

Theme 1: Biosphere: Rethinking our food and bio-based systems

Workshop 1-3

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1W1

Cross-overs: Closing loops together

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This workshop will be limited to 20-25 participants.

One of the pathways to close resource loops within the transition towards a circular economy could very well be an intensification of cross-sector collaboration. Cascaded use and exchange of (waste)material flows between industries was mentioned in the groundbreaking report by the Ellen MacArthur Foundation (2013) as a crucial building block of a circular economy. Not only did this encourage companies and governments to reevaluate their perception of 'waste', but also a number of platforms (e.g. Circular Goodz, BioBoost, Seenons, Werflink) arose that aim to connect companies by centralizing information on supply- and demand of residual materials.

In this context, participants of the workshop "Cross-overs: Closing loops together" will explore how their respective sectors could become more connected by exchanging resource flows such as (waste)water, nutrients, biomass, minerals and metals. The workshop consists of presentations by the organizers and a co-creation session in collaboration with illustrators from JAM Visual Thinking. The presentations will be used to introduce the concept of 'Cross-overs', based on cases that have been developed within the KB project on Circular Greenhouse Horticulture (KB 34 1-2C-5) and the Flagship project Circularity by Design (KB-40-004-001). The first example case focuses on aquaponics: a cross-over between the horticulture and aquaculture sectors. The second example case focuses on how to develop a circular approach, utilizing organic sources

within a high-rise setting and combining it with food, feed and energy production, educational and community functions within the living, working & recreational environment.

To assess the potential of cross-overs a clearly outlined approach has been developed that can be summarized as a set of questions:

1. Which waste material flows do your companies/sectors produce?
2. Which of these flows are potential resources for other companies/sectors?
3. What are the foreseen benefits of exchanging/reusing a waste material flow?
4. Which challenges are perceived before the potential benefits are achieved?
(e.g. scale, logistics, quality requirements and legislation)
5. What are potential solutions for these challenges?
(e.g. technology, infrastructure, governance aspects, new business models)

1W2

Transformation opportunities for linear to circular marine resource inclusive food systems; bivalve mollusk perspectives

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What is the role of marine organisms in the food system? How can we transform from linear marine food chains to a circular marine inclusive food system? Low trophic marine organisms such as seaweed and shellfish can be produced much more efficiently, and with other carbon footprints than high trophic organisms such as pelagic fish. What is the role of low trophic organisms in the "new" food system? How can industrial partners, science and producers partner up to overcome the first challenges of this transformation? Circular approaches as envisioned for terrestrial production are not directly transferable to the marine food system, what is needed as a first step in a marine inclusive system? Together we'll explore the transformation opportunities from linear systems with high carbon footprint to circular marine resource inclusive food systems.

There is growing awareness of the need to incorporate marine or aquatic resources in the food system, in particular via the production of low trophic organisms. This will potentially lower pressure on agricultural land for food production. It potentially also positively affects resource scarcity as well as environmental pressure. However, there is

still debate on the extent to which marine resources can be produced and on the energetic efficiency of the production systems involved.

Alternative routes, such as conversion of current aquatic based feed production to human food, increasing the efficiency of the food system, are explored. Processing and refining the currently underused low trophic marine resources and marine by-products to food ingredients, to plant and animal production applications, and to non-food applications, is a field that is gaining interest and of high importance for the circular economy. Besides there is also the path of resource efficiency, in which great challenges lay in the use of other trophic levels/species, and the use of stocks, which are currently underexploited or of invasive character. How may these help in the process of by product valorization and utilization.

In this workshop we will discuss the opportunities to incorporate marine bivalve resources in a circular food system and explore the potential to valorize the (international) knowledge and business opportunities. WUR will introduce the ecosystem services related to bivalve production as a unique selling point for food system implementation. This will be followed up by an introduction on the health aspects of bivalve mollusks (to be determined). This will provide the basis to continue an (interactive) creative session to explore potential routes to incorporate bivalve mollusks in a circular food system (market idea generation). The second part of the workshop will focus on the discussion on what is needed to evolve to the next phase of opportunities (knowledge gaps and business development).

This workshop is particular of interest to food and feed protein sectors seeking for added value and health promotion in their food business.

1W3

Re-rooting Wageningen Campus

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'Re-rooting the Dutch Food System: from more to better' is a vision for a regenerative and nourishing food system in 2050. This inclusive food vision is based on healthy agroecosystems and the resources they provide, and is rooted in socio-economic conditions. By 2050, we have replaced the wasteful, linear model of our current food system with a circular one. A circular food system safeguards natural resources, prioritises plant biomass for human consumption, prevents losses and wastes, and recycles unavoidable losses and waste into the food system.

Moving the food system towards this future requires action by all actors and stakeholders in the food system. By connecting to our roots – our healthy agroecosystems, and our

capacity to collaborate – we can collectively realise a healthy and regenerative food system in the Netherlands.

Together with students (e.g. Circular Farming Platform Wageningen) and other Campus actors (e.g. Green Office Wageningen; the rector), we will envision how we can make the WUR campus more circular, and define concrete steps for action. Through brainstorm sessions and futurecasting we will work towards a shared goal, and short and medium term actions. Then we will identify which stakeholders and people at WUR are needed to take steps towards this future. What can each of these people/organisations do to make a meaningful contribution? Which potential collaborations and synergies do we see? And which steps can be taken today or tomorrow? In this way, we come up with a joint vision for the future as well as with concrete steps that can be taken to make the campus more circular.