



SCAR BSW and BBI JU SRG JOINT WORKSHOP

Advancing the Creation of Regional Bioeconomy Clusters in Europe

14th March, Brussels, BBI JU (09:00-16:30)

Workshop report: lessons learned and recommendations for developing clusters in the bioeconomy

This report is a brief record of the workshop and the ensuing discussions and includes as annexes the agenda and list of participants. Presentations will be sent to participants. Around 80 persons attended the workshop.

Recommendations and wrap up

The report starts with recommendations which emerged from the workshop and as such is a synthesis of the outcomes of the workshop. During the concluding session participants provided feedback on the overall lessons learned in the cluster workshop. The non-exhaustive list of recommendations below points to ideas for consideration when developing clusters in the future.

The actual process of cluster development is important and must be carefully planned. However, potential benefits can reward investment in terms of resources. There is no blue print for building, organising and developing a cluster, but will depend on the actors and their willingness to support the process, to work together and to make things happen.

Recommendations for developing clusters in the bioeconomy:

Initial phase

- Be clear where to go with the cluster: have a shared vision and strategy with an action plan.
- Start with SMEs, but include other disciplines as well.
- Be patient, build trust; it should go step by step.
- Be ambitious, but realistic.
- There is no blueprint for a cluster.

Funding

- There are different options including public funds, private funds, membership fees, generating funds from activities etc.
- There is likely to be a change over time possibly moving from predominantly public to more private funding.
- Bioeconomy value chains are still very much market (supply) push driven; requires a change towards market (demand) pull driven value chains.

Cluster Management and Administration

- Usually a need for somebody to drive the cluster; someone who is extremely passionate
- Cluster management and administration can provide professional facilitation and management support.
- Be careful that the cluster management does not become a project manager of H2020 projects in order to get resources

Support and alignment

- EC funded projects like BERST, BioStep and Power4Bio can provide tools for supporting the development of regional bioeconomy strategies. Use what is available.
- EC Bioeconomy Strategy is available and national strategies are being developed; regional/national clusters must align with these.

General Implementation

- Start small and build up capacity; learning by doing.
- Open-innovation is important to connect science to business and to accelerate development.
- The actual process of establishing and developing a cluster is both important and beneficial.
- Benefits of clusters for members include emerging value chains, connecting stakeholders, increasing market opportunities etc.
- Develop networks within the cluster and between clusters.
- Seek and use support from BBI JU and others

Background of workshop

The workshop was a joint initiative of the Bio-based Industries Joint Undertaking (BBI JU) and the SCAR Strategic Working Group on Bioeconomy (SCAR BSW). The specific aim of the workshop was to stimulate interest in creating regional bioeconomy clusters in regions and countries that are less active in the bioeconomy and bio-based sectors via an exchange of knowledge and experiences in developing such clusters. The overall aim was to foster support for the bioeconomy in general and for increased participation in the BBI JU Initiative of underrepresented countries, including SMEs.

Experts and representatives of bioeconomy related clusters, State Representatives Group (SRG) of the BBI JU, SCAR BSW and BIOEAST¹ members and policy makers at national and regional level discussed the key elements for cluster development and their role in supporting the bioeconomy. Participants included representatives from countries which are currently less active.

Opening and Objectives of workshop

Philippe Mengal, Executive Director BBI JU, opened the joint workshop and addressed its main aims:

- To identify good practices of regional bioeconomy clusters.

¹ <http://bioeast.eu/>

- To foster support for bioeconomy in general and the role that SMEs can play here. What are key drivers for clusters development in bioeconomy in order to improve it?

The [Bio-based Industries Joint Undertaking](#) (BBI JU) widening participation strategy intends to increase the participation of member states (MSs), associated countries, regions and stakeholders in the initiative to leverage the full EU bio-based potential. The study “Bioeconomy development in EU Regions”² published by the European Commission (DG RTD), demonstrates the direct link between the high participation of a certain country in the BBI JU and the presence of clusters. Clusters are closer to territories and can make the necessary link between the regions and the bioeconomy/the BBI JU initiative. Also they are instrumental to leverage the participation of SMEs in the Bioeconomy.

