



Boosting European Citizens' Knowledge and Awareness
of Bio-Economy Research and Innovation

D 3.2

Roadmap and Synthesis of hubs

From a nucleus to a flourishing hub



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1. Introduction

The following deliverable sheds light on the process of ‘setting up’ five regional BLOOM hubs, namely:

1. Spain (Focus: usage of rest materials from agro-production for valorization; innovation and networking within the agro-food sector)
2. Poland (focus: bioplastics, pharmaceuticals, food, agriculture)
3. Netherlands (“Dutch Hub”; focus: bio-chemicals and bio-plastics)
4. Finland & Sweden (“Nordic Hub”; focus: new wood-based products)
5. Austria & Germany (“Austrian/German Hub”; focus: innovative circular materials)

Moreover, it elaborates on certain framework conditions and the initial situation of the bioeconomy environment in each region. The main goal of this deliverable is to show the development of the hubs since their establishment. It deals with the regional characteristics and the first starting position of each hub – for instance, the different positions and connections of regional hub partners to bioeconomy networks and clusters. Furthermore, it deals with the main achievements of network-extension and connecting to networks (e.g. development from the first stakeholder mapping to the current status). Moreover, the current and future development of each hub will be elaborated. In addition, a critical assessment of in how far the hubs succeeded in reaching the initial objectives will be implemented.

The first chapter deals with the starting point in the year 2018, where the BLOOM hubs were set up. The second chapter deals with the development and main achievements of the hubs from 2018 to 2020. Collaboration and exchange between the hubs, certain achievements during the operation of hub activities will be of focus as well. The final chapter deals with the potential future development of the BLOOM hubs until 2022 – when the BLOOM project is officially concluded already.

Basis of the analysis is a desk research on first descriptive texts where the setup and development of the hubs are described, such as the Description of Action of the General Agreement (DoA), the BLOOM Newsletters, the BLOOM website and especially the deliverables D1.1, D3.1 and D7.1. To depict the current status of the hubs as well as possible future development, two methods are applied. First, a qualitative online questionnaire, answered by seven hub and co-hub representatives from Spain, Sweden, Finland, the Netherlands, Poland, Germany and Austria. Second, a subsequent focus group with 10 participants, where each hub and co-hub as well as the project coordinator – the Centre for Social Innovation (ZSI) – engaged in a collective reflection, was applied to create a synthesis of hubs as well as a potential look into the future activities within hubs.

As the deliverable deals with the formation of hubs on a structural level, it does not report on specific data about outreach or dissemination activities. This will be the focus of D3.5: ‘Report on innovative Outreach and Awareness Activities’ and D6.4: ‘Report on Dissemination and Sustainability and exploitation plan’.

2. Conceptual Framework

First and foremost, hubs are an essential outcome from, and accelerator of the objectives of the BLOOM project. Objectives, which were backed with a theoretical foundation in WP1. Therefore, the theoretical lens of the ‘framework of transition concepts’ which was developed within D 1.1 – Bioeconomy mapping report (p. 21-29) is applied within this deliverable.

2.1. Objectives of BLOOM

The creation of the hubs is a specific outcome from the objectives of the BLOOM project. Likewise, the objectives are implemented in specific hub activities. Within the grant agreement (part B, 1.1), four specific objectives were stated:

1. Raise awareness and enhance knowledge on bioeconomy: BLOOM will strengthen the awareness and knowledge regarding bioeconomy research and innovation by stimulating activities via **regional hubs** and developing outreach activities for EU citizens demonstrating the potential economic, environmental and social impact of the bioeconomy.
2. Reduce the fragmentation of awareness strategies and build up and strengthen a bioeconomy community: BLOOM will **enlarge the engagement** of triple helix partners from the domains of the market, the government and knowledge partners from civil society and the education sector and thereby complete the innovation ecosystem, which is needed for the deployment of the bioeconomy.
3. Gain a **common understanding**: BLOOM will create spaces for the needed debate on preferences and values concerning the bioeconomy; for interaction and exchange of information, knowledge, meaning and aspirations, with the aim of establishing consensus on how a bioeconomy can be realized.
4. Foster (social) learning and education: BLOOM will make bioeconomy knowledge and research available for education. It will provide applications for different levels of educational schools’ programs, vocational training, etc. BLOOM will **support learning between regional knowledge and innovation centers and citizens** towards advancing capacities and competences.

From the beginning of the project in 2017, these objectives are pursued by all consortium members involved. The task of setting up the hubs, can be seen as an outcome of the first objective. As an initial task, the regional hub partners collected letters of commitments from regional governments and institutions (see DoA). Some hubs – such as the Spanish hub – collected several letters, indicating a strong position within a bioeconomy network from the start. One of the first tasks was to identify relevant stakeholders within the field of bioeconomy (D3.1). In co-creation workshops, stakeholders from different realms of society engaged and, in some cases, became active parts of the hubs. From 2018 onwards, it was the goal of hub activities to enlarge the engagement of civil society and develop from triple helix to quadruple helix engagement. This process will be elaborated in more detail within this deliverable. Co-Creation and subsequent outreach and dissemination activities have fostered the creation of a common understanding and exchange about the topic. The work within the hubs were guided by activities of WP1 such as the creation of the bioeconomy-mapping report and the development of a theoretical foundation. Over the time, this knowledge has been translated in the languages of the hubs and has been adapted to local situations.

The five regional hubs, with all different activities and processes happening on a local, regional, national and international level, are playing a major role in fulfilling these BLOOM objectives. The deliverable at hand further elaborates on this role. Moreover, it unfolds essential processes and creates a synthesis of the hubs. Finally, it incorporates an outline and roadmap of future hub development.

2.2. Framework of transition concepts

The BLOOM project aims the promotion of a transition towards bioeconomy. Local hubs are one major approach within the project to work towards this overarching goal. The framework of transition concepts developed within D1.1 (pp. 21-29) helps to understand the conceptual framework in which the hubs act. Bioeconomy is accompanied by a high level of complexity. It is a cross-sectoral matter, different domains of society (public, private, society and knowledge) with different values, cultures and languages need to be connected. Moreover value-chains overarch several regions and countries. Several disciplines and aspects connect with bioeconomy, such as economy, social science, environmental science or climate.

To operationalise the transition, different situations within regional hubs can be identified with six overarching and interacting concepts: 1. Clusters, 2. Regional innovation strategies of smart specialisation, 3. Value chain management, 4. Readiness, 5. Circular Economy, 6. Innovation pipeline. They are further explained in the Bioeconomy Mapping Report (D1.1) and have been made accessible with an infographic¹. Within this deliverable, these concepts will be linked to the setup of the hubs, as well as the current and future development of the hubs.

¹ Bioeconomy transition: framework of concepts: <https://bloom-bioeconomy.eu/repository/bioeconomy-framework-of-concepts/>

3. Methods

In a preliminary phase, desk research has been conducted. Of special interest were documents that relate to the establishing of five regional BLOOM hubs. The general agreement of the BLOOM project was the initial source. After setting up the hubs in 2018, BLOOM newsletters that were sent out in November 2018; March, August and December 2019 and in March and July 2020, as well as the self-description of the hubs on the BLOOM webpage were an additional source. The process of setting up the Hubs (Task 3.2 within the grant agreement), was briefly described within deliverable 7.1 “periodic activity and management report”. Further considered deliverables are: D1.1, D1.2 (Communication framework, targeting awareness, education and training and network extension), D3.1 (Stakeholder Mapping) and D.3.3 (Guidebook on engagement and co-creation methodologies). This initial research was followed by a qualitative online questionnaire that was answered by seven representatives all five hubs and co-hubs. They constitute the basis for a subsequent focus group.

The hubs are located in different countries of Europe. There exist several similarities of conceptualisations, because of EU strategies and related frameworks and more than 10 years EU R&D and collaboration between regions, universities and industries within Europe. However, as the social world is an open system (Collier, 1994), it is not possible to generalise from the analysis of answers to seven questionnaires and one focus group with 10 participants. This view on generalisation is guided by (Sayer, 2000, p. 12) as “Observability may make us more confident about what we think exists, but existence itself is not dependent on it”.

The report at hand presents a brief overview about the implementation of the hubs and hints about how the hubs developed since their establishment. The deliverable is capable of revealing certain processes occurring within hubs. Nevertheless, as the world is an open system, still, there exists a realm of processes existing without being observed. Processes, that will not be covered within this deliverable. In this regards, special caution has to be given when dealing with the future development of the hubs.

3.1. Qualitative online questionnaire

The data that informs the deliverable was generated by seven answers to the qualitative online questionnaire (Creswell, 2014; Yin, 2003), conducted from March to April 2020. The steps in the construction of the questionnaire were guided by (Peterson, 2000) and included a pre-test, that led to slight adaptations of the preliminary version. The questionnaire can be found in Appendix 1.

The target group of the questionnaire (Appendix 1) were representatives of all BLOOM hub partners, with activities in the Netherlands, Poland, Austria, Finland, Sweden, Germany and Spain. The goal of the qualitative online questionnaire was to elaborate on the development of the hubs from 2018 to 2020. Important criteria for identifying ‘hub-development’ are:

- Initial existence of networks and clusters as well as the connection of the local BLOOM organisations to them
- Development of the stakeholder network from 2018 to 2020
- Contribution of the co-creation phase and outreach activities to network extension
- Development of the interest, engagement and alignment of civil society towards bioeconomy -networks, -innovation ecosystems and -activities

- Development of multipliers – which are persons/institutions/stakeholder/media that played or play an active role in dissemination activities for BLOOM projects and related activities
- Enabling factors and challenges and barriers for the implementation and continuation of the hub

The answers to the questionnaire were received via email. For the analysis, the answers were transposed below each question and can be found in Appendix 2 (Ritchie, Spencer, & O'Connor, 2003). After conducting the analysis, the answers of the questionnaire built the basis for a subsequent focus group.

3.2. Focus group

On Tuesday, the 7th of April, an online focus group was organised via the platform GoToMeeting. The aim was to further discuss certain aspects that were mentioned within the qualitative online questionnaire. Moreover, the goal was to create a synthesis of the hubs as well as to discuss of the potential future development of the hubs until 2022.

The preparation, conduction and processing of the focus group followed the premises and steps suggested by (Finch & Lewis, 2003). A special feature of this method is its synergistic character, “in that sense that the group works together: the group interaction is explicitly used to generate data and insights” (Finch & Lewis, 2003, p. 171). Moreover, the researcher tried to facilitate the focus group in a non-directive character, and to ensure the coverage of relevant key issues. The focus group consisted of the following steps:

1. Introduction, Scene setting & rules
2. The opening topic: What does the term “BLOOM-HUB” mean to you?”
3. Discussion initiated with real statements from the questionnaire as well as fictive ones to cover all relevant key issues and facilitate a vivid discussion:
 - a. „Co-Creation was mainly important from the perspective of social capital building, as the representatives of various environment had to cooperate in a way that was very unusual for them.“
 - b. Hubs with a clear connection to one regional cluster can better fulfil the goal of increasing public engagement in bioeconomy.
 - c. While we have reached 50.000 European citizens, still the majority of the general public does not care about bioeconomy.
 - d. „There is great interest from stakeholders we have met to continue to collaborate, exchange knowledge and communicate the benefits of bioeconomy to the general public. We have set up a platform for this exchange **but unfortunately there is no „business plan“ for how these platforms and networks could continue to exist after BLOOM has ended.**“
4. Ending question: “In 2022: What is left of BLOOM hubs?”

The transcript of the focus group can be found in Appendix 3. The sources of evidence – desk research, questionnaire and focus group – follow the strategy of “data triangulation” (Yin, 2003, p. 98), meaning that results were analysed together. The anonymous codes of the participants range from H1 to H9.

4. The BLOOM Hubs

Anchor points in the BLOOM project are five BLOOM hubs in different regions in Europe that form communities of practice. They are led by consortium partners who invite and involve network partners, such as regional triple helix partners and other bioeconomy stakeholders. Together, they build working teams in co-creation workshops developing outreach activities and materials to strengthen increased public engagement in bioeconomy. The hubs were established in 2018. Within this chapter, the starting position and their focus areas will be explained. Next, the development until 2020 will be elaborated in more detail. This includes a synthesis of the hubs. Finally, this chapter attempts on giving a potential future perspective on the development of the hubs after the project has ended officially.

4.1. 2018 – Nucleus & regional starting position

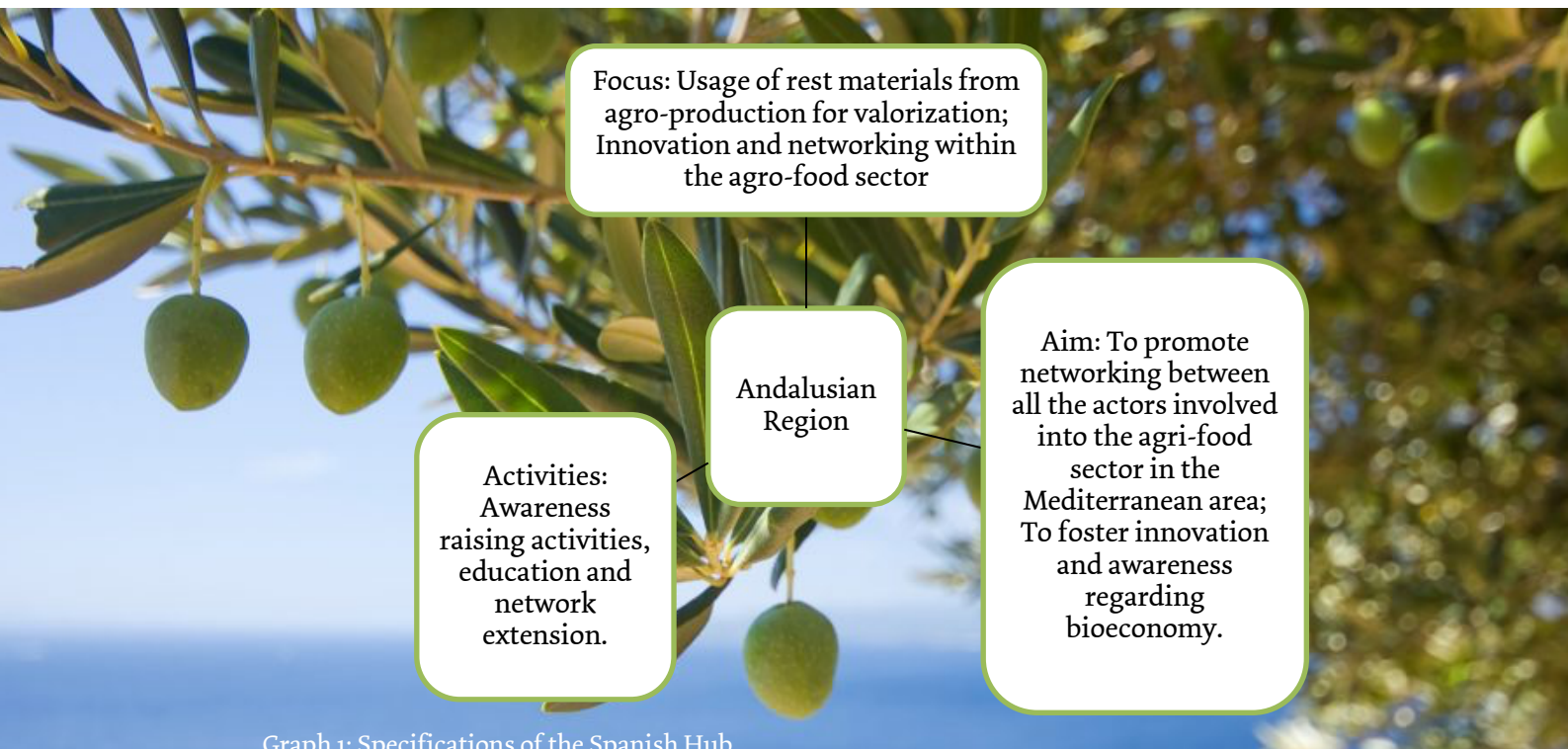
The setup of the five BLOOM hubs in the regions of Spain, the Netherlands, Nordic (covering Sweden and Finland), Poland, Germany and Austria was accompanied by several aspects of the transition concepts (D1.1) mentioned above. Within several regions, technology and bioeconomy clusters were at operating level already. Where this was the case, hubs worked on an instant connection with this cluster, to foster cooperation towards a bioeconomy transition. In some cases, hubs found an instant entry point to collaboration. In other cases, the already established networks were operating ‘quite closed and on their own’. In such cases, regional hub partners had it difficult to find an entry point.

