Picture: Pixabay

Boosting European Citizens' Knowledge and Awareness of Bioeconomy Research and Innovation

BLOOM Newsletter | issue n°7 | December 2020

After 3 rich years, the BLOOM project is coming to its end in December 2020. During the last years, our partner organisations have run many activities to raise awareness on bioeconomy in Europe, bring multiple stakeholders together in dialogue, gain a common understanding and foster learning and education. Five regional bioeconomy hubs have been established in Spain, Poland, the Netherlands, Austria & Germany and Sweden & Finland. In co-creation workshops with different groups of stakeholders, the regional hubs have elaborated a series of outreach and engagement activities. On the following pages, you can find main insights and outcomes of the hub activities.

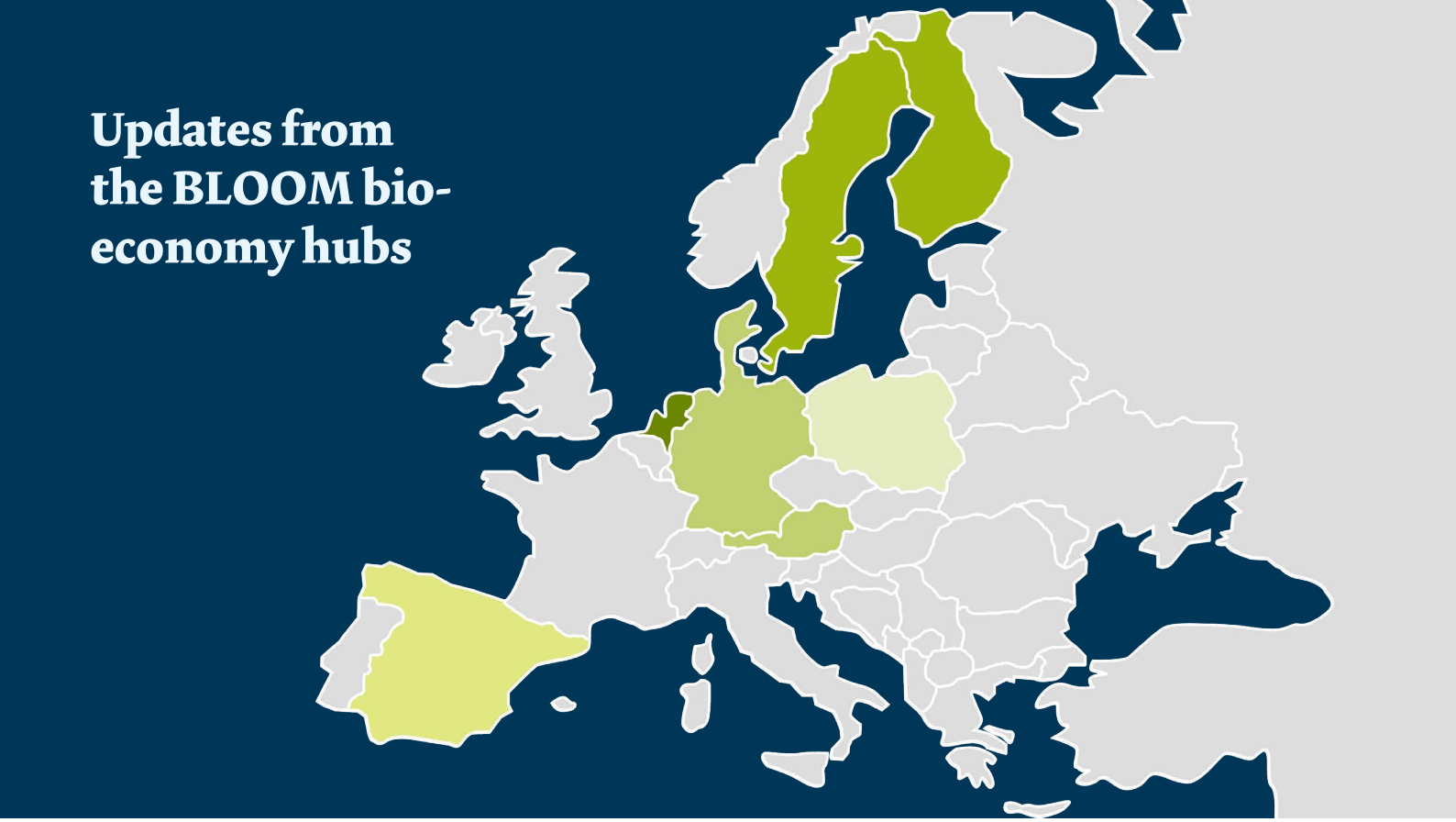
Moreover, the BLOOM School Box is the result of a fruitful collaboration and co-creation process involving teachers from 10 different countries. It is a pioneering collection of bioeconomy related teaching resources which educators can use to introduce the concept of bioeconomy in their classrooms as a trigger to raise student interest in science subjects and their awareness of critical societal challenges. The School Box has been made accessible to many more teachers, through the implementation of a MOOC and a competition. Find out more on page 15!

With the main aim to raise awareness on bioeconomy in Europe, BLOOM has also developed a series of information and outreach material, that now remains available for other projects and the general public. The available material includes a video series on bioeconomy, podcasts, a bioeconomy suitcase with biobased products, guidebooks and much more. For a complete overview, visit the "BLOOM Media" section on our website.

We would like to thank everyone who has contributed to the success of BLOOM during the last 3 years!