Fabio Fava, Chair of BBI JU States Representatives Group, also welcomed participants and stated that clusters are key enablers for innovation. They work at the territorial level, able to mobilise stakeholders and to create partnerships. Clusters are important in any sector, but especially in the bioeconomy that has to integrate quite different and fragmented actors. Not all are ready for participating in initiatives; therefore, clusters could encourage the creation of a long term, robust and sustainable bioeconomy ecosystem. BBI-JU wants to achieve the followings goals:

- To have BBI-JU better integrated in innovation and help reach higher Technology Readiness Levels (TRLs).
- To intensify collaboration between developed member states with Central and Eastern European (CEE) states and Southern European states. Through mobilisation and development of clusters these territories could become much more active within the bioeconomy.

The BBI JU State Representatives Group (SRG), an advisory body to the BBI JU, has recognised the relevance of cluster development in the context of the deployment of the European Bioeconomy potential.

Jan van Esch, Co-chair of the SCAR BioEconomy Strategic Working Group (BSW), also welcomed participants and mentioned that clusters are not yet within SCAR and looked forward to hearing good examples and lessons learned. Bioeconomy clusters are important because implementation is not taking place in the offices of the member states, but in the field at the local level, i.e. where companies work together, and trust each other. As there is no blueprint to organise a cluster, good examples and facilitation tools are helpful to develop tailor made clusters.

The [SCAR Bioeconomy Strategic Working Group](#) (BSW) aims at facilitating informal exchanges between MSs on regional, national and European activities; at implementing strategies and on encouraging research and innovation (e.g. needs, hurdles, challenges, organisational matters etc.) in the broad area of the Bioeconomy. BSW’s ambition is to be the central platform in Europe overseeing different initiatives at national and European level and to translate this into conclusions on actions.

Alex Percy-Smith, moderator of the workshop, introduced the three sessions, the way they were to be structured and their aims:

² https://ec.europa.eu/research/bioeconomy/pdf/publications/bioeconomy_development_in_eu_regions.pdf

- To understand what clusters are and advantages for industry, researchers, organisations, and policy makers.
- To exchange experiences from existing clusters.

Myrna van Leeuwen, bioeconomy specialist from Wageningen Economic Research, reported during the workshop and summarised the major points and conclusions from each session in this report.

Throughout this workshop, BBI JU SRG and SCAR BSW aimed

- To stimulate a transfer of know-how.
- To identify best practices and key drivers for cluster creation in Bioeconomy, so that participation of underrepresented countries in BBI can be further increased.
- To provide recommendations for policy-making supporting the development of clusters based on the outcomes of the discussions.
- To provide a new networking opportunity for bioeconomy actors with a focus on regions that could play a much more prominent role in the European bioeconomy in future.
- To create a new opportunity of closer collaboration between SCAR BSW and BBI JU SRG delegates and others.

Main outcomes of Session 1: Policy support for cluster development

This session captured two examples of EC support to regions and countries in designing cluster policy and cluster development.

European Cluster Collaboration Platform (ECCP)

Hélène Diane Dage, DG GROW Unit F.2– Advanced technologies, Clusters and Social Economy of DG GROW, presented the European Cluster Collaboration Platform (ECCP; <https://www.clustercollaboration.eu>), funded under COSME (Competitiveness of SMEs) and launched in 2016. This service facility provides cluster organisations with modern tools.

Clusters are accelerators of growth and industrial change. The EU has about 3.000 strong regional clusters in related bioeconomy industries, which have as main objectives:

- Strengthening the cooperation between members/stakeholders of clusters.
- Increasing the competitiveness of small and medium enterprises.
- Supporting the international activities of SMEs, e.g. to produce more efficient, by bringing them the right partners.

ECCP - What? A platform for cluster organisations that looks for collaboration on a voluntary basis

- Gives national/regional clusters the opportunity to work strategically in a cluster platform, against low participation cost.
- It is very active: 960 clusters are in; 11.000 monthly visitors to the website.
- Not only SMEs are involved and organised, but also technological centres and universities.
- Top 5 of its target markets are US, China, Canada, Japan, and Brazil.

ECCP - Why? The need for investing in a smart, innovative and sustainable industry due to global challenges to achieve. With this respect, especially the circular economy is seen as a win-win opportunity to explore carbon reduction business actions, creation of jobs and export chances.