Furthermore, each hub defined its own focus area, referring back to the regional innovation strategy of smart specialisation (EC, 2017). At its core lies the premise of the optimal use of regional strengths and opportunities. Within this specific focus (e.g. bioplastics in the Netherlands), the hubs considered the whole string of the corresponding value chain² (e.g. from raw material to final product). In addition, the initial phase was accompanied by generating an understanding about the development of the specific region – especially regarding to technological readiness and the regions position in the innovation pipeline. The strategic choices that are made by the regional innovation system to optimize the development of the region – in the form of investments or facilities – have to be brought closer to and made graspable for the civil society to create acceptance.

Within the first phase of the BLOOM project actions such as the creation of the first stakeholder mapping, as a basis for future hub activities such as the co-creation and the development of outreach material played an important role. The objectives of this stakeholder mapping (D3.1, p. 6) shed light on the initial orientation of the regional hubs: 1. to identify the profiles of organisations that are target audiences in the bio-based economy, 2. to identify the profiles of individuals that are target actors in BLOOM, and 3. to give an initial overview of the attitudes, needs and constraints of the five stakeholder groups.

² Technological routes of biomass conversion and valorization: www.bit.ly/bloom-bioeconomy

4.1.1. Spanish Hub

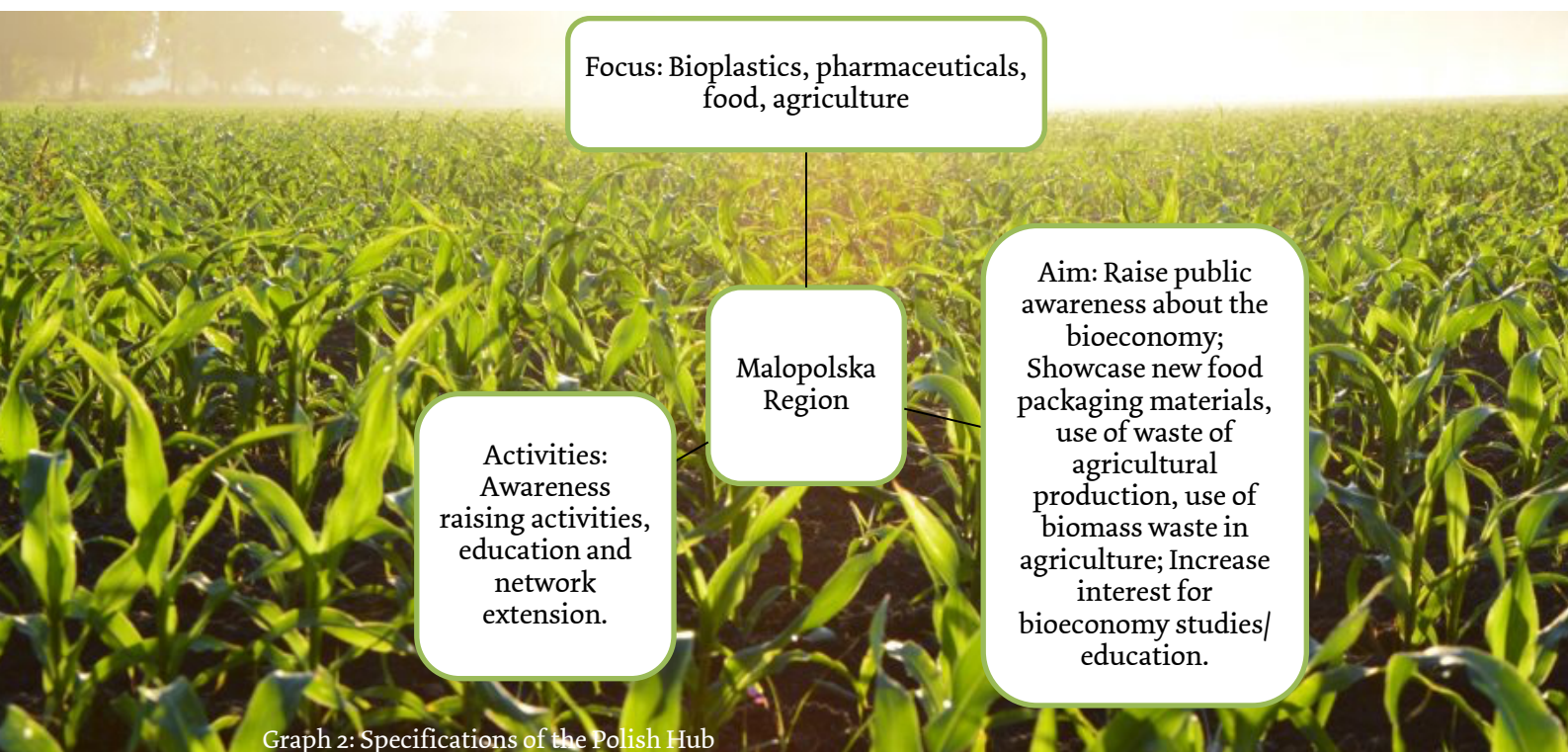


Graph 1: Specifications of the Spanish Hub

The Spanish Hub was set up by taking advantage of the system created for the development of the Andalusian Bioeconomy Strategy, published in the year 2018. In the same year, the Andalusia Bioeconomy Cluster was launched. From the very beginning, the hub was aligned with the strategy and the cluster. In this sense ceiA3 as an active stakeholder of this strategy as well as an actor with considerable knowledge about bioeconomy in the region, decided to configure the hub as a complementary community of practice that will improve the general communication of the bioeconomy among the general public. Usage of rest materials from agro-production for valorisation towards energies is one of the main topics accompanying Spanish hub activities. The first step towards to set up the Spanish hub was to contact the main representatives of the quadruple helix of the region regarding bioeconomy and creating a core group of experts who will co-lead together with ceiA3 the design and implementation of the co-creation workshops. In order to make the core group of experts totally understand the methodology of co-creation, ceiA3 organised the first co-creation workshop having the core group as participants. Parallel to the co-creation workshops that are underway, the collaboration with similar projects also targeting bioeconomy is considered as crucial for the Spanish Hub. For example, the collaboration with BIOVOICES is making the activities implemented by the hub more visible and extends and improves the networking of BLOOM. Another key point for the Spanish Hub was to include from the beginning on the outreach activities that the hub has to implement in the agenda of the different institutions/organizations that are part of the hub. In this way this year is planned to participate in several events for general public organised by the private sector and the academia. (synthesis of Appendix 2 and D7.1, p. 22)

The following objectives were defined: to disseminate the Andalusian strategy, to identify the main demands of civil society, to identify the main obstacles and strengths of the circular bioeconomy in the field of communication and to design outreach activities and strategies for better participation of civil society and its organizations.

4.1.2. Polish Hub



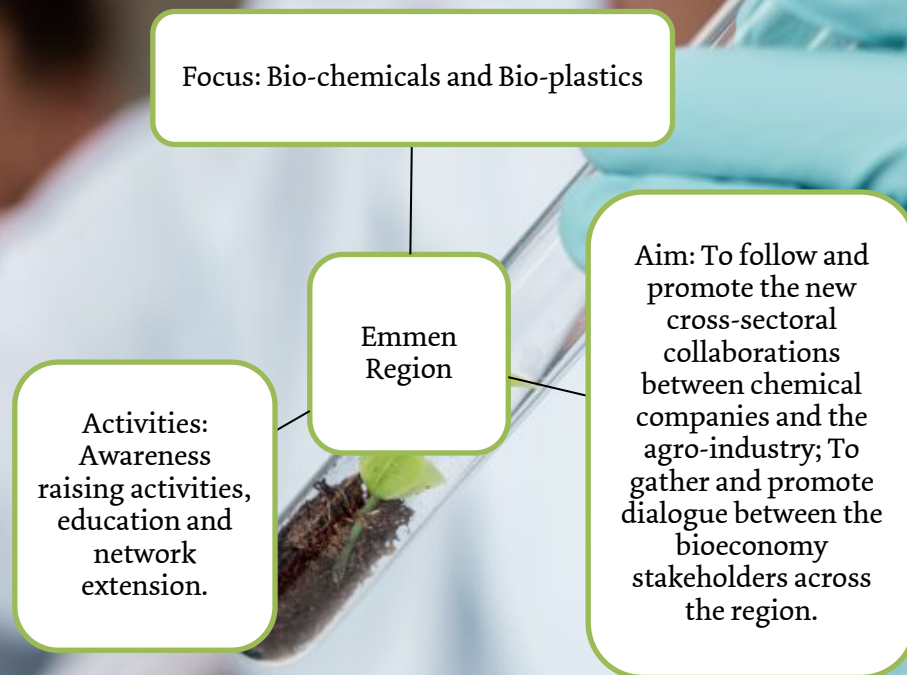
Graph 2: Specifications of the Polish Hub

In the region of Malopolska, hardly any efficient bioeconomy networks existed. However, there were quite a few clusters. Mostly, they were focusing the issue of biofuels/bioenergy. An example of such a cluster constitutes the Life-Science Cluster and Polish branch of Clean-Tech, also having bioeconomy as one of area of activity. The first focusses medical applications of bioeconomy. Within the latter, bioeconomy is one field of activity.

To address this lack of networks, the first phase of Polish hub activities was characterised by several initiative meetings. After UAK and CSC organised several internal meetings, an initiating meeting took place in Krakow in which UAK, CSC and a director of LifeScience bioeconomy cluster (member of Polish Hub) took part, was organised at the beginning of 2018. This was followed by a working meeting and jointly organised a pilot co-creation workshop. At the end of 2018, another working meeting took place in Krakow in which UAK, CSC, and UEK (University of Economics in Krakow – member of Polish Hub). After that, the Polish hub coordinators jointly organised the first co-creation workshop, which lasted for 2 days. Participants of this meeting were local administration (however they were not decision-making employees), representatives of research / academia institutions and NGOs.

Furthermore, the following objectives were defined: raising awareness and knowledge about bioeconomy among Polish citizens, presenting to a wider audience innovative solutions and directions of bioeconomy development in Poland, strengthening the bioeconomy community through the involvement of non-governmental institutions, administration, business, research and innovation sector and educational institutions.

4.1.3. Dutch Hub



Graph 3: Specifications of the Dutch Hub

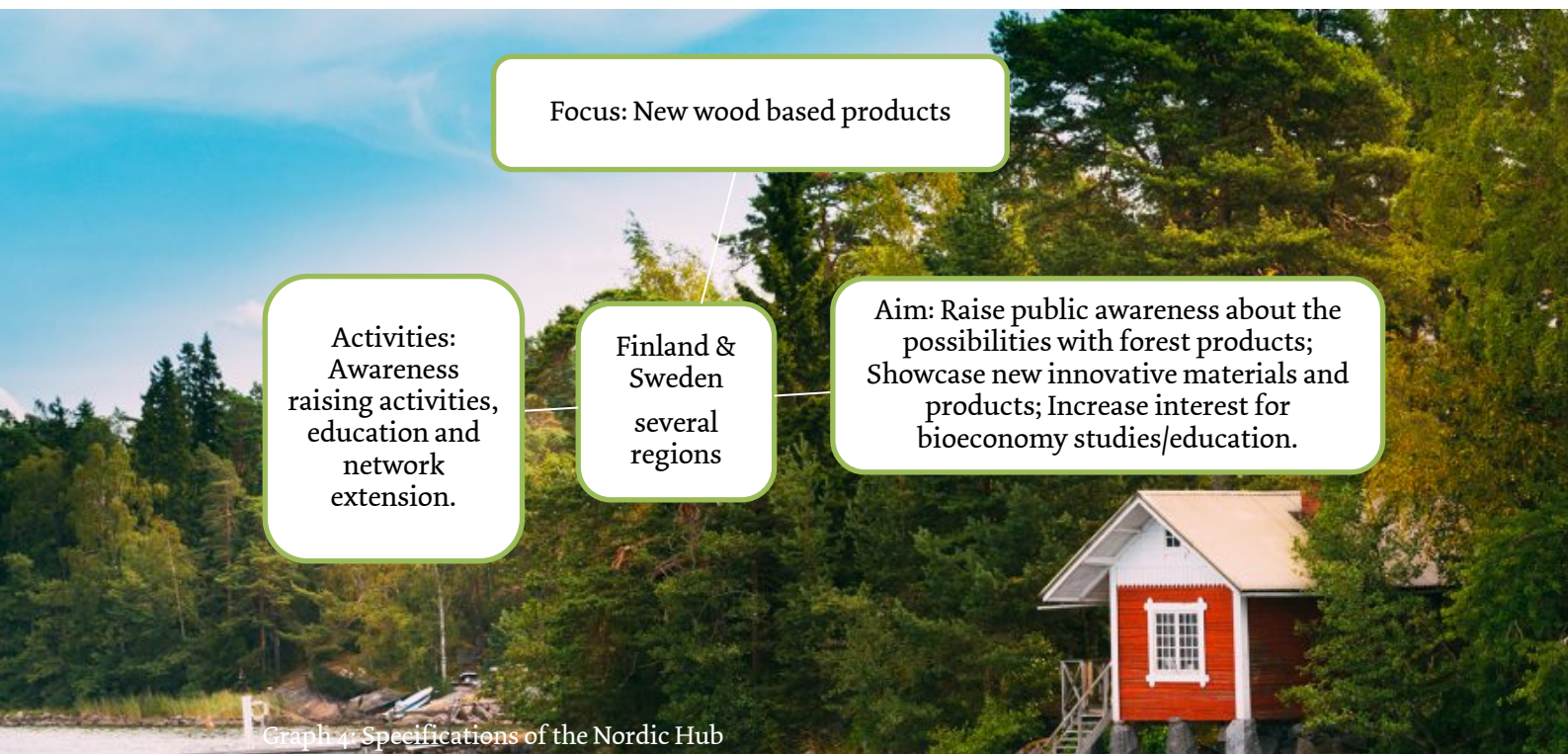
The setting up of the regional hub in the Netherlands has been conducted by finding alignment with current networks, strategies and activities. WR has been in close contact with key actors in the North of the Netherlands networks. The BLOOM approach has been presented to and discussed with the province of Groningen, province of Drenthe, with the North4Bio-Sounding Board (in which all triple helix partners adjust their activities and commonly explore new developments), with the BERNN network, (Network of Higher Education institutes, who collaborate on Bioeconomy in the region). Most partners understand and experience the problem of the missing link with civil society and general public. Therefore, they opened up for the BLOOM project and activities.

