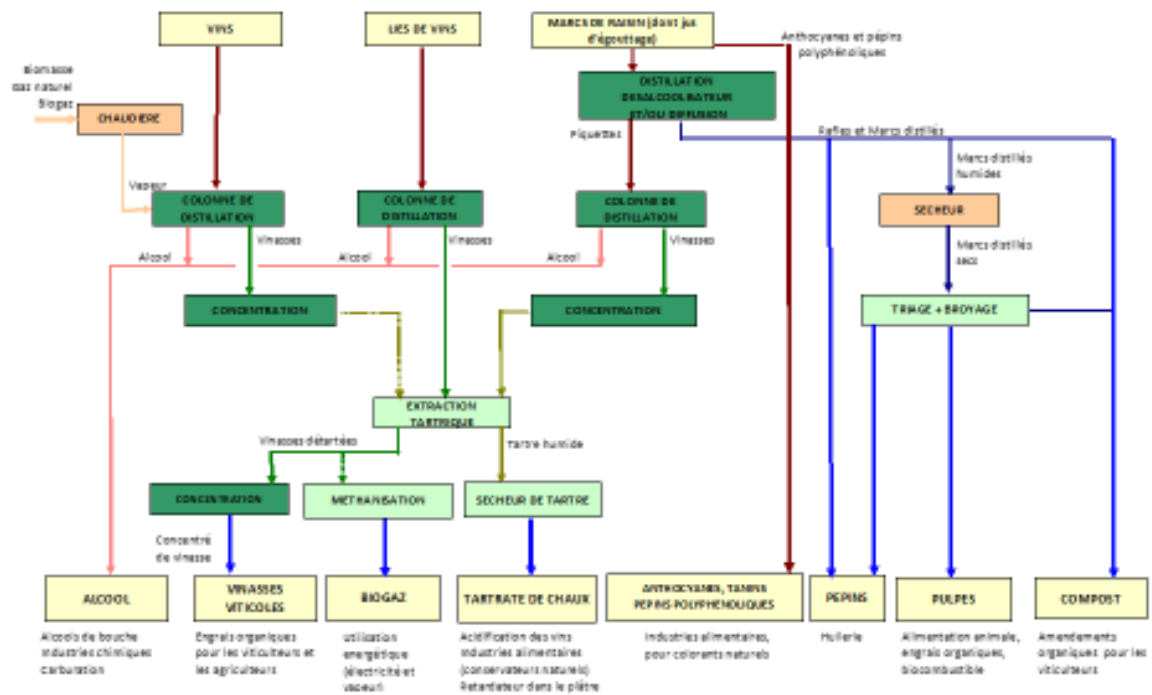
For the cooperative itself:

- ix. Economies of scale in marketing (cereals, wine products,..)
- x. Economies of scale in purchasing (supply side)
- xi. Pooling of resources in production.

WINE DISTILLERIES: BIO-REFINERIES ARE ACTORS OF THE CIRCULAR BIOECONOMY

According to the plant chemistry roadmap (ADEME), a bio-refinery is « a complete industrial plant located on the same site implementing processes intended to break down the components of biomass into its various components, in order to obtain intermediate food products and non-food products (chemistry, energy). According to the concept of bio-refinery, the entire biomass used must be valued. »