ECCP - How? Supporting and boosting the growth and connection of business ecosystems and enabling cluster organisations in EU, by offering following tools:

- *European Observatory for Clusters and Industrial change* (<https://ec.europa.eu/growth/industry/policy/cluster/observatory>): a single access point for statistical information, analysis and mapping of clusters and cluster policy in Europe. For 1) European, national, regional and local policy-makers; 2) cluster managers; and 3) representatives of SMEs.
- Organising trade fairs, bilateral meetings and matchmaking events.
- Organising actions to promote cluster cooperation for industrial leadership in global markets, e.g. 'EU clusters go International'.
- Supporting joint international strategies and collaboration with partners in third countries that benefit SMEs.
- *European Resource Efficiency Knowledge centre*: provides services to SMEs and their support organisations, like tailored reports on SME's resource efficiency performance
- *European Cluster Excellence Programme*: supporting cluster management excellence and strategic interregional partnering to foster cluster capacity building and SME competitiveness. Aims are 1) to enhance cluster managers' skills; 2) to support cluster strategy development; and 3) to organise twinning.
- Facilitating projects for new industrial value chains (e.g. in H2020). Especially the 'bio' issue is a very important starting point in those projects.
- *Towards joint cluster initiatives*: EC is working on its conceptual from; circularity, value chain and digitalization will be the three main topics.

Discussion

The issue was raised that the ECCP toolkit misses an instrument that finances network events where SMEs can meet and learn from each other, and can identify potential opportunities and also competitors on the market. This is a necessary stage before going international. The BioEconomy Regional Strategy Toolkit (BERST; 2013-2015; FP7) project learned that community network meetings of institutions and human beings have to be initiated as these take time and are costly, especially for SMEs. DG GROW answered that the innovation and smart specialization process has to start locally. A next step is to encourage companies to go abroad, but – indeed - only small funds are available for financing the creation process of new cluster partnerships.

Conclusions on European Cluster Collaboration Platform (ECCP):

- Clusters must go beyond helping SMEs only - technological centres and universities should also be involved and they should get organised.
- Clusters can strengthen internationalisation opportunities of SMEs and could improve growth.
- Steps to be taken for SMEs in developing clusters: a) understand national and EU markets; b) start working with those partners; c) get support from clusters when going beyond EU markets to minimise risks.

BIOEAST Initiative

Barna Kovacs, Secretary General BIOEAST, explained the establishment of BIOEAST, a Central and Eastern European initiative for knowledge-based agriculture, aquaculture and forestry in the bioeconomy (see <http://www.bioeast.eu/>). This open initiative started by the Visegrad Group Countries (Czech Republic, Hungary, Poland, Slovakia), and was joined by Bulgaria, Croatia, Latvia, Lithuania, Republic of Estonia, Romania, Slovenia.

BIOEAST Initiative - What? The initiative offers a shared strategic research and innovation framework for working towards sustainable bioeconomies in CEE countries. Formalised through three political agreements of the Agri Ministers in CEEs (October 2016; September 2017; June 2018).

BIOEAST Initiative - Why? The need for strategic thinking at (inter)national level to address gaps and challenges on:

- Traditional knowledge transfer process; low performance of knowledge-based agriculture, aquaculture and forestry in the bioeconomy; and participation of CEE regions in H2020.
- Sector based, parallel processes; lack of cooperation network.
- Lack of societal understanding and participating.
- Lack of political commitment, administrative capacity, personal skills, evidence based policy making.
- Lack of funding framework.

BIOEAST Initiative - How? Interventions for up-take within the bioeconomy at national CEE level follow the process of Scope, Goals, Level, Objectives and Actions:

- Identify challenges and research areas, develop a common vision, and develop a bioeconomy strategy.
- Provide an evidence base for policy making and state of play: SCAR/NOVA studies show potentials for increasing a) agricultural productivity; and b) bio-based waste use for materials.
- Develop skills, synergies and visibility:
 - o Theme specific working groups will be established.
 - o Could CEE bioeconomy benefit from clusters and how to establish these? Options:
 - Bottom-up national cluster on bioeconomy: needs strong political commitment.
 - Top-down regional/local clusters on bioeconomy: needs strong entrepreneurial commitment.

Discussion

There should be better EC support for developing strategies in CEE states in order to increase the participation rate of their SMEs in the EU cluster platforms.

Response by DG GROW: EC does inform member states on opportunities for participating in clusters. To raise participation rate of CEEs, they have to come with proposals as the working together with different stakeholders and innovation process start at regional, i.e. bottom-up, level.