The next task during the set up was to define the focus area and to form a group of participants. The North of the Netherlands represents two clusters with a focus on green chemistry, the cluster of Chemport Delfzijl and the cluster of Chemport Emmen. The latter had already started a collaboration and initiatives towards bio-based chemicals. Therefore, WR decided to apply the co-creation activities in the Emmen cluster.

The final step of the setup was to identify and to mobilise relevant stakeholders, CSO's and representatives of the general public for the co-creation workshops. Together with the province of Drenthe, the municipality of Emmen and the Stenden University of Applied Science, WR identified potential participants.

That is how the hub in the Netherlands was created, aligned with current strategies and practices, engagement of a partner network and expectations and aspirations for BLOOM activities were raised.

4.1.4. Nordic Hub

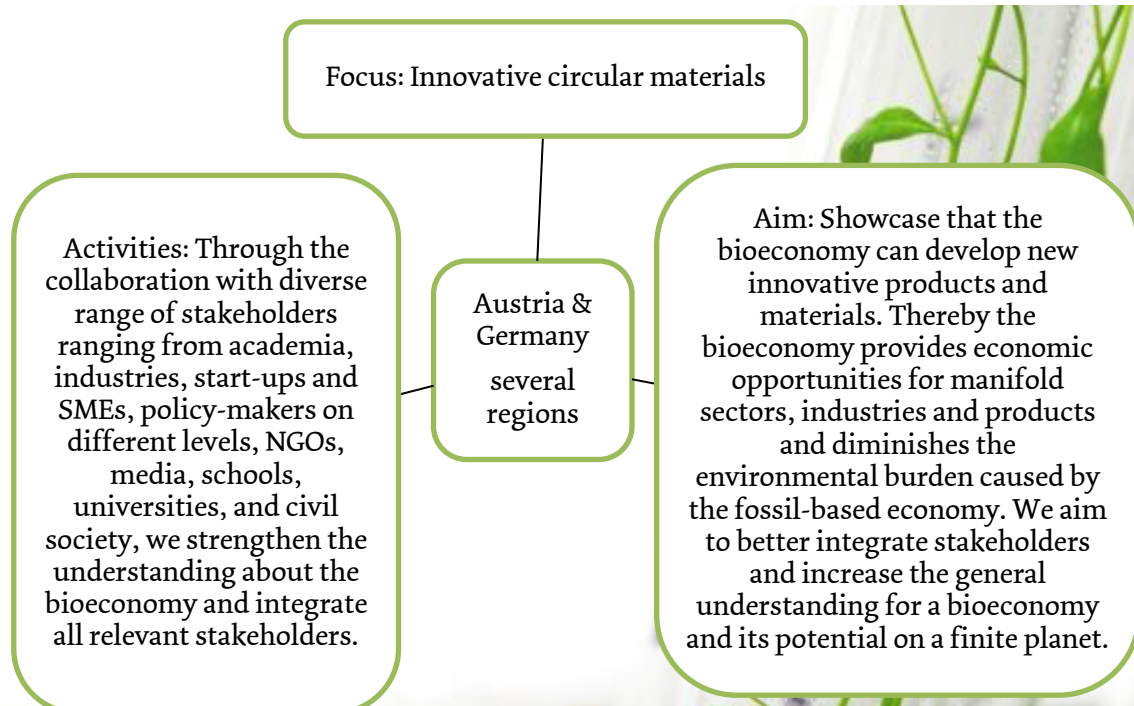


The Nordic hub includes two partners – JAMK University of Applied Sciences in Central Finland and the Vetenskap & Allmänhet (VA) in Stockholm, Sweden. The regional strategy of the regions encompassing Central Finland is focusing on bioeconomy, digital economy and knowledge-based economy. Due to great forest resources and strong forest-based industries the bioeconomy relies on wood-based products, machine building related to wood processing and haulage as well as bioenergy. The Nordic Hub aligned with the Tarvaala Bioeconomy Campus in Central Finland which promotes entrepreneurship, new innovations and R&D activities and operates with students, experts, entrepreneurs and researchers and authorities. The regional aim is to support upgrading of biomass by-products and wise use of regional resources as well as support the sustainable development. At the time the hub was set up, there were some regional networks for different aspects of bioeconomy and research, innovation and business clusters in Sweden but no national coordination.

The focus of the Nordic hub is in forest bioeconomy and new wood-based products. The hub partners conduct activities within the two countries while collaborating closely by extending the Finnish and Swedish bioeconomy networks and planning joint activities. The Nordic hub coordinators have organized two hub meetings in person. The first one took place in Stockholm in Sweden. The Finnish hub coordinator and RDI2Club (Interreg III B Flagship project) project coordinator visited Swedish hub in May 2018.

Furthermore, the following objectives were defined: to raise awareness and enhance knowledge on the bioeconomy and forest-based materials and products among Finnish and Swedish citizens, to strengthen the Finnish & Swedish bio-economy community, by engaging NGOs, policy makers, business, research and innovation sector and the education sector.

4.1.5. Austrian & German Hub



Graph 5: Specifications of the Austrian & German Hub

In Austria the FTI Strategy on research, technology, innovation was developed and presented in May 2018. A bioeconomy strategy was presented only in the beginning of 2019. There were initiatives regarding bioeconomy, but not as formalized and coordinates as in other hubs. The EcoSocial Forum was a founding member of the “[Bioeconomy Austria](#)” network. Members range from research institutes, universities, industry and business associations to civil society organizations. The Austrian bioeconomy consisted of several innovative industries and business entities and SMEs, in the fields of: forest/wood; paper industry; agriculture – especially potato, corn, wheat; innovative materials: such as bioplastics made from starch/plants/PLA, and others such as algae.

In Germany, the central scientific player in bioeconomy in the region of North Rhine-Westphalia is the Bioeconomy Science Center (BioSC) in Jülich, which was founded in 2010. The universities of Aachen, Düsseldorf and Bonn as well as the Research Center Jülich are working on a common strategy with an involvement of existing networks and cooperation. Germany has institutionalized the bioeconomy through the German Bioeconomy Council ten years ago. WILAB, as a civil society organisation connected with several other research and civil society organisations, had difficulties connecting with established and relatively closed formal industrial/triple helix networks on bioeconomy. Communication of these networks with the civil society was lacking. Therefore, WILAB chose the approach of ‘raising awareness from the outside’.

In several meetings between WILAB and EFE, the following objectives of the German speaking hub were defined: to make innovative (and often circular) products and materials of bioeconomy known to a broader public, to increase understanding of the need for such products in order to pursue climate protection and other social goals, to foster the network with key players, to enable an open discourse.

4.2. 2018-2020: Hubs as active communities of practice

After elaborating on the setting up of the hubs, the following sub-chapter deals with development within the hubs from 2018 to 2020. Aspects such as network extension, stakeholder management, awareness raising, the engagement of the civil society, as well as drivers and barriers for hub development are discussed.

4.2.1. Network connection, extension & stakeholder management

From 2018 to 2020 several activities and processes occurred within the five regional BLOOM hubs. Referring back to the smart specialisation strategy and further regional differences and conditions, it has to be stated that all five hubs had very different primary framework conditions. Nevertheless, a growth in network and stakeholder commitment, which varies from hub to hub, is observable.

A roadmap can be synthesised in the following way. After an initial conceptualisation phase and stakeholder-mapping, hubs started contacting the identified stakeholders. This was followed by the conduction of several co-creation workshops where the relationship with the stakeholders increased and consolidated. In some cases, it has been difficult to reach all members of the quadruple helix in the same intensity. This will be elaborated further below. Hubs that described a presence of regional clusters and networks above, worked on an entablement of a connection with these clusters and – in most cases – started collaborating. After the co-creation phase, and during the outreach phase, these stakeholders and networks became important parts of the organisation.

This sub-chapter starts with a summary of identified key aspects regarding network extension and stakeholder management. This is followed by a more detailed description of this process by the hubs. Finally, the chapter concludes with a hub-example, to make the underlying processes graspable.

The Focus Group in a Nutshell: Co-Creation and Activating the Network

“Co-Creation was important from the perspective of social capital building. The connections during this process were very important. However, there is no ‘one-size-fits all’. Local, regional and national specifications need consideration” (H4).

“An essential part of social capital building was the phase before the Co-Creation. When we actively approached and mobilized all kinds of new partners. There are also other effects of the co-creation besides social capital building. Also getting more connected to other domains. And creating new ideas, obviously” (H1).

“The really important thing was that the five different stakeholders feel that we think that they have a right to say something to the topic. Some stakeholders did not even know that they have a role in this field” (H6).

“In our region, the co-creation process was an unusual situation. Representatives of different domains collaborated for the first time. We saw how people were discovering different perspectives. As it was an unusual situation, for some participants the methodological setting did not fit, people had different expectations” (H3).

“There is a lack of coordination of bioeconomy stakeholders within our country. Therefore, our work was appreciated by all different sectors” (H9).

“One of the difficulties was that people tried to escape to the meta level when discussing. Making the step to the personal involvement and commitment – is an important issue for these activities” (H4).

“It also refers to the smart specialization strategy in Europe. Regions have different priorities. There are cultural differences. There are borders between different domains and organisations that are not used to work together” (H1).

Box 1: The focus group in a nutshell: Co-creation and activating the network

Box 1 shows the identified key-statements of the focus group. It reveals that several factors enabled the growth of the network and stakeholder engagement. Additionally, the statements show that in several cases it was difficult to reach out to all members of the quadruple helix. In some cases, the hubs have struggled to connect, mobilize and align with all members of the triple-, as well as quadruple helix as well as networks. In the following step, the regional process and conditions will be elaborated hub specifically.

Spanish Hub

In the beginning, the extension of the hub was very simple encompassing the main representatives of each sector of the quadruple helix, with low involvement of CSOs. In order to be coherent and look for effectiveness, the Spanish hub was developed totally aligned with the Andalusian Strategy and the cluster. This means that the main representatives of the quadruple helix of the Spanish hub were also the same main persons who were involved in the development of the strategy and in the creation of the cluster. Until 2020 the Spanish hub has fostered the network extension, by having more members that represents the territory, such as the main consumers association in Andalusia as well as member of the Local Action Groups.

The co-creation phase has contributed to strengthen the network. In this context it has helped to fill those gaps that the bioeconomy cluster and the initiatives promoted by the regional strategy couldn't reach. The co-creation process has allowed to create an informal space where the participants can work together and think about the real needs of promoting the bioeconomy to the general public.

Due to the fact that the Spanish hub is coordinated by the ceiA3, which is composed of 5 universities and 2 associated centers, there were several multipliers from the beginning onwards. Nevertheless, among these universities an increase can be observed in the persons involved in the BLOOM dissemination, students and more researchers, as well as personnel from the transference offices. Additionally, the collaboration with other projects as BIOVOICES and BioBridges has been crucial in order to improve and extent the network of multipliers.

Nordic Hub

From the beginning onwards, the stakeholder network of the Nordic hub involved representatives of the quadruple helix: academia, research institutes, business, government/policy, teachers and civil society organisations. Before the BLOOM project started there were less contacts between these groups but through the different hub activities more contacts between sectors have developed. The activities have also initiated collaboration and knowledge exchange with stakeholders on regional, national and Nordic level. The regional partners JAMK and VA already had quite large regional network. However, the co-creation activity offered an excellent platform to extend the collaboration to young people who were identified as key stakeholder group in co-creation process.

Moreover, the co-creation contributed to a lot of stakeholders from different sectors of society getting together for the first time and understanding the importance of communication and of citizen involvement for the transition and implementation of bioeconomy. This collaboration was about to bloom especially in 2020 but interrupted dramatically because of limitations of practical activities of corona virus.

Several educational institutions and regional clusters and some Nordic and international organisations have been in touch, expressed their interest in collaborations. It was not possible to collaborate with all of them due to a lack of resources to engage in more dissemination activities than what were planned in the DoA.

Dutch Hub

From the beginning onwards, the hub was interested in BLOOM and wanted to collaborate with BLOOM to extend the network with the CSO's and to reach out for the general public, in order to inform them about the biobased strategies, developments innovations in Emmen region. BLOOM mobilized educational institutes such as HEI, vocational training, secondary schools, civil servants, intermediates and networkers, who organized events for the general public, companies who attract general public, environmental organizations and communication experts.

The co-creation phase brought together different stakeholders, new stakeholders from CSO, or those who have a strong connection with new target groups as the general public or youth.

The co-creation session has mobilized 20-30 people. With some (10) of them we have planned to collaboratively organise outreach activities. The rest is being informed by BLOOM newsletters. With the outreach activities, we aim to reach out for 10's – 100's of people. The partners play an important role, they seem to be capable to reach out for specific target groups and can be seen as a multiplier. The Dutch hub collaborates with 4 main multipliers in the Emmen region.

Polish Hub

BLOOMs network in Malopolska is based on the quadruple helix. The co-creation process connected the representatives of local administration, representatives of research / academia institutions and NGOs and – in subsequent stages – representatives of the following target groups: farmers, women, young-ambitious. The final co-creation workshop took place in CSC in Warsaw. More representatives of NGOs applied, people engaged in civil society movements and business representatives joined the workshops without a special invitation. CSC reports to the Ministry of Education, so it's a natural stakeholder.

The co-creation phase was mainly important from the perspective of social capital building, as the representatives of such a various environment had to cooperate in the way that was very unusual for them. Those, who found this method fun and creative became our experts and contributors during the outreach phase. Co-creation enabled identification of the target groups and dedicated outreach models.

The evolution of the actors involved was not necessarily related to the growth of the network. Initial contacts established in the co-creation phase have brought many potential partners. Most of them were not interested in working together for BLOOMs goals. During the outreach activities, there remained a fairly strong relationship with several academic institutions, NGOs and some specialists. There were also institutions that asked for events dedicated for their needs (for example some special schools). The representatives saw information on BLOOM outreach and then addressed us to introduce the subject for their pupils.