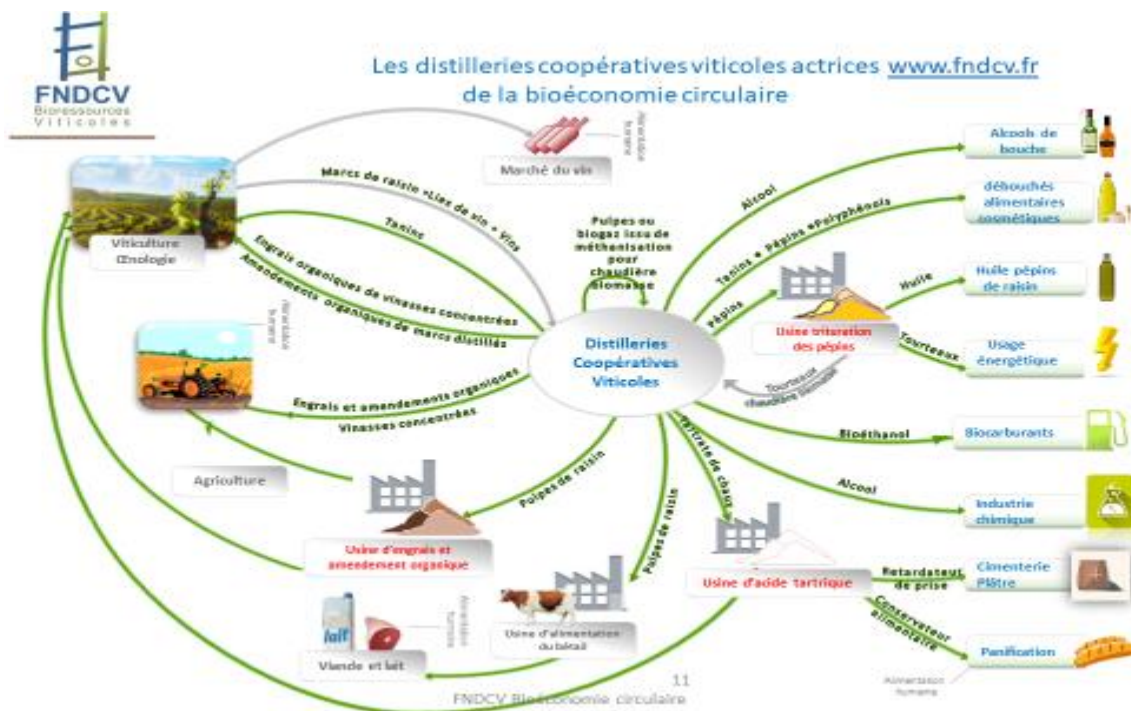
Applying this concept in the case of CAVALE cooperative has created several value chains as outlined below:



CAVALE WINE DISTILLERY: A CIRCULAR BIOECONOMY MODEL



The circular bioeconomy business model of the cooperative makes it possible to supply bio-based products, bio-energy, food and feed but also to establish flows, which recycle part of the nutrients back to the individual farmers.



Potential contribution of the cooperative to mitigating climate change through the production of advanced biofuels



BIOETHANOLS VINIQUES AVANCES ISSUS DE RESIDUS

Bioethanol produced with grape marc and wine lees are named advanced bioethanol (annexe IX directive RED 2) which respects the sustainability criteria this legal framework.

ED95, advanced ethanol, is a biofuel authorized in France in 2016 with specific characteristics :

- Ethanol made with fresh grape marc
- not dehydrated ethanol with additif renewable, used in captive fleets
- Sustainable alcohol.

Winery strongly affected by climate change:

- Global warming- grape harvest has to be done earlier than before (more or less one month early).
- Extreme and frequent droughts, floods, and other weather events.

Impacts on the final product

- Change in wine's characteristics : farmers and winery mostly have to adapt their practices to the new climate.
- Farmers need to find new grape varieties, later harvesting and more resistant to drought and diseases.

Mitigation actions by the cooperative

- Work with local community in order to create the right incentives.
- Associated farmers bring grape marc and wine lees to the distillery.
- Those by-products are transformed into different other products that can be used elsewhere (i.e natural food colours, grape seed, compost...).
- Creation of own platform of composting, in order to give back to associated farmers the grape marc they gave us, in another form (ONZE 300). Promotion of compost which is 100% grape marc, to nourish the ground.

R&I

- Focus on innovation in terms of sustainability: Implementation of an innovative project of grape marc.
- Other structures as Coop de France are helping us by creating working groups around sustainability and bioeconomy.

Ensuring biomass sustainability:

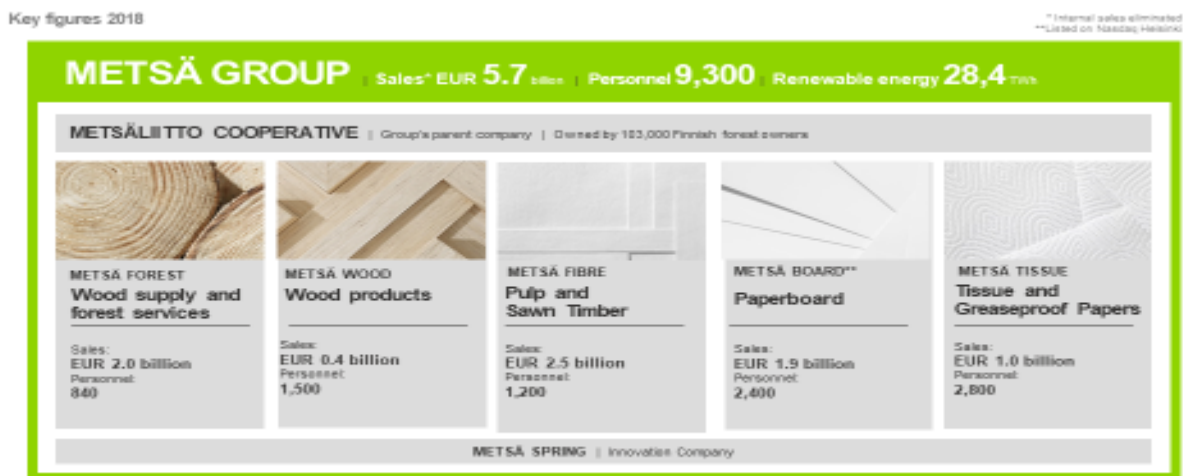
- Agricultural value: 50% of the grape marc to return to the soil (compost Onze 300).
- Energy recovery: 100% renewable energy independent (gazeification, methanation, photovoltaic, energy efficiency).

IV. Presentation of different business models illustrating the benefits of cooperation and the support of cooperatives to individual farmers for the deployment of the Bioeconomy (forestry, industrial crops).

9. Metsä Group (Finland): “A sustainable and circular bioeconomy business model of the forest based industries”

Ms Tytti PELTONEN, Vice President, Corporate Affairs, European Union

Metsä Group’s parent company is METSÄLIITTO COOPERATIVE, which is owned by 103,000 Finnish private forest owners (about 50% of the private forest ownership in the country). The groups has the following areas of operations and covers the whole value chains from the production of the raw material until the final products.



3 | © February 2015 | Metsä Group



The group has a resource-efficient model of production, valorising each part of the available renewable but limited raw material.

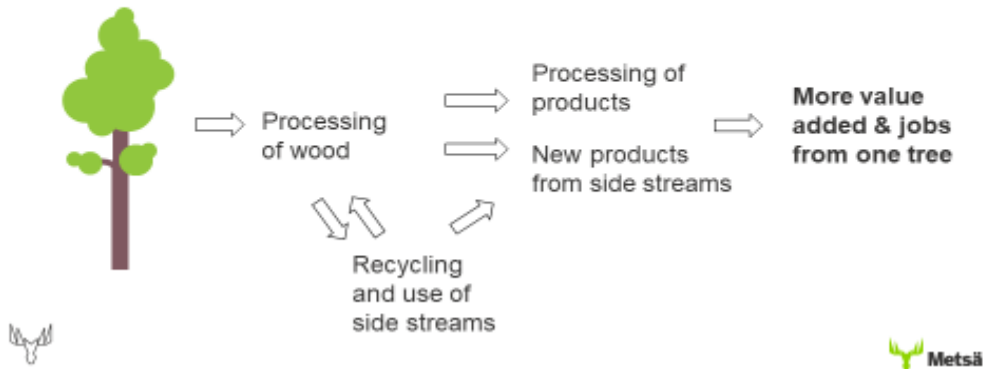
Beyond traditional forest industry



The business model has also evolved over time to focus even more on creation of new products from side streams, involving as well new partners in the creation of these value chains. This has eventually made it possible to create additional value, benefiting the individual forest owners.

MetsäSpring

New bioproducts improve existing value chains and create jobs



The forest-based industries have a huge climate change mitigation potential as long as sustainable, circular business models are applied based on innovative state-of-the-art technologies. This can transform them in carbon sinks, contributing to decarbonisation of the economy.