Content:

Updates from the BLOOM bio-economy hubs



Dutch Hub

Area: Bio-chemicals and bio-plastics
The hub follows and promotes new cross-sectoral collaborations between chemical companies and the agro-industry

News from the Netherlands

Reaching the civil society with bioeconomy outreach activities

In the BLOOM project we have created a rich basis of concepts, definitions, explanation of biobased valorization routes, bioeconomy key messages, and insights in regional approaches and practices. Based on this content, in the BLOOM project we have finalized the following outreach materials, which have been used at a variety of outreach activities:

- A PowerPoint presentation with an overview of circular bioeconomy concepts on knowledge and innovation
- A series of posters for Gallery Walks, presenting different aspects of the bioeconomy
- A video on bioeconomy at Wageningen University and Research
- A video as part of the BLOOM bioeconomy documentary series: "From sugar beets to bioplastics"
- Key messages on bioeconomy
- Questions and Answers, based on interactions with the general public
- A suitcase with biobased products

In collaboration with partners of the Dutch regional Hub, Wageningen Research has organized a variety of outreach activities in the Netherlands: gallery walks, webinars and science espressos.

Gallery Walk

We have created a presentation of basic bioeconomy concepts on six panels, which show definitions and key messages about the bioeconomy, including three valorization routes of biomass, starting with sugar, wood and fibers, and a description of the regional approach. Additionally, we have created specific regional panels, one for Emmen and one for Wageningen, to show the specific characteristics of both regions and to explain to the visitors the appearance of the bioeconomy in their own regions. The gallery walks have been shown in Wageningen City Centre, in a vacant shop in the main shopping street. In Emmen region, the gallery walk was supposed to be shown at a public side event of the Bioplastic Expo in Emmen. Unfortunately, due to COVID-19 this event has gone virtual and has attracted only professionals. Nevertheless, the panels are now available for the region to show during upcoming regional events.

Webinar

We organised three webinars, two international and one regional webinar. The international webinars have been prepared in collaboration with our the BLOOM Nordic bioeconomy hub. One webinar was about bioplastics in your daily life, which touched upon the smart specialization of our regional Hub in Emmen region. Wageningen Research introduced the concepts and the biobased plastic products. Roel Folkersma, from NHL Stenden University of Applied Science presented the Emmen regional hub, the approach, innovations, companies and the bioplastic products which are produced in the Emmen Cluster.

Science Espresso

We hosted various science espressos to inform divers groups of people about bioeconomy concepts, perspectives and products. An important setting for these activities was the Dutch Design Week in Eindhoven. In 2019 it was visited by thousands of visitors, who also came to the BLOOM exhibition. We hosted the stand during nine days and many national and international groups visited us, both professionals and the general public, all interested in new sustainable materials for consumer products.

In 2020 the Dutch Design Week went 100% virtual. Again, Wageningen research contributed with a presentation of the BLOOM project and with the participation from BLOOM perspective in a panel with designers and experts interested in circular bioeconomy. This year the event did not attract that many participants from the general public, as they are not used to visit digital exhibitions yet. But the professionals were very interested in the opportunities which have been shared by the BLOOM project, and were open to explore the use of biobased materials in future activities.

Conclusions

The BLOOM materials, storyline and activities have attracted a lot of interest. Many Dutch regions have in the past invested in bringing together the triple helix partners (academia, business and public institutions), in exploring the potential of biomass valorization in their regions, and defining their strategic opportunities for value added activities and regional growth. It was not common to involve civil society, as the BLOOM project has done, but the region of Emmen has recognized the importance of reaching out to the general public. The importance of explaining the policies and the current developments in educational institutes and industrial sites in an understandable way was recognized. There is now an increased awareness of the fact that Emmen is able to innovate very successfully towards new sustainable biobased alternatives for fossil based plastic products. Emmen has created a cluster of activities and of organizations, supported by intermediate organizations and a well aligned educational and innovation infrastructure. For further development Emmen relies on sufficient capacities and investments.

When working with a quadruple helix approach (with academia, business, public institutions and civil society), the internal cohesion is very important, as well as the common strengthening of the external profile in order to attract investments, students and new work force. The BLOOM outreach materials have been used in Emmen region and the importance of the interaction with the general public has arrived in the reginal agenda. All the materials produced by the BLOOM project are now available for further dissemination and can be used to further spread the importance of the circulare bioeconomy for the future of our region.

Remco Kranendonk, Wageningen University & Research

BLOOM Testimonials

Dealing with the challenges of holding bioeconomy outreach events during times of Corona - a conversation with Elianne Rookmaaker, municipality of Wageningen

The Dutch bioeconomy hub of the BLOOM project had scheduled many outreach activities on bioeconomy in 2020 – and then the Corona crisis came. Nevertheless, the Dutch hub and the other 4 regional bioeconomy hubs got creative in how to still do meaningful outreach activities during these special times, be it online formats or smaller face-to-face formats. We talked with Elianne Rookmaaker, project manager from the municipality of Wageningen, who shared with us some insights about the challenges the Dutch hub was facing in the implementation of events during the Corona crisis.

"We planned an interactive talk at the public library of Wageningen about the BLOOM project, which had already been scheduled months before. In the same week a small exhibition in one of the vacant shops in the city center was planned, where people could just drop in and get some explanation about bioeconomy from researchers and other experts who are involved in the project. Because of COVID-19 there were more and more restrictions, so in the end only the exhibition could take place. The interactive talk at the library had to be postponed.

But thanks to the BLOOM bioeconomy exhibition in the vacant shop, we had some interesting conversations with local inhabitants. Some of them read about the project in the local newspaper, and they were interested in and curious to get more information about bioeconomy. Through these conversations we soon realised that the distance between researchers and academic theories, on the one side, and "the man in the street" on the other side, is often even bigger than we thought.

We struggle to make the concepts of bioeconomy easily graspable and understandable for everyone. We received some very valuable feedback and new ideas on how to make this knowledge even more accessible by making the context simpler and easier to understand. We also got positive feedback on the practical demonstration of bioeconomy products and processes. For instance, we showed fresh, locally grown Miscanthus (Elephant Grass) - a fast-growing grass that can be used to produce bio-polymers, bio-concrete, paper and cardboard as a basis for a variety of biobased products. By showcasing products, visitors were able to grasp the different steps of the production process much easier.

The exhibition also attracted the attention of local and regional media, especially since the exhibition was targeting local inhabitants in the city center, and not focusing just on scientists.