Austrian & German Hub

In the formulation of the Austrian FTI Strategy, which built the basis for the subsequent strategy on bioeconomy, EFE and ZSI, as well as representatives of triple helix network were involved. Representatives of research institutions (various scientific fields, from natural science to social science), public administration, industry were part of workshop groups. The representatives involved were selected by the group working on the strategy (3 ministries and research institutes, as well as EFE and ZSI) trying to have a diverse background represented. In 2018, the bioeconomy network of the Austrian hub already consisted of representatives following the quadruple helix. Industry and SMEs, research institutes and universities, policy & public administration, as well as (some) civil society organisations³. From 2018 to 2020, new entities appeared as the topic of bioeconomy finds more and more attention within research, politics, business and civil society. One example is the Center for Bioeconomy at the University of Natural Resources in Vienna, which was established in 2019 and became an active member of the hub immediately. Moreover, contact with schools (BLOOM school in Vienna and agricultural school in Lower Austria) and media (e.g. "Blick ins Land" – 15,000 readers), "Landwirtschaftliche Mitteilung" – 50,000 readers) increased. Especially, the co-creation approach led to a strengthening of the network, as participants (quadruple helix),

³ The details on the network can be found here: <https://www.bioeconomy-austria.at>

worked together and came closer to each other. Several participants became active multipliers of the BLOOM project. Concerning outreach, especially the gallery walk – conducted at a conference on biomass – built new relations (such as with “best-research”). Besides multipliers that existed since the establishment of the hub (e.g. partners within the previously mentioned network), we have observed a rising degree of media representatives that want to report on bioeconomy and BLOOM. The newly established center for bioeconomy at the University of Natural Resources in Vienna, immediately became a multiplier. Moreover, former participants & experts of activities – such as the “Umweltberatung” actively disseminate BLOOM activities.

In Germany, there was a certain interest in the early days of BLOOM in exchanging and cooperation. The participation of business/industry was low. The joint activity of 3 European bioeconomy projects (BLOOM, Biovoice, BioBridges) brought some serious attention and had positive effects on the co-creation activities for outreach. But lately two big regional projects started in North Rhine-Westphalia (NRW) with a strong focus on regional economic development (in earlier coal mining areas). As the coordinators of these new projects are well established players in the region and abroad (Forschungszentrum Jülich) it was (almost) impossible to attract companies to participate in BLOOM. There is a big number of projects and organisations in the region. It has to be stated that BLOOM in this long-established scene only plays a minor role. Anyway, the contacts into the science communication group are good and developed in a positive way (e.g. Kulturwissenschaftliches Institut, Essen, Bürgeruniversität Düsseldorf or Wissenschaft im Dialog, organising activities in the year of bioeconomy). Participants of co-creation workshops are still in contact with WILAB and the broader co-creation team.

After presenting the development from the hub-specific perspective, box 2 shows an example of the process of identification of clusters and “docking-on” the cluster and or network. The text presented in the box was written for the second BLOOM newsletter.

Dutch HUB Example: identifying clusters and collaborating

Fostering the transition to a green economy

The Hub of North Netherlands is developing new economic perspectives for the region with the transition into a new green economy. The focus is on the development of new energies based on hydrogen power and on the production of bioplastics, both from local biomass and from recycled plastics. Within the Chemport cluster, the North of The Netherlands has the potential to valorise different fibres and sugar rich biomass resources from (waste material from) regional arable farming, into building blocks for the biochemical industries. Within the cluster of Chemport Emmen, which has a focus on sustainable polymer innovations, the building blocks can be processed into bioplastics. In the North of the Netherlands main players in the network of bioeconomy are triple helix partners from province and municipalities, educational and research institutes and representatives of the business community from developing agencies, business parks and cluster organizations. This network meets often and has created technological innovations, which are currently being processed through the innovation pipeline; some already reach towards TRL7 (technology readiness level). The region is building facilities which support this technological development. The regional sourcing of biomass and the actual volumes of biobased production lines is still very limited. The social readiness of greening the economy and the awareness of the characteristics of biobased products is also rather limited. This is the starting point for BLOOM activities.

BLOOM will align with the current network and will contribute to reach out for the general public to discuss the perspectives and to create outreach materials. The regional partners of the Dutch Hub are mobilising participants for the first co-creation workshop, which is planned to take place in the beginning of April 2019. The plastic problem and the potentials to develop alternatives in the North of the Netherlands will be the central subject in this workshop.

Remco Kranendonk, Wageningen University & Research

Source: BLOOM Newsletter March 2019, available here: <https://bloom-bioeconomy.eu/2019/03/14/newsletter-march2019/>

Box 2: HUB Example: identifying clusters and collaborating, Dutch hub

A function network and connection to local hubs can help to facilitate the major bloom objective of boosting European citizens' knowledge and awareness of bioeconomy research and innovations. This process of awareness raising, and engagement of the civil society will be the focus of the next sub-chapter.

4.2.2. Awareness raising & engagement of civil society

How did the hubs address the objective of raising awareness and enlarging the engagement? What does the above-mentioned embedding within local conditions and collaborations with connections and networks mean for public engagement? These questions shall be answered within this sub chapter. First, a synthesis of key statements from the focus group will be given. Followed by a synthesis of the self-description of the hubs. In a similar manner as above, hub-examples will conclude this sub-chapter.

A first discussion within the focus group arose about the discussion of the role of the connection to clusters and networks. “There are different routes and starting points” (H1). A goal of the statements below is to distinct them:

The Focus Group in a Nutshell: Role of Cluster Alignment

“If the hub is connected with this kind of clusters, networks, the public administration initiatives about bioeconomy in this region, it is easier, to get it going. To engage the public. Within our area, that was the case” (H2).

“For us, this does not hold true, the ongoing projects and bioeconomy clusters in our region, are a quite closed community with their own awareness activities. This was a hurdle. We operated outside several clusters. Therefore, it was much easier to raise interest, draw attention to possible activities created in our co creation workshop” (H4).

“We are working with several different organisations and levels regional national and Nordic clusters. For us it was more like ‘the more the merrier’. Having lots of collaborations and connections in your hub makes that you will have more public engagement throughout the project and the hub. Instead of just focusing on one cluster” (H9).

“The common region gives the common context. For us, I would rather call it ‘informal network’ than cluster” (H3).

“It is not only a hub or a cluster as a structure that increases public engagement. It is always the people that are running different tasks. One of the key issues for us was that we know different entities from this region and could invite them in co creation and different kind of activities” (H6).

“If the goal is to raise the interest on bioeconomy as such, the connection to a regional cluster can help. Because you know the people, you have the showcases at hand. If you want to increase the engagement in the co creation process, I think it could be hindering if you have just the industrial cluster. It really depends on the terms” (H6).

“An advantage of clusters and regional networks is that they are context dependent. With specific vision, strategy of where the region is going” (H1).

Box 3: The Focus Group in a nutshell: Role of cluster alignment

What the statements above make clear is that good knowledge about the regional clusters at hand are an essential starting position. In how far the BLOOM hub aligns with the cluster is highly specific to each region. The Spanish hub for instance, aligned from its creation onwards with the ‘movement’ of the creation of the Andalusian strategy and cluster. Therefore, they use several possible synergistic effects. In other countries, such as the Germany, the development and readiness of bioeconomy is more established. Therefore, the hub leaders chose to work more outside the existing clusters. This is one advantage of the BLOOM project. It facilitates the transformation towards a bioeconomy in line with the current local development.

In the next part of this sub-chapter, the data that the BLOOM hubs have reported in relation to engagement of the civil society and awareness raising will be presented. Moreover, the influence of hub activities on the CSOs and general public's interest for information on bioeconomy will be elaborated. In addition, a special focus lies on the development of the engagement of CSOs and the general public since the establishment of the hub. Of further interest will be the alignment of this group towards bioeconomy networks, the innovation ecosystem as well as BLOOM related activities. Below, a summary about what the hubs have reported on relating to these aspects will be presented.

Spanish Hub

The work has contributed to make the bioeconomy more visible in the region, having involved more representatives of the territory working together with the rest of the main actors (academia, private sector, ...) and establishing new collaborations. A special positive fact is that the hub has involved the Local Actions Groups, because at the beginning this kind of public was very difficult to have in our sessions, they are also very busy and bioeconomy wasn't in their agendas. Nevertheless, thanks to a continuous work as well as the recommendations from other hub participants, they were involved at the end. The local actions groups are a valuable partner because they are very connected to the territory and represent in some way the civil society.

Nordic Hub

The outreach and dissemination activities have raised wide interest among civil society organisations and non-governmental organisations CSO, NGO and the general public. The forest and forest bioeconomy in general are one of the topics under discussion and people like to share their point of views and wish to get more perspective in the topic. For example, the hub has been directly contacted by young people (high school students), vocational school staff, high school staff to collaborate and communication about forest bioeconomy and sustainability. Additionally, the interest for and need of a neutral platform for communication about bioeconomy (not driven by governmental, business or research interests) is the key success factor for the Swedish part of the Nordic hub.

The sustainability has come in part of daily discussion during the project. Therefore, the solutions towards more sustainable society also interest people. The bioeconomy and its potential have been noted as well as challenges in the framework of nature diversity and resources wisdom. The development has strengthened the regional hub of bioeconomy campus and raised it as a communication platform. Currently, the group of CSOs and general public understand better the importance of the bioeconomy and are very keen to be engaged but there is still a lot of knowledge building left to do.

In Sweden, the bioeconomy has become more known in national and regional perspective since the beginning of the project. Some part of that has been the result of activities of the BLOOM organisations. The knowledge about novel innovations replacing plastics or mitigating climate change are about to raise and therefore also independent information and platforms to communicate are needed.

Dutch Hub

Civil society organisations and members of the general public got involved in BLOOM and the Emmen cluster. They have committed themselves to different outreach activities, because they share the value of communicating the perspectives of bioeconomy and biobased innovations in Emmen region. Outreach activities in Emmen region still need to take place. One example of an already conducted activity are activities during Dutch Design Week in Eindhoven. There we faced interest of many visitors from general public. We have spent much time on explaining the exhibition we had prepared, showing the potential of valorization of biomass towards different applications. People were amazed and had lots of questions, showed interest in the products (where can I buy them?). Some were interested in reading more about background, or showed interest in specific subjects, like applications in construction of their homes.

In the Dutch hub, CSOs and representatives show engagement. The general public shows interest. It seems that in the Emmen region, the CSO's and NGO's organizations, educational network and some professionals are getting more aligned with the triple helix networks. Next to the economic department of the municipality of Emmen, the communication department is very active on bio-based economy and is participating actively within BLOOM. This department is responsible for communication towards general public, is organizing events for the general public and uses support from the BLOOM project.

Polish Hub

In Poland, the NGOs scene is not very well developed yet. That is especially visible in Malopolska. Two foundations cooperated with the Polish hub at the workshop level, then one of them carried outreach activity with BLOOM and another proposed participation in another project on the subject of primary production. The general public to which open outreach activities were addressed, are reacted with great openness. However, it seems that a small part of the population was interested in acquiring new knowledge, it was visible during gallery walk or science espressos, where hub organisers were expecting much wider public.

A relatively small group of representatives of NGOs and general public represent a high level of commitment, seeks knowledge, want to change the market attitude of producers and consumers starting from themselves. Many participants of outreach activities emphasized that there should be more such events. However, within the outreach activities in Warsaw, more NGOs and CSOs were involved and co-organised the outreach activities.

Polish activities were directed to the general public, young citizens, farmers, women and children. Bloom was mentioned by the Marshal's Office Newsletter and invited by the local youth radio. During the further outreach activity in CSC information on bioeconomy aspects reached the quadruple helix. CSC reports to the Ministry of Education, so it's a natural stakeholder. Being a reputable institution for the dissemination of science, large events where BLOOM was involved, combining the dissemination and outreach activities attracted the media.

Austrian & German Hub

What can be seen, is that the focus of the hub on innovative circular materials and the BLOOM methods of bringing this closer to the people, increases the interest of the general public and civil society. Especially real ‘showcases’ and real-life examples make bioeconomy and BLOOM graspable. In several cases, the hub organisers heard the comment “from now on we have to look closer on what the product consists of”.

Generally, the engagement and alignment of general public and civil society can be summarized with two keywords: “active” and “sustainability & climate”. From pupils to board members of civil society organisations: Participants of co creation activities and outreach events show a high engagement within the discussion. Of course, this refers to participants. This means, that the person already shows a minimum of interest. During the gallery walk in Austria, hub organizers experienced, that several visitors just passed by and said: “no, we are looking for something different, we are not interested” (general public). Both, the general public and civil society show interest, but also skepticism. Especially about the sustainability and carbon footprint of the products and production processes.

To conclude this sub-chapter, two developments can be summarized. First, a movement from triple helix activities, towards a more quadruple helix approach, where more organisations and representatives from the civil society got included. In some cases these –often – new connections are very fragile and need further consolidation. Second, a movement from civil society towards alignment with the triple (and quadruple) helix networks. An example is the Austrian & German Hub, where the hub partners origin from civil society organisations. Where there was already a connection with an existing network, it was possible to connect with the triple (and quadruple) helix. In some cases, this proved rather difficult due to relatively closed triple helix networks (see example of Germany).

Alignment with all four domains: research, policy, industry and civil society made it possible to foster the transition towards a bioeconomy. This will be further indicated by the example listed in the box below.

Spanish HUB Example: Boosting citizens' knowledge and engagement activities

C3-BIOECONOMY is a combination of efforts, linking highly qualified research institutions with experience in knowledge transfer within areas of the journal scope. It is founded by the Agrifood Campus of International Excellence (ceiA3) and edited by the University of Córdoba, thanks to the network and work generated in BLOOM. We invite everyone to stay updated about the Spanish Hub! The journal is coming soon!

Source: BLOOM Newsletter December 2019, available here: <https://bloom-bioeconomy.eu/2019/12/15/bloom-newsletter-december-2019/>

Box 4: Boosting citizens' knowledge and engagement activities, Spain

The development of the hubs shows that awareness, knowledge and engagement within the sphere was enhanced and fostered. Especially, the co-creation phase, the outreach activities and the alignment towards bioeconomy networks and clusters has helped in this regard. To reach towards an encompassing analysis, the next sub-chapter will deal with enabling and disabling factors of hub-activities.

4.2.3. Enabling & disabling factors

Especially when dealing with the topic of sustainability – in this case meaning that the processes and developments facilitated by the BLOOM hubs – it is crucial to elaborate on two questions. First: What made the setting up of five local BLOOM hubs possible? And second, what were the biggest challenges and hurdles for a) setting up the hubs and b) the continuation of hub activities. This sub-chapter elaborates on what the hub organisations have reported on those questions.

Spanish Hub

The existence and continuation of the hub it is going to be possible due to several facts: First, the bioeconomy “ecosystem” that exists in Andalusia (regional strategy initiatives, bioeconomy cluster, ...). Second, ceiA3 has its own bioeconomy strategy so the Spanish hub will continue in this context, even when the BLOOM project is over.

Regarding the challenges for the implementation of the hub, there were hardly any, because of the existence of the relatively new regional strategy and bioeconomy cluster. The set-up fell in the time of the ‘year of bioeconomy’ and a corresponding movement within Andalusia. The Spanish hub considers that the interest will be there for a long time but that it is quite important to have a regular contact and implementation of activities in order to maintain the hub.

Nordic Hub

The interest of and need for a platform for communication about bioeconomy which is not driven by governmental, business or research interests is one of the key success factors of the Nordic hub. Scarcity of resources in terms of allocated money and person months are the biggest challenges to keep the hub activities going.