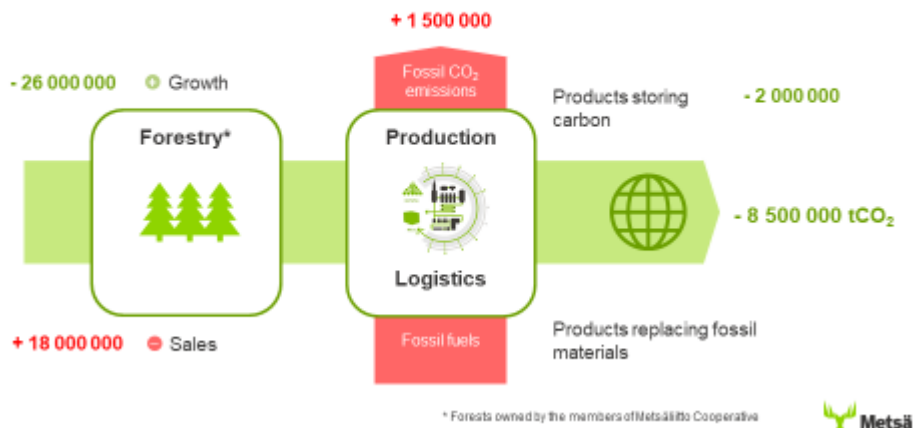
Mitigation actions

- Sustainable forest management- allows for a net growth of the forests and creation of carbon sinks.
- Low carbon production methods: energy & resource efficiency and breakthrough technologies.
- Recyclable and long-term use of products- another way of creating carbon sinks in long lasting wood products.
- Renewable energy from side streams- allow for valorising streams that replace fossil-based energy sources and contribute to the energy decarbonisation.

In order to achieve its goals the group has set sustainability objectives for 2030.



Metsä Group is a significant carbon sink



Investments to support low-carbon circular bioeconomy

- i. In 2015-2018 Metsä Group invested 2 billion EUR in the European bioeconomy- new bioproduct mill in Äänekoski, Finland (1.2 billion EUR);
- ii. In 2018 Metsä Group established a new innovation company Metsä Spring Ltd:
 - a. Identifies and develops new business opportunities in sustainable forest-based bioeconomy and circular economy

- b. Textile fibre demo plant investment.
- iii. Metsä Group is planning three new investments worth 2 billion EUR:
 - a. New bio product mill in Kemi, Finland;
 - b. New pine sawmill in Rauma, Finland;
 - c. First phase in renewing the Husum pulp mill, Sweden (Implementation in 2019 – 2023)

Successful market-based and resource-efficient Bioeconomy

- Competitive forest industry means upgrading each part of the tree to its highest value;
- Our products succeed in international market and have great growth potential without regulatory subsidies;
- Healthy established businesses enable investing into new innovations;
- Public co-funding of R&D&I accelerates the development of new high-risk technologies;

10. Hemp Co-op (Ireland): *“Use of industrial hemp for innovative bio-based products”*

Ms Kate CARMODY, Chair Irish Hemp Co-operative Society Limited

The Co-operative was registered in May 2018 and has more than 100 members at present. It has been set up to address the many issues facing small farmers, already working with companies in the bio-economy. It also aims at addressing legislative and logistical barriers.

Hemp as an ideal crop on marginal land:

- Much of the land on the Western seaboard is difficult to farm.
- High rainfall.
- Small scale farms- 20ha to 30 ha.

Hemp and Linseed/Flax potential:

- Maximising organic production through integrated cropping systems.
- Remediating land for organic use.
- Valuable side-streams for industry.
- Weed suppression. No need for MCPA (Endocrine disruptor).
- 120 day growing cycle lends itself into rotational systems for all farmers.
- Cash crop for farmers

Local hub supplying agronomy knowledge:

- Shared equipment for setting and harvesting the crop.
- Local knowledge for appropriate value chains to suit area.
- Researching appropriate varieties.
- Securing markets for products.
- Initial products identified- Fibres, Seeds, leaf and flower.
- Mobile refinery for producing high value bio-actives.

Development issues for the Co-op Ireland:

- Development and marketing plan needed.
- Fundraising, through a share issue, to create capital for processing facilities.
- Ongoing applications to EU funding schemes for research and innovation.
- Solidarity, integrity and trust to grow the co-operative, into a life changing body for rural Ireland.
- New website to give a forum for all members.
- Competition should not be a major problem as the co-operative structure lends itself to economies of scale

V. Main conclusions from the workshop

The different business cases presented have clearly shown that cooperation can be a key driving force to deploy the bioeconomy, effectively integrating primary producers and revitalising rural areas.