In order for the bioeconomy to become part of our daily lives, I think it is crucial to find ambassadors among the local inhabitants who can tell others in everyday language about the benefits of a sustainable bioeconomy. The challenge is that even the term bioeconomy itself is not well understood by the majority of people.

Even though it is a pity that nearly all planned events got cancelled, we used the situation as a chance to do a smaller prototype exhibition, which taught us two important lessons:

a) The municipality, local inhabitants and entrepreneurs are enthusiastic and eager to learn more about bioeconomy and they are open and positive towards the subject of bioeconomy.
b) It is crucial to narrow the knowledge gap between the professionals/researchers and the people in the street, and to avoid jargon."

Interview with Elianne Rookmaaker, municipality of Wageningen

Would you like to participate? Get in touch with the Dutch Hub:

Wageningen University & Research, Netherlands
Remco Kranendonk: remco.kranendonk@wur.nl
Harriette Bos: harriette.bos@wur.nl

Nordic Hub

Area: Wood based products
The Nordic hub (Sweden & Finland) aims to raise public awareness about the possibilities of forest products.

News from Finland and Sweden

Boosting bioeconomy in the Nordics – BLOOM Nordic Hub

The goal of the Nordic Hub in the European BLOOM bioeconomy project was to communicate the opportunities and challenges of the bioeconomy, as well as to increase knowledge and demand for forest-based products and materials amongst the public. Several initial meetings were held with research institutes, universities and companies in Finland and Sweden to understand their role in the bioeconomy, the products and services they provide and the challenges they are facing in communicating with society. From this knowledge gain, we set out on an exciting journey into the innovative sector of the forest bioeconomy.

Elina Pääkkönen, Senior Scientist at VTT, specialized in new fiber-based products.

„Cellulose is the new plastic but to get our research out into the market and to consumers, we need companies that can invest in this new research.“

- Elina Pääkönen, VTT Research Scientist.

To find out who to target and how to design our communication activities we organised co-creation workshops where stakeholders from civil society, the research and innovation sector, academia and education, decision-makers and industry separately in both countries, co-created communication activities about the bioeconomy and a forest-based circular economy. Participants exchanged ideas, ambitions and challenges, as well as opinions and experiences of bioeconomy.

One of the first things we did in the co-creation workshops was to find answers to questions such as, What is the bioeconomy? Is it always climate-friendly? Does it mean the sustainable use of natural resources? What are renewable resources and bio-based production? Does bioeconomy include the circular economy and ecosystem services, or anything else?

Based on discussions, we developed a working definition of bioeconomy concept in Sweden:

The bioeconomy is economic and societal development based on renewable resources. It encompasses products/services made from natural resources, bio-based materials and processes (land, forest, sea and freshwater). The bioeconomy also includes trade in ecosystem services. The bioeconomy requires changes to processes and skills in society. A transition to the bioeconomy can lead to sustainable societal development and to a circular economy.

The bioeconomy is about not using finite resources such as fossil raw materials and minerals. It does not need to be small-scale, ecological, circular, sustainable, non-polluting or likeable!

Bioeconomy and sustainability

There are already a large range of regional and national activities and campaigns addressing the forest industry, forest-based products and new innovative materials. But the co-creation activities showed that at least in Sweden the term 'Bioeconomy' has been partly kidnapped by the forest industry, and feels somewhat commercialised and thought of as a marketing campaign in itself.

As an outcome of the co-creation workshops, the Nordic hub wanted to build a more neutral platform to discuss the bioeconomy and to develop communication activities targeting young people, particularly girls. We created opportunities for regional and national stakeholders to collaborate and exchange knowledge, and to find new ways to engage the public and young people.

One way of achieving a more sustainable world is by raising the general public's awareness about the environmental impact of their lifestyle and the products they buy and use. Even though there is a wealth of information available, the concept of bioeconomy and its potential in tackling global sustainability challenges is still rather unknown for many within the EU. Therefore, communicating bioeconomy in a clear, straight forward and understandable way is key in order to reach a wider public and to raise their awareness about the bioeconomy's future possibilities and role in reaching the UN Sustainable Development Goals.

A fresh boost to bioeconomy communication

We learned throughout the BLOOM project the importance of encouraging the public to think critically by giving them enough information and creating space for discussion. This way, people could observe and reflect on the impact of their daily decisions from different perspectives. The solutions are hardly ever black or white – especially when it comes to bioeconomy and its many perspectives of sustainability.

In the workshops that were held, most stakeholders agreed that young people and especially young women are very concerned about environmental issues and keen to act in more sustainable ways. We need to listen and create opportunities for dialogue with local young people in order to create ideas together with them about how, where and when to communicate and what kind of information is needed. If the communication is not interesting enough for them or not connected to their daily lives, they are not going to listen.

One output of the workshops was the creation of social media campaigns in Finland and Sweden, for example during "Global Week to #Act4SDGs" to promote action in solidarity with citizens across the globe, including youth groups through #FridaysforFuture and the youth-led #globalclimatestrikes. The campaign wanted young people to reflect on #BIOECONOMYinMYdailylife in a series of images shared through social media.

We also visited schools and attended a festival in the suburbs to talk with young people about the bioeconomy in their local communities. Using hands-on examples of traditional bio-based products and new innovative ones, we started dialogues around bioeconomy and the most important natural resource in the Nordics: the forest and wood.

Preeti Gahlawat, teacher in the BLOOM school network and BLOOM project manager in Sweden Lotta W Tomasson talking about how the bioeconomy can be taught in schools during a Festival in the suburbs of Stockholm.

Throughout the project we noticed that the students and young people already know quite a lot about bioeconomy, but that they really respond to concrete examples of bio-based products and especially stories about how they are produced. Young people and their teachers need and want more information about bioeconomy.

During the BLOOM project it has become clear that youth are interested in methods used to measure sus-

tainability and in responsibility aspects. As long as companies, research institutes and universities are offering clear, hands-on and evidence based information in a dialogue manner citizens will be able to make informed decisions which will contribute to creating a sustainable future in a circular and biobased way.