Dutch Hub

The following can be identified as the biggest drivers of the hub setup and continuation: the multipliers, people who have shared ambitions, who have discovered how to benefit from BLOOM. One barrier constitutes the distance of Wageningen to Emmen. Hub representatives cannot be present so frequently. The time-interval between the co-creation phase and outreach activities was a bit too long.

Polish Hub

Bioeconomy (apart from primary production) is a poorly spread concept in Poland. At the same time, there is a social group that is increasingly aware of the need to change the economic paradigm, change the approach to the natural environment for which this type of project is an inspiration. The involvement of such individuals enabled the project to proceed. Moreover, the unselfish goal of the project was also important. People who we invited to participate in co-creation workshops and outreach activity were surprised that we do not want to sell them anything, nor do we want money from them, only commitment and their knowledge.

The biggest challenge was the involvement of other entities to cooperate. The time and money barrier turned out to be significant. Many people do not believe that there is a different economic model than linear and conventional, based on fossil fuel energy. However, the biggest problem is audience indifference, unwillingness to interact, lack of curiosity, lack of openness.

Austrian & German Hub

Especially the engagement and interest of the stakeholders keeps it running. If you are starting an activity and within several minutes you have positive responses from several stakeholder groups – this indicates a flourishing hub.

One challenge in the hub implementation in Austria was the different thematical focus of the stakeholder groups. The groups who already worked in the field of bioeconomy before (triple helix) were (are) interested in innovation, research and market tools. The “new” stakeholder groups – students from university and schools and NGO/CSO and the general public focused on (ecological) sustainability issues. Now an institutionalization of the communication of the stakeholder-groups with very different backgrounds is needed to ensure that this communication does not end with the BLOOM project. Furthermore, financial resources and time resources could harm the continuation of flourishing activities in the future (after the BLOOM project ends).

4.3. Synthesis of hub development

The roadmap of the development of the five regional BLOOM hubs was depicted by the chapters above. This sub-chapter has the goal of synthesising several main achievements and success stories of the hubs since its establishment.

Spanish Hub

The involvement of the Local Actions Groups and the consumers association, as well as the collaboration with the Spanish partner of Biovoices and Biobridges (ASEBIO, the Spanish association of bioproducers) can be identified as a success story. It showed, that the hub grew since its establishment and through collaboration, the goal of working towards a transition to bioeconomy could be reached. Cluster and triple helix collaboration well aligned within Andalusian frameworks and institutions seemed to be succeeded in extending networks and activities towards civil society.

Nordic Hub

The Nordic hub continued deeper collaboration with a local high school having 1200 students. This network also planned an activity with the Nordic hub about sustainability. The activity was targeted to the 9th graders. The hub has been able to reach out to several regions in and to connect different parts into a national and Nordic hub. Also, the importance of communication and a quadruple helix approach in the co-creation process for the transition and implementation of bioeconomy has been shown. For the success it was important to have a good institute on science communication, which is well positioned within the network of institutions, private sector and society.

Dutch Hub

The Dutch hub is a good example of extending the current triple helix network with society, finding engaged multipliers towards education and civil society. BLOOM has succeeded to become part of the regional network, programs and activities. One success story constitutes the connection with communication department of municipality, communication consultants who are working in the Emmen Hub, and who have shared ambitions. Another example is the invested time in mobilization of the network, in finding key partners and getting to know the partners, in aligning BLOOM with the regional dynamics.

Polish Hub

One success story is the commitment of a group of students within the outreach activities of 'Bioeconomy Ambassadors', who directed their professional future towards bioeconomy as a result of a meeting with BLOOM. They also conducted outreach activities for younger audiences themselves, so the effect for this target group was immediate. The Polish hub has done its best to connect to regional strategies, networks and clusters. However, it was not so easy to realize this alignment. The Polish hub succeeded in finding different partners on different subjects in different regions to organize outreach activities. This has not yet lead to a quadruple helix and alignment. Now it is needed to strengthen the relations, to make them sustainable and to arrive in the next phase of developments.

Austrian and German Hub

After some initial struggling to connect to biobased triple helix networks, Austria managed to get in connection. The starting point was from the Bioeconomy-Austria network. The new connections with civil society organisations are not yet strong. The next step is to come to the level of formalization and to collaborate at framework or program level, in order to sustain the connection. Especially the co-creation methods were appreciated by the participants of different stakeholder groups.

Synthesis

Five BLOOM hubs have been established in different regions in Europe. From their setup in 2018, they rose up to living lab examples and communities of practice. While consortium partners are leading the hubs, network partners (first triple helix and later more quadruple helix) engaged within several activities. In several cases, already existing clusters were included. In the phase from 2018-2020, bioeconomy stakeholders ranging from research, industry, policy to the civil society, developed activities and material within co-creation workshops. The common goal of all actors involved was to increase public engagement in bioeconomy. The chapters above show, that the hubs grew from the nucleus to living lab examples. Engaging civil society and the general public and working collaboratively towards a bioeconomy transition. However, following the results of the questionnaire and the focus group, it can be summarized that BLOOM partners did not always succeed with these goals. First, it is not an easy task to find an entrance point, show added value and fit in the current program of a network or cluster that is already established. Moreover, mobilizing civil society sometimes proved difficult as this group lacks organisation compared to the triple helix. In some cases, they are not used to collaborate with the triple helix. In some cases, mentioned within the focus group, civil society organisations were not willing participate and engage in activities.

In most cases, the activities of the hubs align with the objectives of the BLOOM project. Especially the first objective, of strengthening awareness and knowledge through active regional hubs has been addressed. Through a collaborative network, the activities fostered an enlargement of quadruple helix partners. Some hub activities mentioned above, can be identified as examples of a flourishing innovation ecosystems, needed for deployment of bioeconomy. Especially, through the conduction of co-creation workshops, hubs were able to create space for debate on preferences and values related to the bioeconomy. Moreover, exchange and interaction of information, knowledge, meaning and aspirations was enabled through the above-mentioned hub activities. Collaboration between the hubs has been made possible by annual hub meetings and monthly hub calls. This created an international platform of knowledge-exchange. On a subsequent level hub actively worked together in the conduction of five international webinars. Some activities brought quadruple helix stakeholders from research, industry, policy and civil society closer together. In relation to the civil society and general public a more sustainable and bio-based economy and society has been promoted. Furthermore, hub activities brought regional, national and international strategies on bioeconomy, as well as research closer to the general public. Several strengthened network connections could have the potential of a long-lasting impact on the innovation ecosystem. Hubs aimed an open dialogue with civil society and general public, as well as engagement of this group, which has been accomplished in several cases. Furthermore, the exchange that has been created through co-creation and alike, has a potential impact on science and innovation through the exchange of ideas.

4.4. 2020-2022: Future development of hubs

The focus of this chapter will be a short outlook into the future development of hubs. The BLOOM project will officially be concluded in 2020. On a meta level, the future development of the hubs depends on the definition of what a “BLOOM hub” is. These and other questions were discussed within the focus group – which will be the main source of this chapter.

The Focus Group in a Nutshell: 2020 – 2022

“ceiA3 has its own bioeconomy strategy, so the Spanish hub will continue in this context even when the BLOOM project is over. An example is the continuation of the bioeconomy newsletter, that will be initially based on BLOOM resources” (H2).

“With some people and some organisations I really hope that there will stay a cooperation level” (H3).

“The hub as BLOOM hub (as an organizational structure of the project), will no longer exist, but working with the experiences and knowledge created through the BLOOM project, will continue to work” (H4).

“All the collaborations will still be there. And we also try to inspire more collaborative work in this direction on the Nordic level” (H9).

“In the Netherlands, there was already a hub/network. And BLOOM aligns for 2,3 years with that network. And when BLOOM is finished, the network will still exist. And hopefully, the network has extended to more civil society organizations and has more involvement of and outreach to the general public” (H1).

“We will continue working on that topic. What will stay from BLOOM is that we will incorporate more CSOs and schools in our day to day work” (H6).

“It might not be the BLOOM hub itself that keeps functioning, but we have been developing a lot of material – for example the suitcase – so, with all the connections made and the networks established, there will be some afterlife to the BLOOM hubs. But they have to reorganize their structure” (H7).

“I hope that we can use the connections of our collaboration. With you and also, on regional and local level” (H6).

“The contacts and connections we’ve gained through this project will be the main thing left” (H8).

“What will remain is the expertise and experience in engaging with the general public and different stakeholders” (H4).

The comments in box 5 and the aspects mentioned above show, that even though the project BLOOM will be over, there are still many traces left of the hub-activities. Metaphorically, the process could be described the following way: A train full of bioeconomy stakeholders and a few representatives of CSOs the general public is departing from Portugal with its destination in Moscow. In Madrid, several passengers (the BLOOM hubs) enter the train and start collaborating, exchanging and getting more CSOs and members of the general public on board. In Krakow, these passengers leave the train. The remaining participants remember these passengers and continue to collaborate. In Moscow, the remaining participants have fulfilled the transition towards bioeconomy.

Deliverable 6.4 “Report on Dissemination and Sustainability and exploitation plan”, will further report on concrete activities and actions that will remain from the BLOOM hubs and all consortium members. Within an extra sustainability session in 2020 hub representatives and further consortium members developed several ideas on how to keep the results and core values of the BLOOM project alive. “There are strategies of all partners about how to continue with the work after BLOOM” (H4). Questions, such as “how can we actually reuse all the knowledge that we have built up within this project?” And not to let it be another platform for the platform-graveyard” (H9) was answered there.

5. Summary

Within deliverable 3.2, the process of setting up five innovative BLOOM hubs in the regions of Spain, the Netherlands, the Nordic hub in Finland and Sweden, Poland and Austria/Germany was depicted. Furthermore, the deliverable dealt with the process of hub development from 2018 to 2020. Of special interest were the extension of bioeconomy networks and the alignment with bioeconomy clusters. Furthermore, the process from a triple helix approach towards engagement of the civil society (quadruple helix) was elaborated in more detail. In addition, milestones, such as the creation of the first stakeholder mapping, the organisation of co-creation workshops as well as the beginning of the conduction of outreach activities were of focus. The development of the hubs can be illustrated by the figure below. In 2018, there were already regional bioeconomy innovation ecosystems, networks and clusters existing. In line with the smart specialisation strategy of the European Union, hubs have chosen a specific focus. As each region finds itself on a different readiness level, and different position in the innovation pipeline, hubs have adapted their strategies toward these specifications. Through good collaboration with relevant stakeholders, it was possible to foster a transition towards bioeconomy. Moreover, the implemented BLOOM hubs have collaborated and engaged with each other and have increased the engagement of the civil society. This means, that the hub was growing (indicated on figure 1 by the growth of the respective hub). When discussing future development, hubs agree on the fact that created BLOOM material and knowledge will persist, as well as – with a high likelihood – the developed connections. Therefore, the objectives of the BLOOM project have been addressed by all the BLOOM hubs, on different levels and with different intensities. After the BLOOM project has ended, the communities of practice will remain active in the form of collaborations, cluster activities and further projects. Within figure 1, this is indicated by the circle showing the year 2022.

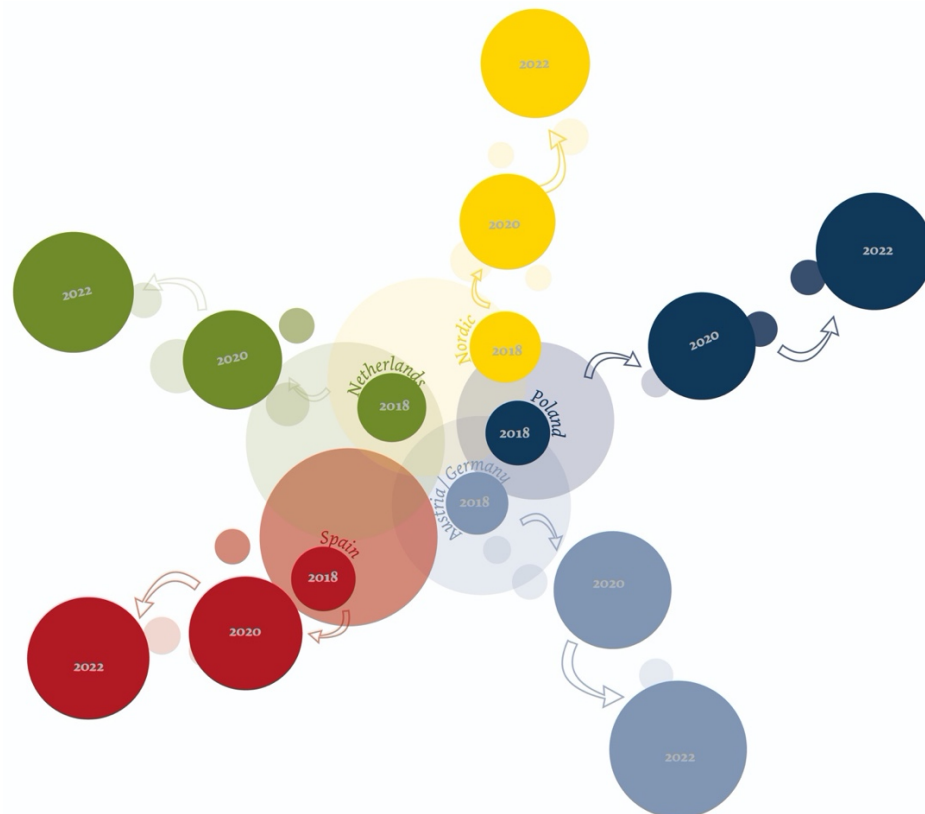


Figure 1: Development of BLOOM Hubs (own figure)

6. Resources

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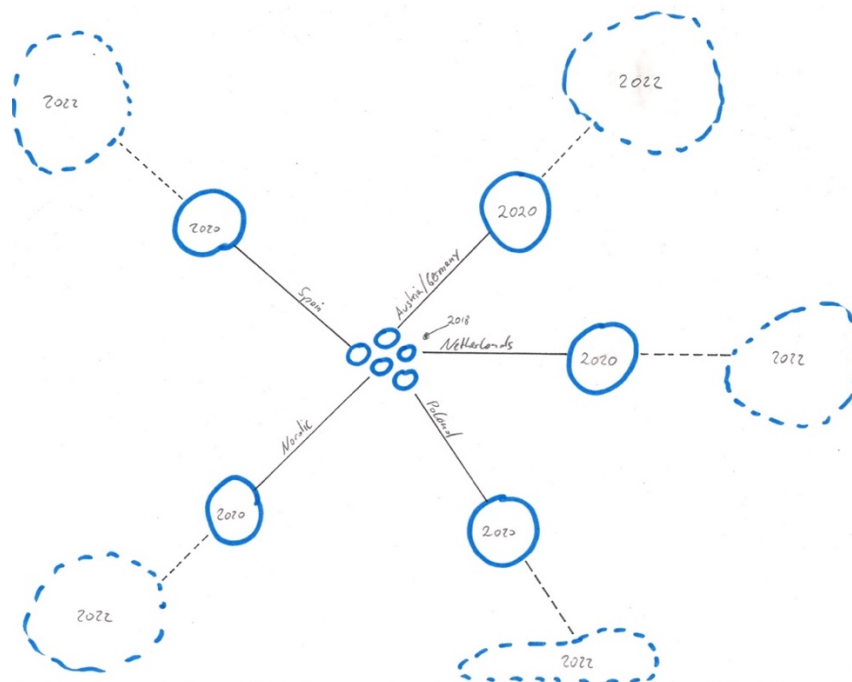
Appendix 1: Qualitative Online Questionnaire

Dear Hubs,

thank you for participating!

