Interreg Baltic Sea Region | Co-funded by the European Union

CIRCULAR ECONOMY Blue-Green Bio Lab

# Bio-industrial symbiosis

## Policy Brief

# Participatory Workshop Design

This brief is a part of the Blue Green Bio Lab Tool Kit, that represents the findings in the Blue Green Bio Lab project. The project targets the urgent challenges of reducing nutrients to waters of the Baltic Sea Region, limiting greenhouse gas emissions, and enhancing European self-supply with food, feed, and energy. Together, aquaculture, agriculture and industry can provide solutions to these challenges through industrial symbiosis based on the sustainable exploitation of local blue and green biomasses initially grown and/or harvested with the objective to produce positive ecosystem services. The Blue Green Bio Lab project is co-financed by Inter-Reg Baltic Sea Region with partners in Denmark, Latvia, and Sweden.

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This brief provides a description of methodological approach of the Blue-Green Bio Lab project to designing and conducting local stakeholder workshops with the aim of starting discussions about local bio-industrial symbiosis based on selected biomasses.
Purpose of the workshops are to:

- Enhance the capacity of authorities to facilitate bio-industrial symbiosis design processes
- Enable cross-sectoral industrial stakeholders to expand their potential for exploring one type of biomass for multiple products.

Early on in the project, the project partners agreed that best practice would be to have one common participatory workshop design – given the aims of the project to compare output and results from the local workshops.

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## Bio-industrial symbiosis design principles

The principles that govern design of a bio-industrial symbiosis, focus on its distinctive aspects related to primary production and utilization of biomass that yields favorable climate and environmental outcomes within the local ecosystem and landscape. The integration of various industries through symbiotic relationships has proven to be an innovative approach towards achieving sustainable development goals. In this context, the emphasis on utilizing specific types of biomasses to generate positive impacts on both the climate and local environment remains a key priority. The participatory workshop design aims to back the essential considerations and strategies that underpin a successful implementation of a bio-industrial symbiosis.

## Generic participatory design

The initial **intention** for the workshops was to create an opportunity for engagement and begin building a mutual foundation for developing bio-industrial symbiosis. The primary **goals** were to involve a range of participants through a participatory process, develop possibilities for industrial symbiosis with participants, and form the basis for future activities in the project. To meet the participatory element, the workshop is designed on the principles of Art of Participatory Leadership; the Climate Foundation partner is an experienced facilitator of this approach. For more information on Art of Participatory Leadership see Annex 1.

Having identified the intention and goals, Climate Foundation Skive assessed the needed elements to secure successful workshop outcomes – for participants and the project. During this assessment the following elements were identified:

- Inspirational speech on bio-industrial symbiosis to support a common understanding of basic infor-

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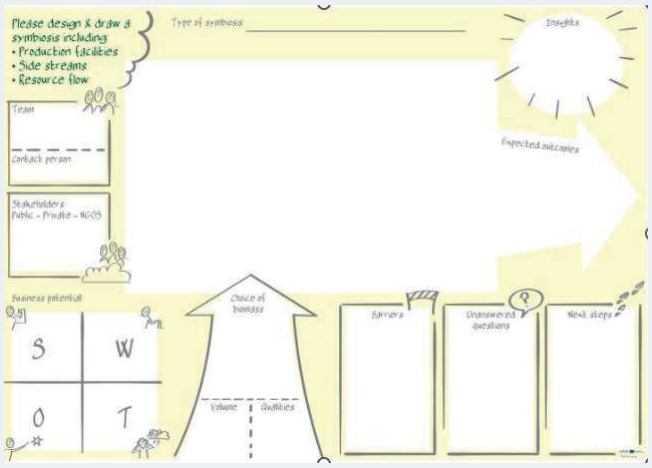
mation and facts among workshop participants
- Presentation of the selected types of biomasses and ongoing initiatives related to an industrial symbiosis
- An interactive design session outlining local industrial symbiosis based on
  - Biomass volumes and qualities
  - Important resource flows' characteristics and estimates (including excess resources to be accounted for e.g., by adding more companies to the symbiosis)
- Identification by workshop participants of the types of challenges with initiating local industrial symbiosis with selected types of biomasses.

Following this assessment, the project partners created the following workshop program:

**Program with proposed timing**
12.00-12.30 Arrival and standing lunch
12.30-12.45 Welcome, context, purpose, and framing
12.45-12.55 Quick check-in: Who's in the room
12.55-13.30 Inspirational speech on industrial symbiosis (optional: and ongoing initiatives related to an industrial symbiosis)
13.30-13.40 Re-organize in groups (either pre-defined or random)
13.40-15.00 Outlining local industrial symbiosis on selected biomass(es)
15.00-15.15 Break
15.15-15.40 Peer coaching
15.40-16.00 Integration of feedback in original groups and preparation of presentation
16.00-16.30 Presentation from groups outlining 3 most important challenges/barriers and if possible, how to overcome the challenges/barriers
– challenges/barriers recorded in a mind map
16.30-16.40 Voting on what participants believe will move the most if overcome (measure the temperature)
16.40-16.55 Reflections/open mic/check out
16.55-17.00 Next step and thank you.