Let the bioeconomy bloom across Europe and beyond!

During three years that ended with a pandemic, we have identified stakeholders, connected with them, and organised events and dialogues across Sweden, Finland, the Nordic and Baltic countries, Europe, Canada and all over the world. There is a huge engagement for making bioeconomy a reality and creating a gamechanger for the industry, communities, schools and other education facilities, research, innovation and policy makers. The Bloom project has helped create a common understanding and develop insights about both cultural differences and common grounds between different countries. Let's keep on moving forward with a circular bioeconomy as the goal and a #forest4future.

Lotta Tomasson, Vetenskap & Allmänhet

News from Finland

Discussing about bio-based in Finnish schools

What are bio-based products? What possibilities or challenges do they have in solving global problems? These topics were discussed with local students on 6th October 2020 at JAMK Institute of Bioeconomy, as a part of the course "Perceptions of Bioeconomy", provided for Karstula Upper Secondary School students.

The course "Perceptions of Bioeconomy" lasts for one week, during which the students get to familiarize themselves with different aspects of bioeconomy: agriculture, forestry, bioenergy, as well as environmental care and clean water. Our conversation with students was related to other forestry issues.

New and some traditional bio-based materials and products (mainly made out of wood) were introduced to the students. They had time to explore the samples and ask questions. The students discussed actively about sustainable use of natural resources: how to motivate towards that, and what might prevent it. They were especially interested in packaging materials, like Sulapac®. Sulapac is a Finnish company that produces plastic-free packaging products – made from a biomaterial called Sulapac. It biodegrades fully without leaving permanent microplastics behind. Sulapac can be processed with existing plastic product machinery, making the switch from conventional plastic to an eco-friendly alternative easy.

Sustainability & responsibility

The students saw many opportunities in bio-based materials. It seems that sustainable use of natural resources is very common and important to them, but at the same time, they had doubts about other people's attitudes towards bio-based solutions.

One major issue affecting the attitudes is the price of the products. The students saw that once bio-based products can be produced in industrial scale, the prices get lower, and the more people are willing to use them. This led to another concern: how nature-friendly is industrial scale production? Can it really prevent pollution?

We can see here, that the students already know quite a lot, but they really benefit from concrete examples of bio-based products and especially how they are produced. They are interested in the methods of measuring sustainability and responsibility aspects.

The importance of projects like Bloom is very evident. Young people – students and also their teachers – need and want more information about bioeconomy. The most important message from the students was: "We want a better future! Why aren't sustainable products already in massive use, replacing fossil-based products?"

Annemari Sinikorpi, JAMK University of Applied Sciences

Would you like to participate? Get in touch with the Nordic Hub:

JAMK University of Applied Sciences, Finland
Kirsi Knuuttila: kirsi.knuuttila@jamk.fi
Annemari Sinikorpi : annemari.sinikorpi@jamk.fi

Vetenskap & Allmänhet, Sweden
Maria Hagardt: maria.hagardt@v-a.se
Lotta Tomasson: lotta@v-a.se

Spanish Hub

Area: Food and agriculture
The hub promotes networking between all the actors involved into the agri-food sector in the Mediterranean area.

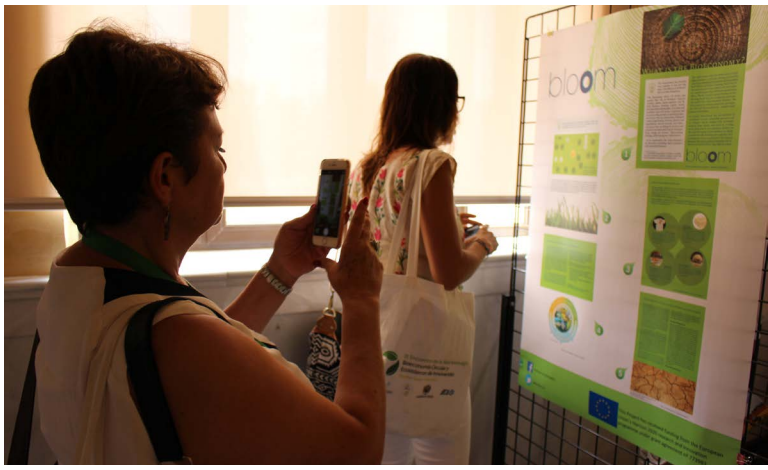
News from Spain

Setting up a community of practice on bioeconomy in Spain - looking back at 3 years of experience

The focus of the Spanish bioeconomy hub lies on innovation and networking within the Agri-food sector. The Spanish Hub was set up by taking advantage of the system created for the development of the Andalusian Bioeconomy Strategy. 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.

Our first step towards setting 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 co-creation workshops with the core group as participants. Parallel to the co-creation workshops that are underway, the collaboration with similar projects also targeting bioeconomy is considered was crucial for the Spanish Hub. For example the collaboration with BIOVOICES made the activities implemented by the hub more visible and extended and improved the networking of BLOOM. Another key activity of the Spanish Hub was to support the different institutions and organisations that were part of the hub in including the bioeconomy outreach activities in their agendas, for the joint implementation.

The co-creation activities in the Spanish hub enabled us to provide an informal space where experts used to working together in other bioeconomy networks in Andalusia have been able to discuss, debate and co-create about how to improve the awareness and the knowledge about bioeconomy. Also the methodology, open and adaptable to the participants and the development of the work done in previous workshops allowed us to go deeper in some aspects as thinking about the more suitable outreach activities or target groups for instance.



Regarding the outreach activities, both the organisation and implementation has been a lot of fun. They allowed to test the effectiveness of the co-creation processes in the sense that some of the outreach activities came as a result of these workshops.

From the Spanish hub it is worth noting that the outreach activities, like the Innovation Route or the Teacher´s Pack, were very effective. They allowed participants to engage in a dialogue and helped to raise awareness, connecting different sectors.