Conclusions on BIOEAST Initiative:

- To challenge policy makers to develop the bioeconomy in the same direction.
- First need is to get a strategic common thinking that gives direction to the stakeholder network: development of a national bioeconomy strategy is key!
- The national bioeconomy strategy should be followed with a roadmap and action plan to implement it. This is a next issue to tackle.
- Though the BIOEAST Initiative does not have the aim to become a big cluster itself, the national bioeconomy strategy could also provide the base for potential cluster (platform) development. Start small: build some small regional clusters – e.g. with stakeholders involved in similar chains. Next, regional clusters could come together in a broader cluster platform.

Main outcomes of Session 2: Best practices from general clusters targeting natural resources

This session identified lessons learned from best practices and experience gained by clusters which have existed for some time. These clusters generally target natural resources, but were not created “on purpose” around the bioeconomy.

The following panellists representing five established clusters gave their views and experiences on a number of cluster related issues. Views and comments have been captured with a view to presenting the diversity of experience.

Agrofood resources:

- Pôle Industries & Agro-Resources (IAR, FR) by *Christophe Luguel*
- Cluster Food+I (ES) by *María Díaz Navarro*

Wood resources:

- Croatian Wood Cluster (HR) by *Rosana Šimunović*
- Paper Province Värmland (SE) by *Maria Hollander*

Biomarine resources:

- Forum Oceano - Maritime Economy Cluster (PT) by *Carla Domingues*

What were reasons for setting up the cluster?

Clusters are groups of entities, i.e. a network, that work together on open innovation. It is about people that share knowledge, ideas, and business.

Maritime Economy Cluster was created by bundling several activities of sectors that relate to the same maritime resource. At the same time it helped that public policy initiatives and wide instruments were available. Further there was willingness to further involve the quadruple helix environment, to organise the value chain, and to have a single voice and strategy. A common aim was to promote innovation.

In *Cluster Food+I*, collaboration and innovation were reasons behind organising SMEs and bringing together all stakeholders under the same roof.

Paper Province Värmland cluster was initiated by only one person that recognised the big suppliers and the research around their own businesses. These potentials were taken as opportunity to work together and to start a cluster.

Croatian Wood Cluster started as a bottom-up approach from the companies. Though the cluster concept was unfamiliar in Croatia, the atmosphere was good to promote the cluster.

IAR cluster started as top-down approach, followed from a call for proposals launched by the government. Regions could submit a proposal for developing a new cluster based on the strength of the region. A group of six entities decided to join its forces. A common cluster vision was created targeting to new outlets for agriculture by using the best technology and finding the best markets.

Which pre-conditions are needed to establish a cluster?

Industrial leadership is needed; real commitment is needed from the industries on cluster strategy.

A common vision is crucial, shared by a core group. Otherwise the cluster will not work. Establish the core group, and organise a critical mass along the value chain. Identify where you are strong. That will attract industries – including brand owners – to join the cluster.

Knowledge about the market (gaps analysis) is essential. Understand the use of building a cluster that is good for accelerating business development in the region.

A common vision is needed to be communicated in an understandable way and that gives trust to members that a cluster is a good concept.

Funding of the cluster is on the longer term hardly linked to national/regional governments, but must come from the market, e.g. by organising events, asking memberships fees, and participating in projects.

Policy support mechanisms are not experienced as being helpful for the clusters. As there is no common strategy of governments, no enduring supportive instruments are imposed. Only if policy support means 'the provision of money' it is considered as helpful for cluster development.

How to increase partner engagement in a cluster?

Clear communication: a good story is needed to create engagement. Use language that is understandable for the small SMEs.

Stay with your companies; give them trust; visit them and go together. At the end you're a network of companies. Be patient and be trusting. Go hand-in-hand.

Connection between members is key. All parts of the value chain must be in, but not immediately from the start. First start with initial collaboration between a couple partners, then take the next step and involve more partners. This process takes time.

Give evidence to the value added of the cluster. Try to engage as much as possible, e.g. to participate in joint projects.

Have a horizontal approach as well and be diplomatic. Everybody has to think you work for them, but the cluster has to work for the whole chain. It is a good platform for dialogue. Knowledge is also very important, e.g. on what is going on in the EU.

Is the Chamber of Commerce helpful for developing a cluster?

Main objective of clusters is working together and identifying opportunities for international markets, while Chambers have different knowledge and different issues to solve.

Cluster membership is voluntary, while membership is mandatory for Chambers.

Clusters are more on innovation, while Chambers are more on training and internationalisation.

Clusters are based on innovation, while Chambers are client-based. The open-innovation tool is helpful here: create events so that people can meet; can exchange non-confidential information; can search for the good combination of partners that understand the science/markets/opportunities.