To ensure the ideas from the group discussion were recorded, a template / large poster was made to support facilitators to gather and organize inputs from the group discussions.




To help organizers with facilitating the different steps in the generic program, a thorough process action plan was developed and discussed among the partners.

## Local differences

As time progressed and each project partner began to get a deeper understanding of local knowledge level and stakeholder engagement, a completely identical and common workshop design did not seem to be the best way forward. For example

- Partners in Lysekil Municipality are working with non-native species and there is a limited knowledge of circularity & symbiosis.
- Partners in the Zemgale Planning Region are focusing on a known biomass, but it is not currently in production.
- Partners in Skive Municipality have a known biomass in production, but there are potential opportunities for new symbioses. Furthermore, there is some local knowledge and experience with symbiosis among some of the key actors.

The partners were aware from the start that there would be differences and therefore need for local adjustments in the workshop design.

Due to local level discussions before and at the start of the project, the project partners were also working on slightly different timelines. For example, discussions with stakeholders in Sweden started much earlier than with the Danish and Latvian partners, and therefore

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the workshop in Lysekil was held a couple of months before the other local workshops. This ended up being a good thing for the project in supporting discussions of how the common workshop design could be used and modified early on.

**Workshop and adjustments in Lysekil, Sweden**

In Lysekil, Sweden there was a broad invitation to participate – not only did they want to discuss the specific biomasses, but they also wanted to raise the general awareness about circularity and industrial symbioses – to see "what could be the outcome". In the end, 23 people representing 12 businesses/organisations participated in the workshop which was moderated by Innovatum Science Park in close collaboration with the neighboring municipality Sotenäs, who also facilitates Sotenäs Symbiosis center. Based on their knowledge and experience the Sotenäs symbiosis center provided the inspirational speech. Prior to the workshop, the participants had been invited to watch three films (YouTube) made by Sotenäs about symbiosis.

When in contact with one of the companies, it became clear that while they were interested in symbiosis but they were not keen on sharing information about their resources openly. This was an issue that also arose in the workshop. During the workshop symbiosis between Red Algae and giant shrimp (Vannamei) as well as symbiosis regarding the wastewater outcome was discussed. Most questions were discussed on a more general level.

Workshop approach in Zemgale Planning Region, Latvia

In Zemgale Planning Region, Latvia, the concept of bio-industrial symbiosis was new, so it was important to find the right way to introduce it to the local stakeholders and decision makers. Before the seminar, we identified the region's situation in the field of extraction, processing and use of blue-green biomass. In the workshop we therefore addressed a wide range of representatives- from scientists and regional development planners to local government specialists and rural entrepreneurs. In total 20 stakeholders participated.

The workshop organized by the Latvian partner of the project- Zemgale Planning Region (ZPR) was held on April 27, 2023, in Jelgava. It was decided to follow the general design proposed by the project, though they went with two inspirational speeches: one on the concept of the establishment of bio-industrial symbioses and the possible types of biomasses and one on the possibilities of biomass extraction.

**Workshop approach and organizing in Skive, Denmark**

In Skive, Denmark, it was decided to follow the proposed generic design. The region is a lighthouse concerning circular bioeconomy, green biomass and industrial symbioses on energy hence the concept of bio-industrial symbiosis is well known to many local stakeholders. Starting with an inspirational presentation helped set the frame for discussions about blue mussels during the workshop and make sure participants were updated on the latest initiatives and knowledge concerning the environmental state of local water bodies at focus of Skive's workshop.

The workshop was held on April 27th, 2023. In late February, we held a first meeting with associated partner Food & Bio Cluster Denmark, to define stakeholders to be invited. An invitation was drafted and sent in the middle of March to a mailing list of stakeholders representing fishermen, producers, suppliers, business support organisations, NGO's, local politicians, local authorities, civil citizens, and academia. A reminder mail was sent out and we made a follow up by phone. People were also encouraged to share the invitation. The invitation was announced on the websites and LinkedIn of Skive Municipality, Climate Foundation and Food & Bio Cluster Denmark. On the day of the workshop, there were 25 participants.

## Transnational reflecions and learnings between project partners

Both in planning and evaluating the workshops, one in-person and several online transnational meetings were held among the partners. The points below summarize the transnational reflections from the project partners:

1. An identical and common workshop design did not work out as thought in the beginning of the project. As time progressed, each project partner

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began to get a deeper understanding of the local knowledge level about biomasses and symbiosis and potentials stakeholder engagement.

2. Due to different local prerequisites, the partners found that it was of great importance to define who should participate in the first discussions? In Lysekil it was mainly businesses, in Zemgale it was mainly municipalities and in Denmark it was a mix.
3. It is also important to reflect on the choice of inspirational speaker because of different needs, depending on the knowledge/experience level with symbiosis and the biomass.
4. Having an inspirational speech during the workshop can also be beneficial to frame how to understand research and research results. And to counter the gap between knowledge and opinion as mentioned earlier.
5. Asking workshop participants to create an industrial symbiosis is simply too large a task during a first encounter workshop. At this stage, it is more important to build trust and level the understanding of the subject to be debated. This is a common learning from all workshops and partners.
6. Asking businesses to participate and share information, leave a chance to meet a trust-issue. Some businesses will hesitate to share production data with participants they don't know. A challenge exposed by the Swedish project partner which they overcame by inviting to 1:1 meetings before the workshop, setting the frame and building trust.
7. It is important to frame the role of a municipality/region at the workshop. That they as a partner in the project participate in the workshop on project terms and not as an authority which they commonly represent.