Rocio Juste Ballesteros, ceiA3

Behind the scenes: filming the BLOOM bioeconomy video series

For the fourth and fifth part of the BLOOM video series, our video team from Otelo eGen went on a trip to Andalusia in Spain.

There, at the wonderful University of Cordoba, we had the opportunity to film two innovative projects in the field of bioeconomy. The first of the research projects is about something that affects all of us: food waste. The researchers we met are dedicated to the question of how leftover food can be used to produce biofuel, and give meaning to the massive amounts of biomass that are thrown away every day. And their other project deals with an almost magical organism called microalgae that can produce another kind of fuel in the form of hydrogen. But more on that later.

What do we need for a video shoot of this kind? We wanted to be flexible, so we reduced the equipment to a minimum. We packed a camera, a tripod, a gimbal (which maintains the balance during camera movements), an audio recorder, a microphone and a light panel.

Together with the team from ceiA3 and our moderator Raquel Toleda Bernal, we spent two days at the university visiting a number of departments, immersing ourselves in deep conversations with experts in the field while filming them going about their business in their laboratories.

We spoke to María del Mar Delgado-Serrano about the fundamental task of the bioeconomy, its challenges and how we can avoid that fuel from biomass competes with food for humans. Sara Pinzi and Miguel Carmona Carbello enthusiastically explained the intricate process of their research project; how they produce biodiesel and other chemical products from food waste collected from the campus restaurants. We were able to literally observe (and film) how they took leftovers from bins and after several steps, filled up a tiny bottle with fuel. We were amazed! Miguel gave us a guided tour of the lab and patiently answered the hundreds of questions we asked. It can sometimes be quite challenging to put these complex scientific processes into a 7-10 minute video. And yes, it helps if you are an outsider who has no idea about the research. To tell a story cinematically, you have to keep it as simple as possible. And we did.

The visit to the laboratory with Alexandra Dubini, David Gonzalez-Ballester and Neda Fakhimi was also very impressive. They are researchers in the Department of Biochemistry and Molecular Biology and have been working with microalgae for many years, studying how these creatures produce hydrogen under certain conditions. These small microorganisms are like tiny factories that use solar energy, oxygen, carbon, and various nutrients to produce several useful materials and gases, including hydrogen. When we first got there, we did not even know that microalgae existed, which made the whole discovery even more exciting for us!

After these eventful days of shooting, we felt enriched by the potential of bioeconomy. When we came back, our memory cards were filled with more than four hours of film material, and we got started in editing this material. Now the 2 doccies that tell the story of our amazing trip to Cordoba have been published. We hope you enjoy watching them as much as much as we liked making them! Watch „From Food Waste to Biofuel“ and „Hydrogen Made by Microalgae“ now!

Sigrid Nägele, Otelo eGen

Would you like to participate? Get in touch with the Spanish Hub:

Campus de Excelencia Internacional en Agroalimentación ceiA3, Spain
Dolores de Toro Jordano: gerente@ceia3.es
Rocio Juste Ballesteros: rjb.op@ceia3.es

Austrian & German Hub

Area: Innovative circular materials
This hub aims to better integrate stakeholders and increase the general understanding and interest for a bioeconomy.

News from Germany

How BLOOM took root in the German Bioeconomy landscape

When looking at the German Bioeconomy landscape one thing became obvious right from the beginning of the project: there are many big players in it already. The concept of bioeconomy is nothing new to German markets and industries. The challenge, however, is how to reach the public. The big players are well aware that in order to move the idea of bioeconomy forward they HAVE to activate the public and thus the future consumers. There is quite the competitive struggle for finding participants for workshops and events on bioeconomy as the bioeconomy landscape is almost oversaturated.

Thus, one could say, the major insight here is: Networking is key! So, this is where the German Hub found its niche. And so, despite all the restraint in the beginning, the German Hub found a level of cooperation with other projects and institutions. The insights and science communication skills the hub had to offer were finally seen and accepted and BLOOM became a visible platform and mediator in the landscape of bio-based research and innovation for outreach and activities in Germany. This opened up many possibilities and led to many great collaborations with other projects and partners that even can still be intensified. In addition, partnering with other events and docking onto them has brought about many possibilities and contacts for future work, too.

Working with civil society and getting into dialogue has shown many interesting insights. The main outcome, like in other hubs as well, is that the concept of bioeconomy is quite hard to grasp. Participants of activities always ask for concrete examples of bioeconomy products. It became quite obvious that communication is more than just speaking, listening and discussing. Sometimes it needs all senses to communicate and understand. So, between juggling not being a promoter of products, but getting into dialogue and offering a safe space for critical thinking, the German hub experienced their engaged participants to always be very interested, always asking many questions but also being sceptical, questioning the concept and taking active part in the lively discussions. Stakeholders in Germany have also proven to be very flexible and reacted and adapted quickly to changing situations, in this case due to Covid-19, and worked together with the German hub to find alternative formats to meet and exchange. Once engaged, they are very invested!

You can read more about the activities in the German Hub on our blog.

Laura Steinhaus, Wissenschaftsladen Bonn

News from Austria

Pathway towards a biobased future

The focus of our hub was on innovative circular materials. After setting up the Co-Hub in Austria, over 90 stakeholders from research and science, public administration and policy, industry and business, as well as civil society organisations and members of the general public participated within four co-creation workshops and two subsequent co-creation webinars.

In the following outreach phase, we organized a three days study trip to the Dutch Hub and innovative companies, a local TV discussion about rural development and bioeconomy, as well as a specific discussion on the potentials of damaged wood for products of bioeconomy (in cooperation with Finland). More highlights of international collaboration have been the international webinar – a joint activity with Germany and Sweden – about the role of textiles within bioeconomy and the visit of our Polish partners dealing about the role bioeconomy in food value chains. At the beginning of 2020, we organised a gallery walk, which was visited by 190 people from the general public, the biomass industry as well as two federal ministers of Austria. With this and the findings of the co-creation phase, we put even more emphasis on presenting real showcases and products to touch. We organized two other gallery walks, one of them online.