The results of this questionnaire will feed into the public deliverable D 3.2 which is dedicated “to form the hubs and place the nucleus in the respective region and the involvement of their cities” (from Grand Agreement). It is due in month 30. In the background, the deliverable especially builds on the technical report D 7.1 – where the first activities of forming the hubs were mentioned, and D 3.1 – the stakeholder mapping (not public).

The main goal of this deliverable is to show the development of the hubs since its establishment. It deals with the regional specifics and the first starting position of each hub. Furthermore, it deals with the main achievements of network-extension (e.g. development from the first stakeholder mapping to the current status). The development from 2018 to 2020 will be the focus of this questionnaire. In a next step, a focus group will deal with a future perspective for 2022 and beyond. This process is shown by the graph below. In general, the deliverable will show the positive success of the hubs and how the hubs were growing and will grow in the future. The deliverable does not have a focus on outreach activities (this will be the focus of D 3.5 on activities, conducted by WILAB).



In a first step, this questionnaire will be sent out to representatives of all hubs (JAMK, WILAB, EFE, VA, WR, UAK, CSC, Ceiz). Subsequently, short interviews will be conducted with one representative of each hub for refinement of the answers and further questions. **The deliverable will be reviewed by WR. Before the deliverable will be made public, there will be a possibility for each hub, to approve everything that was written about the hub.**

Thank you, for answering the questions on the next page! If you have any questions, please do not hesitate to contact me.

Kind regards,

G. Hebenstreit

Hub: _____ Name(s): _____ Date: _____
<p>How would you describe the initial situation and regional specifics in your region in 2018? Were there already “bioeconomy-networks and clusters” existing? If so, how would you describe them? (max. 250 words) (Build on “Setting up the BLOOM hubs” (D 7.1 p.21))</p>
<p>Please describe the extension from the initial constellation and stakeholder network of the hub in 2018 to 2020.</p> <p>Please refer to the triple helix and quadruple helix network approach and specify each group: general public (citizens of EU), young European citizens, policy makers/authorities, educational institutes and science communication networks, bioeconomy researchers, NGOs, media, industry and business. (max. 250 words)</p>
<p>How did the co-creation phase contribute to the network extension? What role do already-conducted outreach activities play in network extension? (max 100 words)</p>

How would you describe the influence of your Hub activities on the CSOs/NGOs and the General Public interest for information delivered by and activities of BLOOM? (around 100 words)

How would you describe the development of the engagement of CSOs/NGOs and the general public since the establishment of the hub? How would you describe their alignment towards bio economy networks, innovation ecosystem, activities and dynamics? (max. 150 words)

How did the network of multipliers grow and develop since the establishment of the hub? (around 100 words) (multiplier = a person/institution/stakeholder/media that played or plays an active role in dissemination activities)

From Grand Agreement: WP3 will empower bioeconomy stakeholders in getting engaged in the bioeconomy. Anchor points are five BLOOM hubs across Europe that form communities of practice. They consist of consortium and network partners of the project and regional triple helix partners and other bioeconomy stakeholders. Together, they build working teams according to living lab examples. In mutual learning and awareness activities (co-creation) and network extensions, partners and stakeholders will work towards an increased public engagement in bioeconomy.

→ How would you describe the biggest drivers of the implementation of your hub? “What made the existence and continuation of the hub possible? (max. 150 words)

→ What were challenges and barriers for the implementation of the hub? What are challenges for the continuation of the hub? (max. 150 words)

Success story of each hub: In relation to all hub activities, what are you especially proud of (not outreach activity)? (concrete story, established network connection, (future) collaboration, etc.)

Do you have further comments?

Appendix 2: Answers Questionnaire

How would you describe the initial situation and regional specifics in your region in 2018? Were there already “bioeconomy-networks and clusters” existing? If so, how would you describe them? (max. 250 words) (Build on “Setting up the BLOOM hubs” (D 7.1 p.21))

Spain

2018 was the year when the regional bioeconomy strategy was published in Andalusia. Before, the main actors within bioeconomy worked together in groups to discuss and create the strategy. Actors were biomass producers, industrial stakeholders, public administration, knowledge centers, small, medium and large enterprises and other groups of interest (consumers). In the same year, the Andalusia Bioeconomy Cluster was launched (with no legal status and defined main actions). Those were developed further during 2019. Right now, the identification of the bioeconomy in the region led us to confirm that there is a lack of biorefineries involved, a low number of innovative companies producing high added value products and low consumer engagement.

In this context, the Spanish hub – focusing the region of Andalusia – was created in 2018. From the very beginning, the hub was aligned with the Andalusian Bioeconomy Strategy and with the Andalusian Bioeconomy Cluster.

Finland

JAMK locates in Central Finland regions. The regional strategy 2040 is focusing on bioeconomy, digital economy and knowledge-based economy. Due to great forest resources and strong forest-based industries the bioeconomy relays on wood-based products, machine building related to wood processing and haulage as well as bioenergy. The strategy also emphasis strongly circulation economy in general and resource wise use of natural resources and the by-products of industrial and social activities.

Tarvaala Bioeconomy Campus in Central Finland promotes entrepreneurship, new innovations and R&D activities and operates with students, experts, entrepreneurs and researchers and authorities. It has business incubators and it provides start-up funding, business consulting and innovation management services. The regional aim is to support upgrading of biomass by-products and wise use of regional resources as well as support the sustainable development.

Further information available in Bioeconomy Campus website:
<https://biotalouskampus.fi/en/>

Sweden

There were some regional networks for different aspects of bioeconomy and research, innovation and business clusters in Sweden but no national coordination. The term bioeconomy was more or less kidnapped by the forest industry.

Netherlands

Emmen Hub was already raised in North of the Netherlands as a innovative region of bioeconomy. Province and municipality, together with the NHL Stenden Institute for Higher

Education, and the Emmen Chemical business clusters had already started a collaboration and initiatives towards biobased chemicals.

Poland

In the region of Malopolska, there were no efficient networks. However, there were quite a few clusters. Mostly, they were focussing the issue of biofuels/bioenergy. There was a Life-Science Cluster, oriented mainly for medical applications of bioeconomy and Polish branch of Clean-Tech, also having bioeconomy as one of area of activity. There were no spectacular effects of their activity in relation to bioeconomy.

Austria

In Austria the FTI Strategy was developed and presented in May 2018. A Bioeconomy Strategy was presented only in the beginning of 2019. Signed on 13th of March 2019. There were initiatives regarding bioeconomy, but not as formalized and coordinates as in other hubs. We, as EcoSocial Forum were an active member of the “Bioeconomy Austria” network. Members range from research institutes, universities, industry and business associations to civil society organizations. The Austrian Bioeconomy consisted of several innovative industries and business entities and SMEs, in the fields of: forest/wood; paper industry; agriculture – especially potato, corn, wheat; innovative materials: such as bioplastics made from starch/plants/PLA, and others such as algae.

Germany

The central scientific player in bioeconomy in North Rhine-Westphalia is the Bioeconomy Science Center (BioSC) in Jülich, which was founded in 2010. The universities of Aachen, Düsseldorf and Bonn as well as the Research Center Jülich are working on a common strategy with an involvement of existing networks and cooperation.

Please describe the extension from the initial constellation and stakeholder network of the hub in 2018 to 2020. Please refer to the triple helix and quadruple helix network approach and specify each group: general public (citizens of EU), young European citizens, policy makers/authorities, educational institutes and science communication networks, bioeconomy researchers, NGOs, media, industry and business. (max. 250 words)

Spain

In 2018, it can be said that it was the year of the bioeconomy in Andalusia. In the context of the launching of the Andalusian Circular Bioeconomy and the creation of the regional bioeconomy cluster, the BLOOM Spanish Hub was created as well.

In the beginning, the extension of the hub was very simple with the main representatives of each sector of the quadruple helix, with low involvement of CSOs.

In order to be coherent and look for effectiveness, the Spanish Hub was developed totally aligned with the Andalusian Strategy and the cluster. This means that the main representatives of the quadruple helix of the Spanish Hub were also the same main persons who were involved in the development of the strategy and in the creation of the cluster.

From there, we had our first co-creation workshop, which was mainly to identify the main needs of the bioeconomy in Andalusia that could be covered by the hub and to approach what kind of activities could be implemented.

Until 2020 we have fostered the network extension having more members that represents the territory. We are talking about members of the main consumers association here in Andalusia as well as member of the Local Action Groups (promoted by LEADER funds).

Finland

JAMK – as a University of Applied Sciences the most important development tasks are related to areal development and bioeconomy. The Institute of Bioeconomy is an active trainer and developer in the fields of rural businesses, agriculture, bioenergy and water management.

JAMK works with topics that are important to people: renewable energy, sustainable food and clean waters. We are actively involved in bioeconomy training, research and business networks. Around 100 professionals work at Bioeconomy Campus in Central Finland that serves as a meeting place for entrepreneurs, investors, researchers, developers, authorities and students.

The bioeconomy campus is formed together with JAMK with 100 students and POKE Vocational College that offers upper secondary qualifications with education community of 400 students.

The Institute provide the Degree of Bachelor of Natural Resources in the field of agriculture and rural Industries. The programme has 240 ECTS credits and takes four years to complete. It gives students outstanding skills to work as rural entrepreneurs or in various positions in companies or in public organisations. We offer studies both in full-time and part-time. The program of Master of Natural Resources, Development of Bioeconomy started at JAMK in January 2016.

Sweden

The stakeholder network of the Swedish Hub involves representatives of the quadruple helix; academia, research institutes, business, government/policy, teachers and civil society organisations. Before the BLOOM project started there were less contacts between these groups but through the different hub activities more contacts between sectors have developed. Our activities have also initiated collaboration and knowledge exchange with stakeholders on regional, national and Nordic level.

Netherlands

The hub was interested in BLOOM and wanted to use BLOOM to extend their network with the CSO's. Also, they would like to reach out for the general public, in order to inform them about the biobased strategies, developments innovations in Emmen region. BLOOM mobilized educational institutes (HEI, vocational training, secondary schools), civil servants, intermediates and networkers, who organise events for the general public), companies who attract general public, environmental organizations, communication experts.

Poland

BLOOMs network in Malopolska is based on the quadruple helix. The co-creation process connected the representatives of local administration (however they were not decision-making employees), representatives of research / academia institutions and NGOs and – in subsequent stages – representatives of the target groups: farmers, women, young-ambitious. The outreach activities were directed to the general public, young citizens, farmers, women and further children, but during the first bioeconomy seminar also quadruple helix (October 2018, pre-event of co-creation). Bloom was mentioned by the Marshal's Office Newsletter and invited by the local youth radio.

The last co-creation workshop took place in CSC in Warsaw (outreach design) and was open for the public, which had quite a different dynamic then in Malopolska. More representatives of NGOs applied, people engaged in civil society movements and business representatives joined the workshops without a special invitation. During the further outreach activity in CSC (due to its nature, which is basing on mass communication and events) information on bioeconomy aspects reached all representatives of the quadruple helix. CSC reports to the Ministry of Education, so it's a natural stakeholder. Being a reputable institution for the dissemination of science, large events where BLOOM was involved, combining the dissemination and outreach activities attracted the media.

Austria

In the formulation of the bioeconomy FTI Strategy representatives of triple helix network were involved. Representatives of research institutions (various scientific fields, from natural science to social science), public administration, industry were part of workshop groups. The representatives involved were selected by the group working on the strategy (3 ministries and research institutes – including EFE and ZSI) trying to have a diverse background represented.

In 2018, the stakeholder network of the Austrian Hub already consisted of representatives following the quadruple helix. Industry and SMEs, research institutes and universities, policy & public administration, as well as (some) civil society organisations.

From 2018 to 2020, new entities appeared as the topic of bioeconomy finds more and more attention within research, politics, business and civil society. One example is the Center for Bioeconomy at the University of Natural Resources in Vienna, which was established in 2019 and became an active stakeholder immediately. Moreover, contact with schools (BLOOM school in Vienna and agricultural school in Lower Austria) and media (e.g. “Blick ins Land”) increased.

Germany

There was a certain interest in the early days of BLOOM in exchanging and cooperation. The participation of business/industry was low. The joint activity of 3 European bioeconomy projects (BLOOM, Biovoice, BioBridges) brought some serious attention and had positive effects on the co-creation activities for outreach. But lately two big regional projects started in North Rhine-Westphalia (NRW) with a strong focus on regional economic development (in earlier coal mining areas). As the coordinators of these new projects are well established players in the region and abroad (Forschungszentrum Jülich) it was (almost) impossible to

attract companies to participate in BLOOM. Nevertheless, there is a good cooperation with partners of these projects who are responsible for communication and societal engagement.

My impression is that the bioeconomy (project) scene is extremely 'elite thinking' with only low openness for cooperation.

How did the co-creation phase contribute to the network extension? What role do already-conducted outreach activities play in network extension? (max 100 words)

Spain

More than talking of extension we think that the Spanish hub and the co-creation phase have contributed to strengthen the network. In this context the co-creation phase has helped to fill those gaps that the bioeconomy cluster and the initiatives promoted by the regional strategy couldn't reach. The co-creation process has allowed to create an informal space where the participants can work together and think about the real needs of promoting the bioeconomy to the general public.

The already-conducted outreach activities have contributed to have more people from the academic sector informed about bioeconomy and in this way involved and interested in working on this sector.

Finland

The regional partner already has quite large regional network. However, the co-creation activity offered excellent platform to extend the collaboration to young people who were identified as key stakeholder group in co-creation process. The collaboration was about to bloom especially in 2020 but interrupted dramatically because of limitations of practical activities of corona virus.

Sweden

The co-creation contributed to a lot a of stakeholders from different sectors of society getting together for the first time and understanding the importance of communication and of citizen involvement for the transition and implementation of bioeconomy. Furthermore, it led to the development of a wealth of outreach activities adapted to key target groups.

Netherlands

Co-creation brought together different stakeholders, new stakeholders from CSO, or those who have a strong connection with new target groups as the general public or youth. Outreach activities will lead to spread the information on the perspectives of bioeconomy generally and of the perspective of biobased innovations in Emmen region.

Poland

It was mainly important from the perspective of social capital building, as the representatives of such a various environment had to cooperate in the way that was very unusual for them (sometimes not comfortable however). Those, who found this method fun and creative

became our experts and contributors during the outreach phase. Some people however found the co-creation method not comfortable and did not want to maintain an active relationship with BLOOM. Co-creation enabled identification of the target groups and dedicated outreach models.

Austria

Involvement of stakeholders already quadruple helix network approach working on FTI strategy extended by university students, teachers, high school students, and citizens. Other groups grew bigger (snowball principle).