## Project facts

The Blue-Green Biolab project is co-financed by Interreg Baltic Sea Region.

Total budget: 499,399.60 Euro.
Project period: October 2022 - March 2024.

Homepage: https://interreg-baltic.eu/project/blue-green-bio-lab/

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CHALMERS INDUSTRITEKNIK
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## Annex 1: Art of Participatory Leadership

# Participatory Workshop Design

To ensure gathering of comparable results from the local workshops and having a participatory, co-creative workshop design, we have used guidelines and templates / posters based on Art of Participatory Leadership (AoPL) principles. AoPL is well-known and often preferred by the EU Commission to co-create, enable commitment, and produce good results.

### What is the Art of Participatory Leadership?

The Art of Participatory Leadership (AoPL) is an approach to scale up from personal to systemic usage of dialogue, facilitation, collaboration and co-creation of new solutions needed to address complex challenges in our work and in our world.

AoPL integrates methodologies, models and practices for collaborative dialogues and designing processes to engage large and small groups in conversations that matter. This systemic approach helps in empowering individuals and teams to learn together, work with collective intelligence, co-create new solutions and move to actions fast. Connecting individual perspectives into collective wisdom is particularly important in times of high complexity and disruption where ”copy/paste” solutions do not work. AoPL is based on how to host and harvest meaningful conversations.

**Methodologies**

AoPL conveys a set of powerful practices applicable for small and large groups:

- Circle
- World café
- Appreciative inquiry
- Open space technology
- ProAction café
- Design for wiser action
- Four-fold practice
- Chaordic path
- Collective story harvesting
- Collective mind-mapping
- Graphic facilitation

Each of the practices or methodologies uses a powerful question at its core. Crafting a good question is a challenge and creating a great one is an art. It’s worth spending time on framing questions because they open the door to whatever comes next.

**More information**

The AoPL is a network and has no formal, legal structure, no appointed leader, no accreditation program and no controlling body. It is based on a practitioner network, with local communities of practice; it is committed to learning and generous with its sharing and support. The first step to become a practitioner is to follow a 3-day-training; these can be found on the internet googling Art of Participatory Leadership trainings.

You can also find more information here: https://artofhosting.org/

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## Annex 2: 3D Tool

# Participatory Workshop Design

As part of the preparation process for the local workshops in the Blue Green Bio Lab project, a simple and dynamic digital tool with building blocks for designing bio-industrial symbioses was developed.

In developing the tool, the partners identified approximately 30 types of production units, plants, different types of stock, and several resource-flows (liquids, gas, fuel, electricity, water, etc. – all color coded). All elements are placed in local folders, which are easily accessible and connected on a dashboard. The resource-flows can be visualized through arrows and lines of various thickness, to differentiate between heavier and lighter resource flows. The tool can also be used in various languages.

From the platform, users can

- share with one another,
- export results/drawings as pictures or pdf's,
- create text boxes for commenting and explanation,
- continuously add new elements (scaling has no limits) and
- save work done in local folders.

The 3D Tool is web-based, open-source, and accessible at: www.bluegreenbiolab.com.

Initially, the 3D Tool was to be used to combine information from different companies (workshop participants) regarding their flows of e.g., electricity, heat, water, dry matter as well as possible prices between companies within the symbioses.

At an in-person partner meeting in Lysekil, Sweden in spring 2023, the partners tried out the tool and discussed the best way to integrate it into the project. At this point the partners decided, not to use the digital 3D Tool in the workshops directly, due to the risk of using too much time and focus on technology. Furthermore, the partners assessed that the limited time with workshop participants should primarily focus on dialogue, trust-building and exchanging knowledge and perspectives.

The partners have however found value in using the 3D Tool to think through, organize and share the key results and learning from discussions with workshop participants. The results of this learning are shared in diagrams included in the bio-industrial symbiosis briefs.

The partners anticipate the continued use of the 3D tool beyond the Blue Green Bio Lab project to further discussions with key stakeholders in developing bio-industrial symbioses based on blue and green biomasses.

We believe the 3D tool can support facilitators in bio-industrial symbiosis development through supporting a common understanding among partners regarding important resource flows, inputs and production units.

Short explainer videos are available to help new users to understand and use the tool:

- How to move an icon: https://www.youtube.com/watch?v=k53iegCRI00
- How to make an arrow: https://www.youtube.com/watch?v=R2AK9-yM2Ak
- How to make a larger text box: https://www.youtube.com/watch?v=GZ2mrY5o0IE
- How to load and/or save: https://www.youtube.com/watch?v=mPUeNCA2fa0