When the Covid-19 pandemic hit us, discussions about home-office were present. Together with our stakeholders, we discussed about societal changes. We took this possibility to organize a webinar about bioeconomy and products in relation to habitation, home-improvement and do-it-yourself. As the outreach phase changed to online-formats during the pandemic, we have kept a close look on the participant feedback. There, it was shown that within 2 hours and several presentations, time for discussion was lacking. To learn from that, we organized one webinar especially dedicated to the two-way dialogue between bioeconomy researchers and society. A recurrent question during engagement activities with the general public has been the question of biodegradability and composability. Therefore, we dedicated our final webinar on addressing this question.

In Austria, dissemination activities (one-way dialogue) reached more than 100,000 citizens. During the outreach activities some of which were mentioned above, we were able to engage with more than 1,500 citizens within a two-way dialogue. Overall, we look back on BLOOM as a great phase working for a transformation to a more biobased economy through citizens engagement and awareness raising. We have generated a lot of content that can be used for future activities. Especially the BLOOM suitcase will be something that lasts. Therefore, we are looking positively into the future and would like to thank all partners as well as participants for a fruitful collaboration!

Thank you!

Hans Mayrhofer, Michaela Hickersberger and Gottfried Hebenstreit, Ecosocial Forum Austria & Europe

Climate change, damaged wood, falling prices: with bioeconomy out of the crisis

In 2019, up to 10 million solid cubic metres of damaged wood has accumulated in Austria. This corresponds to almost half of the total felling and entails a high effort and a drop in prices: One example is the Austrian Federal Forests, where this year a damage of 42.1 million euros was caused by reduced revenues and additional costs of beetle prevention and timber harvesting. In the future, an increase in wood of inferior quality is to be expected, which runs the risk of being left behind in the forest and thus becoming a challenge for the forestry industry. Climate change and efficiency improvements are contributing to this, but forest conversion towards more hardwoods is also leading to an increase. The forestry package of the Austrian Federal Government is a step in the right direction. Now it is time for implementation.

On the 3rd of September, 84 participants had the opportunity to discuss with experts from Austria and Finland about bioeconomy as a possible lever towards sustainable forest management. From the bathtub to diesel made from damaged wood: All this is hidden in the innovation building block of the European Bioeconomy!

Presentations:

1. Austria's forest: Developments and potential according to the Austrian forest inventory (Alexandra Freudenschuß, Institute for Forest Inventory, BFW - Federal Research Center for Forest) – German
2. Reshaping the forest-based bioeconomy: products and solutions (Virpi Korhonen, Executive Director of the New Wood Project, Finland) - English
3. Wood gasification as an option for dealing with damaged wood, oil-free agriculture and natural gas substitution (Christoph Pfemeter, Managing Director of the Austrian Biomass Association) - German

You can download the slides here.

Gottfried Hebenstreit, Ecosocial Forum Austria & Europe

Out of fossils, into ...? A check of products from renewable raw materials

On 6 October the discussion „Out of fossils, into...?“ took place as an interactive webinar. Participants had the opportunity to engage in discussions with researchers from various disciplines and to discuss their personal concerns.

Bernhard Kastner from the Centre for Bioeconomy at the University of Natural Resources and Applied Life Sciences Vienna and co-organiser of the webinar defined bioeconomy as a market economy based on biomass. In order to realise this, a social and economic transformation is needed which takes into account the complex interrelationships. The BLOOM project representative of the Ecosocial Forum Gottfried Hebenstreit presented applied examples of the bioeconomy which we can already find in our daily lives - from a wooden washbasin, a drinking bottle made of corn, cosmetic tins made of natural resin, a shirt made of cellulose or plates made of waste materials from grain processing.

Afterwards, researchers provided insights relating to issues that play a role in the bioeconomy. Antje Potthast from the Institute of Chemistry of Renewable Resources at the University of Natural Resources and Applied Life Sciences, Vienna, works primarily with biopolymers based on lignin and cellulose. While 70 million tons of lignin are used for energy production worldwide each year, only 1.3 million tons are recycled. A lot of potential is still unused. More (basic) research is needed to make progress in this area. A breakthrough is currently still to be achieved, which is also due to the complex structure of the source material.

Gerald Kalt from the Institute for Social Ecology at the University of Natural Resources and Applied Life Sciences, Vienna, places the bioeconomy within a broader social context. There are still numerous conflicting goals to be resolved concerning the growth of the bioeconomy - from the risk of environmental problems shifting or problematic land use changes. A bioeconomy without a simultaneous reduction in resource consumption cannot be sustainable, since the complete substitution of fossil raw materials on the basis of current consumption is not possible and efficient (because it is coupled with an enormous need for imports).

Josef Hackl, expert for sustainable development at the Federal Environment Agency of Austria, placed the bioeconomy in the context of Agenda 2030 and the goals for sustainable development. This approach makes it possible to assess the effects of transformation measures, to identify conflicting objectives and to develop accompanying measures. Only a precise impact analysis will ensure that sustainability in the bioeconomy does not just become an advertising slogan.

The discussion with the participants covered a wide range of topics: from the prevention of microplastic entry into the environment through our clothing, to the cascading use of biomass and waste treatment, to biodiversity in our forests. The definition of bioeconomy, especially the system boundaries, was not entirely unchallenged. For example, wind and solar energy are often not understood as sub-sectors of the bioeconomy. Here, the question was specifically raised whether energy for bioeconomic processes should not also be included in the overall concept.

The need to transform the economy towards a bioeconomy was a consensus among those who gave inputs and asked questions. The prevailing opinion is that our current fossil-based lifestyle cannot be sustained in the long term for reasons of climate protection and resources.

Michaela Hickersberger, Ecosocial Forum Austria & Europe

Compostable! Really true?