How are clusters funded?

Funds are often for shorter periods, e.g. public funds. But clusters need at least a 10 years vision. Therefore, it is important to get a mixture of fund types which may change with time. For the longer term, support from private funds is fundamental: membership fees, participation in projects, providing of services.

The first 10 years they had membership fees; regional funding of some of the regional federations. Useful for building capacities, for getting to know each other, not so specifically for innovation. Then national money came available in next couple of years; nowadays also membership fees are important source of funding'

If no public money is available, the cluster is fully dependent on private money. Business model is to organising events, study events, etc.

First, the staff of the cluster management and administration has to be financed. A critical mass must be built as soon as possible. Business model of clusters are membership fees and dependence on finance of government.

Second, most key is the creation of an innovation community; to develop collaborative innovation projects. These must be financed from outside from e.g. national sources, EC projects, conducting market studies. Also the type of funding goes step-by-step.

Projects with a long period of funding could help to develop clusters. It could give the time that is needed to generate a common policy and strategy; to engage collaboration; to make clear who the main driver is (The industry? The region? The government?); and to develop the cluster further. Different sectorial companies involved must have the same view, e.g. on sustainability.

Avoid becoming an EC project manager just to get funding and keep connected to original cluster management tasks. It is good to make business, but do not diverge from the core activities (e.g. collaborating in innovating projects). It is, however, feasible and important to find the synergies; e.g. projects also provide clusters a lot of knowledge on technology, and help to create networks.

Find a mixture of good and long funding. EC projects are useful, but take care not to get involved in too many. Take time to capitalise the project results to the members.

Are there economies of scale from local-oriented initiatives?

Start with creating a regional community, and then develop industry-driven pilots in open-innovation platforms. The regional cluster could become a national cluster in the course of time and bring higher rate of investment. Be patient also here.

The bioeconomy sector has two dimensions: finding new businesses and earning money. This should start with people in the local area/municipality and organise how people could contribute to transforming the system towards a sustainable product market.

Local municipalities are involved, so cluster works more and more with local stakeholders.

Patience and step-by-step approach required to build up the bioeconomy cluster.

Clusters can be cross-border, but issues on different legislation and regulation in countries can make this complicated. Projects (e.g. Interreg programme) could support here.

How important is a link with other clusters?

Knowledge exchanges between clusters take place in events, and synergies are sought. Also integrated clusters are good for going international. Both cross-sectorial and cross-regional initiatives are undertaken.

Cluster system integration; there is a good exchange of challenges across regions in own country. If distance plays a role – cross-regional – cooperation becomes more difficult, but it is important.

It is crucial to remain in contact with other clusters, to provide opportunities for national members and to learn from each other, both at cross-sectorial and cross-national levels. It is important to have regular meetings with other clusters to build trust. The use of thematic networks, a tool provided by EC, is helpful here.

Exchange of good practices has been done at European level for years. There is a lot to learn from colleagues. The challenge is to manage the cooperation of clusters and create a shared vision and build trust. This is absolutely essential as it will not work otherwise, but it will take time.

Find complementarities (not similarities) of clusters and ways how to improve the value chain competitiveness.

Main lessons learned from best cluster practices:

- Clusters could start with a bottom-up approach (industrial initiatives) or top-down approach (governmental initiative)
- Essential need for a common vision and strategy that are shared by a core group, but also by all members.
- Understandable communication: stay with your companies: give them trust; visit them and go together. At the end you're a network of companies
- Funding needed for:
 - o starting the cluster: public (financial) support is helpful
 - o developing the cluster further: mostly based on private money i.e. membership fees, organising events, participation in EC projects, market analysis reports
- Find a mixture of good and long term funding. EC projects are useful here, but avoid becoming a project manager only just to get funds. Take time to capitalize EC project results to the members.
- Cluster development take time
- Clusters work as catalysts, i.e. by connecting, providing guidance and advising members; not for supporting IPR issues.
- First put efforts in becoming stronger at national, regional and local level before starting partnerships with other countries.
- Crucial is to keep in contact with other clusters, to provide opportunities for national members and to learn from each other; both at cross-sectoral and cross-national levels.
 - o Challenge is to manage the cooperation of clusters, to create a shared vision and to build trust. Regular meetings and EC thematic networks are helpful here.
 - o Find complementarities (not similarities) of clusters and ways how to improve the value chain competitiveness.