During 6 co-creation workshops/webinars, 90 stakeholders were participating, and five concrete outreach events were designed. Especially, the co-creation approach led to a strengthening of the network, as participants (quadruple helix), worked together and came closer to each other. Several participants became active multipliers of the BLOOM project. Concerning outreach, especially the gallery walk – conducted at a conference on biomass – built new relations (such as with “best-research”) and found special attention amongst two federal ministers. This could facilitate a better entry-point to the stakeholder group of public administrators.

Germany

As described above there is a good and fruitful cooperation on development of outreach activities, starting from the networking (also beyond the region, means including people from other states like Berlin, Bavaria or Baden-Württemberg).

How would you describe the influence of your Hub activities on the CSOs/NGOs and the General Public interest for information delivered by and activities of BLOOM? (around 100 words)

Spain

As told before, we consider that the hub have contributed to make the bioeconomy more visible in the region, having involved more representatives of the territory working together with the rest of the main actors (academia, private sector,...) and establishing new collaborations.

Finland

The outreach and dissemination activities have raised wide interest among CSO, NGO and the general public. The forest and forest bioeconomy in general are one of the topics under discussion and people like to share their point of views and wish to get more perspective in the topic. For example, we have been directly contacted by young people (high school students), vocational school staff, high school staff to collaborate and communication about forest bioeconomy and sustainability.

Sweden

The interest for and need of a neutral platform for communication about bioeconomy (not driven by governmental, business or research interests) is the key success factor for the Swedish part of the Nordic hub. The breadth of stakeholders involved also helped to spread the word and to engage citizens and NGOs on regional, national and Nordic level.

Netherlands

Those people or representatives got involved in BLOOM and Emmen regional approach and have committed themselves to different outreach activities, because they share the value of communicating the perspectives of bioeconomy and biobased innovations in Emmen region. Outreach activities in Emmen region still need to take place.

We have conducted outreach activities at the Dutch Design Week in Eindhoven. There we faced interest of many visitors from general public. We have spent much time on explaining the exhibition we had prepared, showing the potential of valorization of biomass towards different applications. People were amazed and had lots of questions, showed interest in the products (where can I buy them?). Some were interested in reading more about background, or showed interest in specific subjects, like applications in construction of their homes.

Poland

In Poland, the NGOs scene is not very well developed yet, what was especially visible in Malopolska, and these institutions have a moderate impact on reality. 2 foundations related to food production cooperated with us at the workshop level, then one of them carried outreach activity with BLOOM and another proposed participation in another project on the subject of primary production.

General public to which open outreach activities were addressed, reacted positively and with great openness. However, it seems that a small part of the population was interested in acquiring new knowledge, it was visible during gallery walk or science espressos, where we were expecting much wider public.

Austria

This especially concerns the following: gallery walk, students' trip to the Netherlands, webinar about bioeconomy at home. What can be seen, is that the focus of the hub on "innovative circular materials" and the BLOOM methods of bringing this focus closer to the people, increases the interest of the general public and civil society. Especially `showcases` and real-life examples make bioeconomy and BLOOM graspable. In several cases, we've heard the comment "from now on we have to look closer on what the product consists of".

Germany

Through cooperation with another Bonn Science Shop project addressing schools a growing interest can be stated – more focused on alternative products.

How would you describe the development of the engagement of CSOs, NGOs and the general public since the establishment of the hub? How would you describe their alignment towards bio economy networks, innovation ecosystem, activities and dynamics? (max. 150 words)

Spain

We consider that the hub has contributed to make the bioeconomy more visible in the region, having involved more representatives of the territory working together with the rest of the main actors (academia, private sector, ...) and establishing new collaborations.

Finland

The sustainability has come in part of daily discussion during the project. Therefore, the solutions towards more sustainable society also interest people. The bioeconomy and its potential have been noted as well as challenges in the framework of nature diversity and resources wisdom. The development has strengthened the regional hub of bioeconomy campus and raised it as a communication platform.

Sweden

These groups understand better the importance of the bioeconomy and are very keen to be engaged but there is still a lot of knowledge building left to do. Our limited budget is unfortunately a barrier for further development of existing network and of new partnerships.

Netherlands

CSO and representatives show engagement. General public shows interest.

We have the impression that in Emmen region, the CSO's and NGO's organizations, educational network and some professionals are getting more aligned with the triple helix networks. Next to the economic department of the municipality of Emmen, the communication department is very active on bio-based economy and is participating actively within BLOOM. This department is responsible for communication towards general public, is organizing events for the general public and uses support from the BLOOM project.

Poland

As admitted above, a relatively small group of representatives of NGOs and general public represents a high level of commitment, seeks knowledge, wants to change the market attitude of producers and consumers starting from themselves. Many participants of our outreach activities emphasized that there should be more such events. However, within the outreach activities in Warsaw, more NGOs and CSOs were involved and co-organised the outreach activities.

Austria

Generally, the engagement and alignment of general public and civil society can be summarised with two keywords: "active" and "sustainability & climate". From pupils to board members of civil society organisations: Participants of co creation activities and outreach events show a high engagement within the discussion. Of course, this refers to

participants. This means, that the person already shows a minimum of interest. During the gallery walk, we've experienced, that several visitors just passed by and said: "no, we are looking for something different, we are not interested" (general public). Ad alignment: both, general public and civil society show interest, but also skepticism. Especially about the sustainability and carbon footprint of the products and production processes.

Germany

Germany has a strong and active NGO scene. In the region there are a couple of food, food production, food dissemination or waste reduction, waste management initiatives in action. In discussions they recognize their activities' relation to the bioeconomy but don't see themselves as bioeconomy policy actors.

How did the network of multipliers grow and develop since the establishment of the hub? (around 100 words) (multiplier = a person/institution/stakeholder/media that played or plays an active role in dissemination activities)

Spain

Due to the fact that the Spanish hub is coordinated by the ceiA3, which is composed of 5 universities and 2 associated centers, the multipliers from the beginning were a lot, nevertheless among this universities we have notice and increase in the persons involved in the BLOOM dissemination, students and more researchers, as well as personnel from the transference offices.

Also, our collaboration with other projects as BIOVOICES and BioBridges has been crucial in order to improve and extent the network of multipliers.

Finland

The bioeconomy has become more known in national and regional perspective since the beginning of the project. Some part of that has been the result of activities of the Bloomers. The knowledge about novel innovations replacing plastics or mitigating climate change are about to raise and therefore also independent information and platforms to communicate are needed.

Sweden

Several educational institutions and regional clusters and some Nordic and international organisations have been in touch, expressed their interest in collaborations. But sadly, we haven't had enough resources to engage in more dissemination activities than what were planned in the DoW.

Netherlands

The co-creation session has mobilized 20-30 people. With some (10) of them we have planned to collaboratively organise outreach activities. The rest is being informed by BLOOM newsletters. With the outreach activities, we aim to reach out for 10's - 100's of people. The

partners play an important role, they seem to be capable to reach out for specific target groups and can be seen as a multiplier. We have 4 multipliers in Emmen region.

Poland

The evolution of the actors involved was not necessarily related to the growth of the network. Unambiguous readiness for COOPERATION was presented by 2 clusters (that expected involvement in their project at a level exceeding our financial capabilities) and other scientific institutions. Initial contacts established in the co-creation phase have brought many potential partners. Most of them were not interested in working together for BLOOMs goals. During the outreach activities, there remained a fairly strong relationship with several academic institutions, NGOs and some specialists. There were also institutions that asked for events dedicated for their needs (for example some special schools). Their representatives saw BLOOM outreach and then addressed us to introduce the subject for their pupils.

Austria

Besides multipliers that existed since the establishment of the hub (e.g. partners within the bioeconomy-austria network), we've observed a rising degree of media representatives that want to report on bioeconomy and BLOOM. The newly established center for bioeconomy at the University of Natural Resources in Vienna, immediately became a multiplier. Moreover, former participants & experts of activities – such as the “Umweltberatung” actively disseminate BLOOM activities.

Germany

There is a big number of projects and organisations in the region. It has to be stated that BLOOM only plays a minor role in this long-established scene. Anyways, the contacts into the science communication group are good and developed in a positive way (Kulturwissenschaftliches Institut, Essen, Bürgeruniversität Düsseldorf or Wissenschaft im Dialog, organising activities in the year of bioeconomy).

Single participants of co-creation workshops are still aware and in contact with WilaBonn and the broader co-creation team.

How would you describe the biggest drivers of the implementation of your hub? “What made the existence and continuation of the hub possible? (max. 150 words)

What were challenges and barriers for the implementation of the hub? What are challenges for the continuation of the hub? (max. 150 words)

Spain

The existence and continuation of the hub it is going to be possible due to several facts:

- The bioeconomy “ecosystem” that exists in Andalusia: regional strategy initiatives, bioeconomy cluster, ...
- The ceiA3 has its own bioeconomy strategy so the Spanish hub will continue in this context, having their involvement in the activities and initiatives promoted by the universities of the ceiA3. As an example: the bioeconomy newsletter that is being

develop in the context of BLOOM is meant to continue in the future, or the development of the bioeconomy materials with the objective that can be used after the project. All of this is going to be possible thanks to the Spanish hub and its coordination.

Regarding the challenges for the implementation of the hub we don't really have any because of the existence of the recent presentation of the regional strategy and bioeconomy cluster. The challenges are more related to keep the dynamization of the hub, we consider that the interest will be there for a long time but that it is quite important to have a regular contact and implementation of activities in order to maintain the hub.

Finland

Climate change, plastic challenge, loss of biodiversity and overuse of natural resources – bioeconomy is in the heart of all these challenges that we are facing globally at the moment. It is one of the solutions to assist us to tackle with these nasty challenges. The markets are offering people easy and not so transparent information about avoiding unwanted impacts. However, there are no easy solutions and the consumers (ordinary people) are really aiming to get more knowledge-based information and to be able to communicate about the issues and potential solutions.

The Bioeconomy Campus represents the independent research and practical experience-based community that offers the local and regional society a platform of communication and collaboration.

Sweden

The interest of and need for a neutral platform for communication about bioeconomy which is not driven by governmental, business or research interests is the key success factor for our Swedish part of the Nordic hub.

Scarcity of resources in terms of allocated money and person months.

Netherlands

Drivers: the multipliers, people who have shared ambitions, who have discovered how to benefit from BLOOM.

Barriers: the distance of Wageningen to Emmen. We cannot be present so frequently. The interval between co-creation and outreach activities – too long.

Poland

Bioeconomy (apart from primary production) is a poorly spread concept in Poland. At the same time, there is a social group that is increasingly aware of the need to change the economic paradigm, change the approach to the natural environment for which this type of project is an inspiration. The involvement of such individuals enabled the project to proceed. The unselfish goal of the project was also important.

People who we invited to participate in co-creation workshops and outreach activity were surprised that we do not want to sell them anything, nor do we want money from them, only commitment and their knowledge.

The biggest challenge was the involvement of other entities to cooperate. The time and money barrier turned out to be significant. Many people do not believe that there is a different economic model than linear and conventional, based on fossil fuel energy. However, the biggest problem is audience indifference, unwillingness to interact, lack of curiosity, lack of openness.

Austria

Drivers: Especially the engagement and interest of the stakeholders keeps it running. All four groups are highly interested in approaching BLOOM goals. If you are starting an activity and within several minutes you have positive responses from several stakeholder groups – this indicates a flourishing hub.

Challenges & barriers:

Implementation: One challenge in the hub implementation in Austria was the different thematical focus of the stakeholder groups. The groups who already worked in the field of bioeconomy before (triple helix) were (are) interested in innovation, research and market tools. The “new” stakeholder groups – students from university and schools and NGO/CSO and the general public focused on (ecological) sustainability issues. Now we have to institutionalize the communication of the stakeholder-groups with very different backgrounds in whatsoever form to make sure this communication does not end with the bloom project.

One big challenge also was the changes in political landscapes because of two elections. Priorities, parties, responsible people changed. And through a substantial period, the process was on hold on this level.

Continuation: personnel fluctuations within the organisation harmed a continuous conduction of hub activities. Moreover, financial resources and time resources could harm the continuation of flourishing activities in the future (after the BLOOM project ends).

Germany

Biggest driver: commitment and engagement of WilaBonn team and colleagues involved in education projects on waste reduction. Commitment of co-creation team partners for the need of societal engagement in policies around bioeconomy.

Challenges are elite thinking of research institutes and projects. The role of the Bloom Hub as facilitator is not or rarely recognized – the hub is more or less seen as competitor in the bioeconomy field.

Another challenge was the long-lasting illness of a WilaBonn BLOOM team member, the maternity leave of another team member and other staff changes which especially in the start-up period was not easy to cope with.

Success story of each hub: In relation to all hub activities, what are you especially proud of (not outreach activity)? (concrete story, established network connection, (future) collaboration, etc.)

Spain

The involvement of the Local Actions Groups and the consumers association.

Also, the collaboration with the Spanish partner of Biovoices and Biobridges. (ASEBIO, the Spanish association of bioproducers)

Finland

In the first place we targeted in collaboration with local youth parliament. The participated in the co-creation process and later in Science café offering platform for communication about bioeconomy innovations in the main library. There they invited us to participate in the sustainability workshop of Let's get global network. Since then, we also continued deeper collaboration with local high school having 1200 students and locating in same facilities with vocation school. The network also planned activity with us about sustainability. The activity was targeted to the 9th graders.

Sweden

We have been able to reach out to several regions in Sweden and to connect different parts into a national and Nordic Hub. Also, we have shown the importance of communication and a quadruple helix approach in the co-creation process for the transition and implementation of bioeconomy.

Netherlands

Connection with communication department of municipality, communication consultants who are working in the Emmen Hub, and who have shared ambitions.

We have invested time in mobilization of the network, in finding key partners and getting to know the partners, in aligning BLOOM with the regional dynamics. We can easily connect and use facilities.

Poland

From my perspective, the real success story is a deep commitment of a group of students within the outreach activities of 'Bioeconomy Ambassadors', who directed their professional future towards bioeconomy as a result of a meeting with BLOOM. They also conducted outreach activities for younger audiences themselves, so the effect for this target group was immediate.

Almost 20 scientists and business practitioners were invited to cooperate and jointly wrote over 430 page monograph presenting the institutional and production aspects of the bioeconomy to a wide audience. It will be presented in June/July 2020. It also gives a perspective for the future cooperation, as all the authors are connected by the bioeconomy subject.

Austria

The Co-Creation methods were highly appreciated by the participants of different stakeholder groups. It was amazing to see how people were able to work together on equal terms without the usual status – each expertise was seen as valuable and contributing - as the setting was far from used to the participants. A researcher enjoyed playing with play maize and the students were treated as equals in the co creation.

Germany

The establishment of a team for outreach and dissemination activities that is working ‘by itself’ and which doesn’t have to be pushed. After all these competitions and partly exclusions it was good to see that commitment.

Do you have further comments?

Spain

We consider a success story the fact that we have involved the Local Actions Groups, because at the beginning this kind of public was very difficult to have in our sessions, they are also very busy and bioeconomy wasn’t in their agendas. Nevertheless, thanks to a continuous work as well as the recommendations from other hub participants, they were involved at the end. The local actions groups are very important because they are very connected to the territory and represent in some way the civil society.