Picture: ©AdobeStock/Jedsada Naeprai

Materials from plant components can replace materials from non-renewable resources such as crude oil. They can help reduce greenhouse gas emissions. Such products of the bioeconomy have already become an integral part of our society: from bio-based glasses or flowerpots to biodegradable drinking cups or pens, to compostable T-shirts or plastic bags. The many different markings and labels for these products sometimes cause confusion among consumers – often it is not clear what the optimal recycling route at the end of the product's life is.

So, do bio-based products and the compostable T-shirt belong in the organic waste bin? What happens if the biodegradable drinking cup is released into the environment? On the 12th of November, over 170 registrants tried to answer these and many more questions with Christian Zafiu from the Institute of Waste Management at the University of Natural Resources and Applied Life Sciences Vienna.

You can watch the recoding of the discussion in German here.

Gottfried Hebenstreit, Ecosocial Forum Austria & Europe

Would you like to participate? Get in touch with the Austrian & German Hub:

Ökosoziales Forum, Austria
Gottfried Mayer: mayer@oekosozial.at

Wissenschaftsladen Bonn, Germany
Norbert Steinhaus: norbert.steinhaus@wilabonn.de

Suitcase in Austria to borrow!

Innovative materials and products for your event, classroom or lecture!

Even after BLOOM's project duration, you will still have the opportunity to experience, touch and explore bioeconomy. You ask yourself how? The whole BLOOM consortium has created a suitcase which contains numerous innovative products of the European bioeconomy.

If you are located in Austria, you can easily borrow the BLOOM Suitcase for school, university or other purposes. Just send us a request and some details and we will contact you! Currently, the suitcase is already used for classroom-activities in an agricultural school in Linz.

More information about the suitcase and how to borrow it can be found here.

Anna Thiel, Ecosocial Forum Austria & Europe

Contact Austria:
Ecosocial Forum Austria & Europe
Gottfried Hebenstreit: hebenstreit@oekosozial.at Mob: +43 664 516 91 28

Polish Hub

Area: Food and agriculture
The main objective of the Polish hub is to increase interest in bioeconomy studies and education.

News from Poland

Did you know that bacteria can produce bioplastics? - Final outreach activities of the Polish bioeconomy hub

On 11th of September Copernicus Science Centre organized an event regarding general bioeconomy issues. It was presented in the form of Gallery Walk in exhibition spaces of CSC. We learnt and discussed about: climate change and its consequences regarding to bioeconomy; sustainable development and its goals, examples of circular economy, sharing economy, bioeconomy, 3R (reduce, recycle, reuse); types of biomass and its value pyramid; examples of bioeconomy products; bioplastics and biogas production from animal manure. The big hit were the products from the BLOOM suitcase!

University of Agriculture in Cracow and the Copernicus Science Center in Warsaw organized a conference on „Bioeconomy - institutional and production aspects". The conference was held online from 21st to 25th of September. After a week of online presentations (you can watch the videos here) – on 25th of September we closed it with discussion with experts and questions from the general public. The most raised issues during conference were: institutional conditions of bioeconomy; bioeconomy in the context of the circular economy and a tool od sustainable development; bioenergy and biofuels (institutional and technological aspects); biomass – meaning, definition and consequences.

On 18th of November, CSC organized an international webinar in English where the potential of bioplastics and their usage in medical usage or new packaging alternatives were explained. Firstly, bacterial polymers (PHA) have many applications in medicine: these biodegradable and biocompatible polymers prove to be excellent materials for the construction of implants, patches, tissue scaffolds and other medical devices that come into direct contact with the body. They can also serve as a platform for the release of bioactive substances locally, and thus relieve the negative effects of systemic drug administration.

Secondly, the material can be used for packaging applications: active and intelligent biodegradable packaging based on furcelleran, obtained from Furcelleria lumbricalis red algae. The current research on the impact of this type of packaging on the quality and durability of stored food products will be presented and we'll talk about micro- and nanocapsules based on furcelleran, which have recently become an interesting carrier of active substances.

Paulina Strzyga, Copernicus Science Center

Would you like to participate? Get in touch with the Polish Hub:

University of Agriculture in Krakow, Poland
Malgorzata Pink: malgorzata.pink@urk.edu.pl

Copernicus Science Centre, Warsaw, Poland
Adam Mandziejewski: adam.mandziejewski@kopernik.org.pl

Updates from the BLOOM school network

The BLOOM School box creates a precedent for Bioeconomy teaching!

The BLOOM School Box is the result of a fruitful collaboration and co-creation process. It is a pioneering collection of bioeconomy related teaching resources which educators can use to introduce the concept of bioeconomy in their classrooms as a trigger to raise student interest in science subjects and their awareness of critical societal challenges.

The basis of the BLOOM School Box is five innovative learning scenarios, co-created and tested in classrooms by the 20 BLOOM pilot teachers from Austria, Belgium, Croatia, Greece, Italy, Israel, Poland, Portugal, Spain and Sweden. Special attention was given to ensuring that the developed learning scenarios are complementary and not competitive to the national curricula, fostering their maximum use and adoption.

Moving further, in an attempt for the BLOOM School Box to reach out to as many teachers as possible, a three-step dissemination strategy was implemented.

Initially, the BLOOM teacher trainings that were carried out by the pilot teachers aimed at increasing exponentially the number of teachers that would use Bioeconomy in their lessons. Additionally, the BLOOM MOOC that was launched, representing an important step in raising awareness of bioeconomy among educators and in scaling up the use of the pedagogical resources on bioeconomy included in the BLOOM School Box. More than 1,500 educators worldwide learned about the MOOC and registered to take part. More than 800 (mostly) teachers followed the course, reaching almost 10,000 students.

Moreover, by incorporating the "Teach Bioeconomy!" Competition in the MOOC and connecting it with important European wide initiatives in STEM education such as the 2019 STEM Discovery Campaign, further opportunities of increasing the online visibility of the project and the number of educational materials in the BLOOM School Box were exploited.