Main outcomes of Session 3: Cluster development within the bioeconomy

This session identified recommendations for cluster development specifically for the bioeconomy sector that are experienced by clusters that are of a more recent start.

The following panellists representing five relatively new clusters gave their views and experiences on a number of cluster related issues. Views and comments have been captured with a view to presenting the diversity of experience.

CLIB 2021 - BioEconomy Cluster Germany 2021 (DE), *by Dennis Herzberg*

Green Chemistry Cluster (IT), *by Sara Cantone*

SBIOC - Spanish Biobased Cluster (ES), *by Margarita de Gregoria*

Bioeconomy Initiative. Bioeconomic Growth Center Guidborsund (DK), *by Mette Jorgensen*

Bioeconomy Cluster (SK), *by Katarina Bliclingova*

How did the cluster start?

CLIB 2021 started with a top-down approach. Ministry awarded five projects to establish clusters. Proposals included concepts on a common vision, common problems and goals and a roadmap.

Bioeconomy Cluster was established along three main incentives: 1) launched in FP7 and bridge gaps between research and SMEs; 2) formulation of business plans; 3) natural need of SMEs. SMEs, academia and research centres are part of the cluster.

Green Chemistry Cluster is a bioeconomy cluster: 50% is industry (mostly SMEs); 35% is university and research. It includes mainly regional partners. It brings together different actors along the value chain, aimed to bridge the stakeholders involved, stakeholders with policy makers at regional and national level. National bioeconomy strategy is available, but not yet an action plan. However, the cluster has its own strategy and action plan. It helps policy makers in organising regional strategies.

SBIOC is basically formed by SMEs that represent different sectors in the bioeconomy (forestry, chemistry, engineering, marine, recycling industry, IP services). They joined their efforts with the main aim of promoting a sustainable society, based on the bioeconomy. The cluster regularly collaborates with public entities, technology platforms and scientific-technical parks.

The *Bioeconomy Initiative* isn't a cluster yet, but wants to build collaboration around sugar beet (main product) and biomass waste. It has started from scratch by organising events and/or visiting events to build capacity and knowledge, visiting schools, and participating in an Interreg project. The aim is to align with existing initiatives and connect.

What are pre-conditions to start the cluster?

A common need to develop the bioeconomy, e.g. by transferring technology. It is impossible to do it on your own, must be done together. Clusters are a good concept.

Essential needs to start: 1) Funds to start the cluster up (could result from a push from a ministry); 2. Define a common problem and vision (e.g. driving force could be the chemical industry, that feel urgency to have different feedstock); 3) Mobilize critical mass of people (5 or 5 is enough at this stage) that are active in developing the bioeconomy (science combined with industry; political willingness); 4) Driving people.

Build trust, but that takes time. The benefit of a cluster is to connect different stakeholders. The cluster gives opportunity to talk with other people.

To have a common idea about the bioeconomy. Public support and funds are essential to start. A good mix of funds is needed; membership fees, provision of services.

A common goal is the first pre-condition. A cluster depends on entities involved. Small SMEs have lack of funding, but people want to work in a common way. There might be a 'language/ understanding' problem between different actors and stakeholder, despite the common vision and goal e.g. researchers and academia have an idea about future opportunities, but companies don't see that yet. It is important to get a common understanding and that people feel committed to learning another 'language'. This also takes time.

It is important to find enthusiastic people that understand why the bioeconomy is good and can communicate that message. Through the examples provided in this workshop, the business could be made understandable.

How do clusters benefit to the bioeconomy?

Cluster facilitates bringing results and benefits to its members.

Clusters can contribute to valorisation of resources and create value to companies and could increase the visibility of the companies.

The networking aspect is essential: a set of events, bringing people together, matchmaking. That can provide a value added to SMEs. This is challenging but that is key for justifying membership fees.

It is important to recognise the different goals within the cluster. Big companies see big value added when clusters can enter into a dialogue with policy makers. Clusters can help in focussing on market

analysis and identifying what is going on. It is easier to get someone on board if you have a group of people behind you that say 'we work together on this or that'

Green transition also means the need for new education, which provides a basis for new collaborations and projects.

The concept of 'bioeconomy' is linked to 'sustainability'; there are common problems and challenges. Clusters can help here, starting from common understanding of the problem and collaboration.

The bioeconomy is not only about money but also about contributing to the environment, job creation and education.