Although also other forms of cooperation structures between economic operators may be equally valuable, this workshop has provided numerous evidences that the cooperatives, in their standard legal form, offer the right pre-conditions for a successful development of the bioeconomy with the full involvement of primary producers by ensuring the minimum economies of scale necessary for setting up certain value chains or as an important factor in establishing new practices at the level of the primary production.

Having this in mind, it is advisable for national and regional policy makers to take into account the existing level of cooperation among primary producers when designing measures for promoting the bioeconomy.

The presentations in this workshop were mainly made by fully-fledged cooperatives but it should be considered that this is not the only possible form of cooperation, specifically for the purposes of developing bioeconomy-types of projects.

In this sense, if the analysis at national/ regional policy level identifies the need for strengthening cooperation, it is advisable as a good practice that further measures are designed to incentivise the creation of specific cooperation structures for the purposes of the bioeconomy, in parallel to other measures directly targeting project support.

This could be an important soft measure, specifically for member states with historically less developed cooperation structures of primary producers or having other forms of cooperation than classical cooperatives, which could also be adequately used as an enabling infrastructure for deploying the bioeconomy.

Key benefits from cooperation for deploying the bioeconomy

i. Maximising economic benefits for individual farmers:

- Better valorisation of biomass produced.

All business cases presented have clearly shown that cooperation structures allow the individual primary producers to get an optimal price, compared to the average market price, for the raw materials they produce (stressed in all cases, with specific evidence presented in some of them).

- Optimising the cost structure by applying resource-efficient business models.

One of the main results of cooperation is the optimisation of the costs of production resulting from the economies of scale (supply of raw materials, storage, processing, marketing, efficient larger scale use of renewable energy etc.).

- Adopting circular models of production.

Cooperation is also vital in creating additional value streams from residues and by-products, allowing achieving a zero waste business model. Depending on the business cases, such new value streams may represent composting of residues and organic waste or other deeper transformations of residues into new products.

- Developing new business models/ new business alliances, which are possible because of the scale a cooperative represents.

In some cases, cooperation is the only way allowing for the joint investment and implementation of new value chains. This way it makes it possible to reap the full potential of the biomass produced especially by valorising residues and waste in innovative ways (i.e. the business cases presented on creation of biomass logistic centres, grass bio refineries, the wine industry as well as the forestry sector are very good examples in this respect). It may also allow the cooperative to build up new alliances.

ii. Improving the sustainability of the business model and increasing the resilience of individual farms to climate change

Almost all primary producers are affected by climate change. This obviously represents a major threat to the sustainability of their business model over time. In this context, the role of cooperatives is vital to help them deploy mitigation and adaptation measures also through technical advice.

Depending on the value chain and the local climatic conditions, the contribution of cooperatives have shown to be crucial, specifically when new crops or value chains have been put in place (specifically when individual members are small scale farms).

Cooperatives play also a positive role helping the individual primary producers and local communities in the energy transition.

iii. The role of cooperatives in the areas of R&I, capacity building, and knowledge transfer

The presentations have shown the important role of the cooperatives in the area of research and innovation. The labs and innovation streamlined by the cooperatives are vital for the sustainable development of the value chains. The new crops developed are more adapted to the climatic conditions ensuring the sustainable development of the business by guaranteeing higher and stable yields over time.

Cooperatives also guarantee the application of good practices across the board by all primary producers participating in the value chain as well as a respective one stop-shop technical support.

All this taken together is vital for the evolution of the business models of primary producers over time.

iv. Role of the cooperative in raising awareness and deploying the bioeconomy in the context of the local community

Many of the presentations have also shown the importance of the cooperatives in the local context by revitalising rural areas, contributing to raising awareness and mobilising stakeholders for innovative approaches for the bioeconomy.

v. The role of public funding (national and EU) to help cooperatives in the process of mainstreaming the bioeconomy by creating new value chains or integrating into existing ones

Although access to finance does not seem to be the major obstacle in deploying bioeconomy projects, the presentations have shown that in some particular cases targeted public financing can trigger innovative bioeconomy projects (i.e. the cases of cooperatives of Alchamancha and Aragon).