Finally, the BLOOM stories of Implementation competition published exemplary implementation stories in four categories: Teaching bioeconomy in primary schools; Teaching with bioeconomy in STEM classes for individual work; and Integrating STEM teaching with bioeconomy; Integrating STEAM teaching with bioeconomy for interdisciplinary team implementation. The network closed its contribution to the promotion of Bioeconomy teaching on 16th and 18th of November at the Global Bioeconomy Summit 2020. Pilot teachers and winners of the last competition shared their experiences and their expertise that was gained while supporting the project. The participants of the workshop were able to interact with the teachers and bringing that way bioeconomy experts and educators closer once more.

The BLOOM School Box

The BLOOM School Box is a collection of bioeconomy related teaching resources which educators can use to introduce the concept of bioeconomy in their classrooms as a trigger to raise student interest in science subjects and their awareness of important societal challenges. The basis of the BLOOM School Box are five innovative learning scenarios, created and tested in classrooms by the 20 BLOOM expert teachers from Austria, Belgium, Croatia, Greece, Italy, Israel, Poland, Portugal, Spain and Sweden. These Future Classroom Scenarios were developed using the Future Classroom Toolkit methodology. Six additional bioeconomy teaching resources were selected to be included in the BLOOM School Box following the BLOOM "Teach bioeconomy!" competition

All the teaching resources from the BLOOM School Box are available on our website.

Picture: Thanks for your Like on Pixabay

Can you hear me? - Outreach and awareness raising in times of the Corona epidemic

How to deal with outreach and public engagement activities in times of COVID-19 when face to face encounters are not or only partly possible and pre-prepared methods and concepts are no longer applicable? Especially for the difficult task of reaching out to persons and engaging them in discussion and awareness raising activities on societal relevant topics such as bioeconomy this is an important question which affects all the projects which are addressing a quadruple approach in the field of bioeconomy.

How projects still can make themselves heard and how virtual alternatives can serve the required needs was discussed with eleven projects in the webinar "Bioeconomy Communication and Stakeholders' engagement in times of COVID-19" organised by EuBionet for an exchange and discussion on how these challenges could be addressed. Like the other projects, BLOOM, under the title "Can you hear me" - presented main obstacles envisaged during the outreach and how the project partners tried to overcome them as it has been experienced and collected by hub partners.

In BLOOM the co-created developed activities were planned to be held in a non-virtual environment. Therefore, being no longer able to stick to initial concepts, the five regional bioeconomy hubs had to be flexible and creative to change the formats of the activities. Additionally, they needed more time for the preparation of the (revised) events, some of the events had to be cancelled or postponed, the outreach teams had to struggle with missing technical skills, both of the audience but also of staff, and constantly, they had to face an increasing number of online events from many projects, which meant a competition on time and attention. Furthermore, less personal interaction with the targeted groups was complemented by online "multitasking", meaning the poor presence and focus of participants to just a single activity in front of the computer.

How to catch this attention and how to engage participants and create lively and interesting events?

In BLOOM, but not only in our project, partners revised the structure of their events, shortened them, put fewer programs in it and tried to make them more interactive, like using MIRO boards or SLIDO. They used various formats and introduced bio-based products virtually, as they would have done in face-to-face events. Quizzes or informative cards, videos and produced educational materials found their application here as well. BLOOM partners even organised virtual field visits or applied a serious Lego play online.

The EuBionet webinar on 12th of November 2020 allowed discussion of the requirements necessary for successful events and exchanged them with other bioeconomy projects. Consistent recommendations were:

- provide good instructions how to (technically) join an event,
- have a clear agenda,
- make sure you have good speakers with lively and interesting presentations,
- and offer interaction with the audience through all available social media channels.

Somehow unexpectedly, the Corona induced switch to online formats not only caused difficulties, but also offered new opportunities. Saving time and money for

travel was one of these advantages, also being able to reach out for remote areas, interlink different countries or enable the participation in events which would have been less accessible otherwise. Also, events could be recorded and as such be accessible to a wider audience after the event as well. In general, all partners learned new skills and created flexible ideas.

All in all BLOOM's recommendations to organise shorter events but more often and to use different styles, different subjects, different channels to connect, different techniques and tools found a clear echo by other projects, also agreeing to accept that things will go wrong.

The EuBionet workshop successfully connected BLOOM with other related projects and opened the virtual door for future cooperation to enhance exchange of knowledge and ideas and also to join forces for activities and further strategies and conceptual steps in raising awareness for the bio-based economy and related research and innovation.

Norbert Steinhaus, Wissenschaftsladen Bonn &
Ilse Marschalek, Zentrum für Soziale Innovation ZSI

Example of a Miro Board:

Picture: Pixabay

BLOOM information and outreach materials

During the last 3 years we have continuously developed information and outreach materials on bioeconomy and on the approach of the BLOOM project. Find our newest materials below: the last two episodes of our video series on bioeconomy, two new podcasts, a collection of biobased products that are part of the BLOOM bioeconomy suitcase, and a guidebook on the outreach and engagement methodologies used by our hubs.

Our film team traveled to Córdoba (Spain) to film the last two episodes of the BLOOM bioeconomy documentary video series. Watch „From Food Waste to Biofuel“ and „Hydrogen Made by Microalgae“ now!

How can outreach and engagement activities become a success? Have a look at our guidebook with activities implemented by the BLOOM bioeconomy hubs.

Come with us on a journey to the bioeconomy future! We'll peek inside a different kind of time machine, a suitcase filled with items that might look and feel like the products we've been using for years, except that they are slightly different: they don't harm the environment. Check out the products of the BLOOM bioeconomy suitcase in the leaflet and this video!

The last episodes of our bioeconomy podcast series are online now! Learn more about research on new forest materials with Josefin Illergård and on the challenges and potential of bioeconomy in Austria with Martin Greimel.

Stay updated how BLOOM is engaging EU citizens and civil society in the bioeconomy via the project website and social media:

bloom-bioeconomy.eu

facebook.com/BLOOMEU

@BLOOM_EU

BLOOM EU

@BLOOMEU

BLOOM EU

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 773983.