The combination of 'clusters' and 'bioeconomy' is different from how clusters usually work and start. In an emerging sector such as the bioeconomy, people are not used to working together as they do not usually depend on each other's business. From that perspective the cluster is the only way to work together.

A bioeconomy cluster is not a normal cluster, as for the EC the climate is a key aspect here. Investment in impact on innovation is a smart goal to achieve.

Open-innovation is important. Many chemical enterprises have closed their R&D departments. In recent years, industrial players have been investing directly in young SMEs, i.e. spin-offs of universities. Clusters could create a 'bio-voice' on which a problem (concrete question) has to be solved. SMEs that submit a good proposal will get funding. This is an usual way to integrate science with business.

The community (members of the cluster) is part of the value that the cluster creates.

Membership fees versus benefit of the cluster: If a member wants to spend time in collaboration, which is key in a cluster, then the membership fee should be low; benefits will be much higher, which is the value a cluster can generate directly.

How to include primary producers in clusters?

Farmers should be helped to understand that it makes sense to be involved in clusters. A cluster should include a range of actors including not only researchers but also primary producers.

The beauty of the bioeconomy is that it includes a wide range of sectors. It is about circularity and sustainability but usually starts from the primary producers who provide the biomass.

It is almost impossible to have everybody on board from the very beginning. 1) A strategy is needed for development. 2) It is important to go from a technology push to a market pull. Both aspects are needed but it takes time to build the cluster in that direction. Start from what you have: what are the strengths in terms of opportunities (sectors, feedstock availability, willingness, strategy, etc.), then make steps.

Start from sustainable production on farm, which will, in the course of time, improve global issues. It's not only on carbon in soil and organic farming, but whole circle has to be regarded; otherwise it will not work.

Interreg projects can convince farmers to get something out within relatively short term. Cluster is a smooth way to create a contact between science and the primary producer.

Members of the cluster must be active and willing to collaborate and to come with ideas how to bring new products to the market or goes across borders. Clusters could help with finding partners and funding.

The bioeconomy is still very much market push/supply driven instead of market pull/demand driven.

Question to audience: Which steps are needed to start a bioeconomy cluster?

Bring stakeholders along the value chain together: primary, processors, SMEs, researchers and an accelerator to connect. That group of persons is needed from all businesses.

The change from market push to market pull is interesting. Atmosphere is needed to make first a push for a short time, but next formalise/change it into a market pull.

There are interlinkages between 'agro' and 'bioeconomy' and 'circularity'; it's about labelling, but the common word is 'sustainability'. The common language is to have the whole value chain captured.

Build consortia around the value chain; it depends on the regions' characteristics what works best, e.g. when a company selects its location it looks at multiple criteria, including feedstock availability.

It is difficult to mobilise bioeconomy in CEE states as most countries and regions have no bioeconomy strategy. But the industries are there. However, this workshop has provided examples how mobilisation could take place.

At national level we still need policy commitment to show that the bioeconomy is important first; and next step is to use clusters for building networks and connections.

This type of event needs to be repeated from time to time to increase mutual learning.

Main lessons learned from clusters in the bioeconomy that just started:

- Clusters are at very different stages of development.
- Still a lot of effort is needed in getting a common understanding of problems, goals and the vision of clusters including views of different stakeholders; speaking the same 'language'.
- It is not only about money, there are also other challenges like the environment, job creation, education etc.
- A cluster can bring value added to members, by:
 - o Contributing to valorisation of biomass resources; this creates value to companies.
 - o Networking and bringing people together.
 - o Entering into dialogue with policy makers, which is difficult for individual companies especially SMEs
- Bioeconomy is an emerging sector with new connections across sectors which do not usually work together. The cluster concept is key to getting trans-sectorial collaboration started and organised.
- Bioeconomy, circularity and sustainability start with the primary producers (biomass providers), but other actors must be included in a cluster e.g. researchers etc.
- Primary sectors must be convinced to participate in bioeconomy clusters; in general this needs additional efforts and takes time.
- It is difficult to mobilise bioeconomy partners in CEE states. This workshop has provided good examples how the process could start.
- EC funded projects like BERST, BioStep (<http://www.bio-step.eu/>) and Power4Bio (<http://ecrn.net/power4bio-h2020-project-approved-by-the-european-commission/>) provide tools and information for supporting the development and implementation of regional bioeconomy strategies.

Annex 1 Agenda

Annex 2 List of participants