Regarding the Biovoices project collaboration we are proud because is not only a collaboration in the paper but in the practice, we talk a lot and they come to our hubs and give their inputs as well as we do with them.

Sweden

There is a great interest from the various stakeholders we have met to continue to collaborate, exchange knowledge and communicate the benefits of bioeconomy to the general public. We have set up provided a platform for this exchange but unfortunately there is no “business plan” for how these platforms and networks could continue to exist after BLOOM project has ended.

Appendix 3: Focus Group Transcript

Welcome

9 participants: H5, H3, H6, H2, H8, H9, H6, H1, H7, H4

Agenda of the Focus Group (Finch & Lewis, 2003)

1. Scene setting and ground rules
 - a. Welcome, introduction not too technical, motivational, roles of participants, an overview. There are no “right or wrong answers” everyone’s views are of interest! Aim is to hear as many different views and experiences. Everyone is free to say what they think – whether agree or disagree. Remember: This is not a Telco! Content will come from participants as well. This focus group will be less guiding as usual telephone conferences. The focus group is about your personal views. Disagreement or difference in view is both acceptable and wanted.
 - b. In case something should be treated confidential: 3 options: 1. Say it immediately, 2. You will get the written document for approval, 3. WR is reviewer.
2. Individual Introductions (not needed)
 - a. Check In: Everybody says something with video & microphone
3. The opening topic

“What does “BLOOM-HUB” mean to you?”.

H4: “A local group working on the project ideas, or a national group”

H2: Yes, a group. For me the first word is something like ‘group’

H1: For me it is a regional network that is always working on bio based innovations.

H3: for me it is co-created institutions

H6: For me it is a national or regional relationship, like the hubs are going to be more than at the beginning.

H9: For me I would say it is a collaborative network, working on bioeconomy, on Nordic, national and local level.

H6: For me it is a platform that is shared by different sorts of entities. Like quadruple helix. That shares understanding about this bioeconomy innovations.

I1: thank you for the first input. Would you say that we all have the same view on what a hub is?

H4: I see a difference, because some of the remarks were more project oriented and some were directly related to content of bioeconomy.

I1: So, one last question about this, what does this mean? In how far is the hub connected to the organisations that are in this meeting now? Is a hub something that will persist after the bloom project has ended?

H3: In my opinion, not in the form as it is, because there are different aims of different organisations. So, I don't think they will be always having a reason to be connected. But with some people and some organisations I really hope that there will stay a cooperation level.

H4: It will not continue as a *BLOOM* hub in my understanding. Because the project is over. But through the connections we've made we will continue working on the aspects of bioeconomy and in these working environments, we always can make a relation to findings and outcomes of BLOOM. The hub as BLOOM hub (as an organizational structure of the project), will no longer exist, but working with the experiences and knowledge created through the BLOOM project, will continue to work.

H9: For us it is a bit the same. All the collaborations will still be there. And we also try to inspire more collaborative work in this direction on the Nordic level. There might be something like a new BLOOM but for the Nordic countries.

H1: In the Netherlands, there was already a hub/network. And BLOOM aligns for 2,3 years with that network. And when BLOOM is finished, the network will still exist. And hopefully, the network as extended to more civil society organizations and has more involvement of and outreach to the general public.

H6: I see it quite similar as H1. I think, the BLOOM hub will end. Definitely. But I hope that we will still have a bioeconomy hub here in Austria. For sure, our organization will be part of this hub. We will continue working on that topic. What will stay from BLOOM is that we will incorporate more CSOs and schools in our day to day work.

H7: It might not be the BLOOM hub itself that keeps functioning, but we have been developing a lot of material – for example the suitcase – so, with all the connections made and the networks established, there will be some afterlife to the BLOOM hubs. But they have to reorganize their structure.

4. Discussion

Statement: „Co-Creation was mainly important from the perspective of social capital building, as the representatives of various environment had to cooperate in a way that was very unusual for them.“

H4: I would not underline that this way was *very* unusual for them. I think that working in Co-creation was expected. I would underline that it was important from the perspective of social capital building. The connections during this process were very important.

H1: An important part of this was the phase before the Co-Creation. When we actively approached and mobilized all kinds of new partners. That was an essential part of this process. CC was important for the social capital building. It is not very unusual for the people in the Netherlands. There are also other effects of the co-creation besides social capital building. Also getting more connected to other domains. And creating new ideas, obviously.

H6: I think that co-creation as such was not that new, but the really important thing was that the five different stakeholders feel that we think that they have a right to say something to the topic. Some stakeholders did not know that they have a role in this field.

I1: What was the role of especially this Co-Creation approach within the hubs?

H3: For us, it was an unusual situation where the representatives of four different environments meet and actually have to do something together. And it had its problems, because some environments may be treating other environments not that seriously. We have seen a conflict, where some representatives of NGOs did not speak scientifically enough for some representatives of science. But it was helpful to actually see how people were discovering – sometimes with surprise – different perspectives. For *some* of the business representatives the methodological setting did not fit, as – from their perspective – a whole day of participation, was too much, and the link from the workshop-format (and ‘*playing*’) to an increase of profit was not present. They had different expectations, several were hoping to find business partners and open new markets.

H9: We’ve got the totally opposite response from our co-creation workshops in Stockholm. Most of the participants were very eager to participate. And they were nearly hopping up and down to be creative. They were listening to each other. For us it was difficult to get participants from the environmental organisations, as they are quite fierce in the discussion on sustainable forest management. Some other stakeholders invited us after the workshops to show what we have done within BLOOM. There is a lack of coordination within this topic in Sweden. Therefore, our work was very appreciated by all different sectors.

H4: Regarding the exchange within the hub. It was good. We were able to build a team to work continuously. One of the difficulties we had in the beginning was that people tried to escape to the meta level when discussing. Instead of thinking about concrete solutions and what they – personally – or the organization can do to deliver results. It is something like H3 described “this is not a conference”. I think making the step to the personal involvement and personal commitment – to what is discussed and what is the outcome of this co-created activity – is an issue in all kinds of these activities. And we experienced it as well. Another difficulty we faced was that there were a lot of activities going on in our region. I reported on that in the questionnaire. Many actors were more interested in business opportunities than in awareness raising. So, we had to establish a specific position in the field.

I1: Regarding the difference within the hubs: What does it mean for BLOOM Hubs in general that there exist such regional differences?

H4: There is no ‘one size fits all’. It needs local regional national adaptation of plans and activities. And different communication strategies, regarding the engagement of audiences.

H1: Regarding some environmental organisations we see the same. There are some organisations who are not willing to cooperate. Regarding the differences in the hubs, there is this smart specialization strategy in Europe. And all regions have made their priorities. Many have priorities of bioeconomy and bio-based innovations in order to grow, develop and become more sustainable. The strategy is also to work with triple and quadruple helix organisations. Moreover, there are cultural differences. Borders between the different domains, organisations not used to work together with other groups. We see this also in our project. This is for sure. And more and more networks, clusters, intermediate organisations appear, so it is not very easy to connect to them. Building these might be easier for bigger and broadly known institutions like WR, than for smaller organisations.

H9: I think our strength was that we are a small but independent organization. So we are already like a platform for open discussion on these issues. That is our strength. It might even come down to *how* the co-creation workshops were organized. The design, the format, the length. We tried to keep them short. Because time is valuable. Especially for the industry, but more or less for everyone.

Statement: Hubs with a clear connection to one regional cluster can better fulfil the goal of increasing public engagement in bioeconomy.

H2: In our case, that is true. It is not only about a cluster but, also the strategy and the networks that are increasing in the region. If the hub is connected with this kind of clusters, networks, the public administration initiatives about bioeconomy in this region, it is easier, to get it going. To engage the public.

H4: This is not the case for us. The ongoing projects and bioeconomy clusters in our region, they all think, that they are doing awareness raising within their activities. They are a quite closed community. Working with the regional cluster was quite difficult. And therefore, working from outside it was much easier to raise interest, draw attention to possible activities created in our co creation workshops.

H9: I agree with H4. For us it was totally the opposite. As we are working with several different organisations and levels regional national and Nordic clusters. For us it was more like 'the more the merrier'. Having lots of collaborations and connections in your hub makes that you will have more public engagement throughout the project and the hub. Instead of just focusing on one cluster.

H3: I could probably fine with it. The common region gives the common context. That could be helpful. I am not sure if I would call it cluster due to the issues I have mentioned before. More an informal network.

H6: I think that it is not only a hub or a cluster as a structure that increases public engagement. It is always the people that are running different tasks. One of the key issues for us was that we know different entities from this region and could invite them in co creation and different kind of activities. Sometimes, if you have very strong own cluster, and you are working with the people that think in a similar way, you don't really see out of the box. But other entities are important as well. I think it is more about the *persons*, and the structures.

H6: I think it really depends on what the terms mean of this statement. If you see cluster as an industrial cluster, for example the wood cluster in the south of Austria. And the other question is, what is the engagement in bioeconomy? Now we were talking about engagement in the co creation. If it is the interest on bioeconomy as such, I think the connection to a regional cluster can help. Because you know the people, you have the showcases at hand. If you want to increase the engagement in the co creation process, I think it could be hindering if you have just the industrial cluster. I think it really depends on the terms.

H2: Maybe it is because it was the year of bioeconomy, and lots of networks, and the situation that everyone wants to be part of the cluster and the hub. Maybe that is why everything was easier for us. But I am not sure, It is just my opinion.

H1: I think that is an advantage of clusters and regional networks. I think also what H3 was saying. Context. Vision, strategy of where the region is going. That helps. I think that is part of this regional strategy. I think that helps. It is good to analysis here. We see different routes. And different starting points as well. It would be good to report that and to distinct that.

Statement: While we have reached 50.000 European citizens, still the majority of the general public does not care about bioeconomy.

H3: I totally agree.

H9: I am not sure if the general public of all Europe understand what bioeconomy is. Because I think that they care about different aspects of the bioeconomy without knowing that it is defined as bioeconomy. This is also what we learned from our outreach activities here in Sweden.

H3: If you reach just one person, it is already a success.

H4: You will never get a 100% coverage. You will never get a 50% coverage of all citizens of Europe, of your city, your corner. It is a starting point. When the environmental discussion started on climate change, it was the same situation. This is some kind of snowballing, some kind of starting small, be continuously online with your activities of this field. We don't have to be ashamed that we *only* reached this number of citizens. I think this is a success. Once you started *working* with somebody, this is already a real success. Just telling people is OK. But *working* is a real success. This is what the hubs did. They started working with the stakeholders and as such it is a success. No matter of how many people have been reached. / I think that people care about certain aspects of bioeconomy. They are aware. They talk about compost, plastics, reusing materials, ...

H1: I think we need to have an outreach. And maybe 50.000 is already a lot. We, ourselves, cannot reach out to much more. I think. But what we do, also with our partners: we develop outreach materials. Which are useful to be used also for other regions in Europe. They have the potential, to reach out to a much larger public in Europe. I think, that is our objective. To make bioeconomy and the concepts accessible.

H6: It is not just the people we reached directly. But also if you tell something to a student. And they are going to tell their parents, their fellows. The snowballing is really important. That the public does not care about bioeconomy – I don't think it is the case. I think they care about certain aspects. Like jobs. This is highly relevant – if the bioeconomy gives me a job.

H3: Yes, this is true, but about the term “bioeconomy” itself, people don't really care from our experience.

H7: There is no need to justify this number. I would not think about this number so much, but more about the “does not care”. Because, it goes in hand with what H3 said. It is not about that they don't *care*. It is that they don't *know*. And that is why they don't care. Because, if they hear the term, they have no connection to it. But still, with this project and with the work of the hubs, we have worked on this awareness raising. And this is a success. Education is the key. Society and Science can jointly discover solutions.

Question: How should we conduct public engagement in the next six months?

H4: Look into the planning of the partners and that is how it should be done. Because it is good. It is co-created. It is tailored to the specific needs. Fulfills what is possible in the different regions. I don't see ‘one size fits all’.

Statement: „There is great interest from stakeholders we have met to continue to collaborate, exchange knowledge and communicate the benefits of bioeconomy to the general public. We have set up a platform for this exchange but unfortunately there is no „business plan“ for how these platforms and networks could continue to exist after BLOOM has ended.“

H4: I think this statement is wrong. Because we had a sustainability session and there were a lot of ideas developed about how to continue with the activities. How to continue with the BLOOM website. We would like to keep it longer alive than just 1.5 years. We heard from different partners how they are going to continue. In the context of bioeconomy and squeezing in BLOOM results. Probably it is not a *business plan*. But there are strategies of all partner about how to continue with the work after BLOOM.

H6: We haven't been communicating only about the benefits of bioeconomy. We as a hub, all the time we have been pointing out, that bioeconomy as a field of industry, has strengths in certain perspectives. And sometimes it has great challenges. We can't only believe in bioeconomy. It is not the only solution. It is one of the solutions in suitable cases. In some cases, it is not the best option, concerning sustainability.

H9: For the sustainability, there is also this question of 'how can we actually reuse all the knowledge that we have built up within this project?' And not to let it be another platform for the platform-graveyard. Because there is a load of platforms out there. So I would like to raise the discussion of – besides the great points within the sustainability meeting – how can we in our future work incorporate all these ideas to the new European projects that we will engage in. Or in other regional, national, international projects. So we have a plan of who is going to to what and who will be participating in future projects in the coming years. And who actually *owns* the material? Who owns the webpage? Is it free for everyone to use?

H4: What is the platform? Is it the BLOOM website, or is it the hub? Or is it the network we created? The answers on these questions depend on how you define the term 'platform'.

Final question: If you think about the year 2022: What is left of the BLOOM Hubs?

H9: Could we send you the answers to this question instead, I need to leave?

H3: For the universities: I think I will still have the contacts. And perhaps, if I'll write another project, more locally, we might use the connections. Hopefully, informal connections will remain.

H5: 2022: I have a feeling that the Spanish Hub and the one from the Netherlands will still exist. And I hope that the material will be used in the universities. For other organisations, such as ZSI and WILAB, I hope that we can use the material we have created as a basis for future projects about working with and informing the public.

H6: We will still have the relationships that we have built. And that we can talk to the people who we got to know during the time of the project. What is going to be left, is the notion that, to engage the public is very still used and a legitimate way within bioeconomy.

H6: On behalf of our organization I hope that we can use the connections of our collaboration. With you and also, on regional and local level.

H8: As H3 said, the contacts and connections we've gained through this project will be the main and the best thing left.

H4: You were asking about what is left of the hubs. Exchange will remain. Especially on the policy level. It is great to learn from each other. Contacts will remain on the local national and regional level. I don't think that we will be considered as a hub for bioeconomy in our region. Because there are much stronger partners, as H1 said before it is difficult for a comparably smaller organization. What will remain is the expertise and experience in engaging with the general public and different stakeholders.

H7: Maybe the BLOOM hubs are not *BLOOM* hubs anymore, but still there is an underlying connection that has been made, through collaboration. For future activities, something will remain from it. Connections, networks, collaborations!

Thank you very much!