

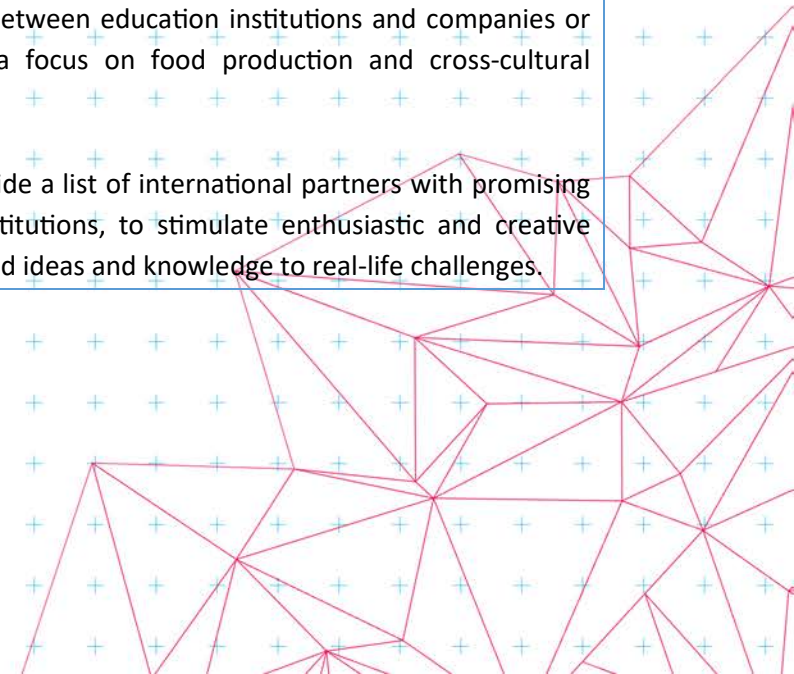
Challenge name	<b>Cradle2Cradle Restorative Horticulture in Uganda</b>
Challenge owner	Seed2Feed & Planetary Services (facilitators) Amelia Agro Africa (local organization)
	X <i>Company</i> <input type="checkbox"/> <i>Research</i> <input type="checkbox"/> <i>Student team</i>
	Frans de Jong (Seeds2Feed) Otto Kroesen (Planetary Services) Ana Xambre Pereira (TGD Challenge Collector)
Brief summary	Do you want to contribute with your skills & knowledge to a more sustainable future in Africa? Yes?! Then this ISBEP is for you! In collaboration with Seed2Feed, Planetary Service & Amelia Agro Africa, apply cradle-to-cradle technological solutions to regenerative horticulture to improve its natural resources use and greenhouse energy efficiency. Be part of the promotion of sustainable agriculture practices and local community capacity building in Uganda. This is your chance to have a meaningful impact in the world!

### About the challenge owner

Seed2Feed is a small-scale development organisation that supports sustainable agriculture and farmers entrepreneurship initiatives in the Global South, with a focus on sub-Saharan Africa. The mission is to connect local and Dutch enterprises in the agriculture value chain with governments, knowledge institutions and NGOs to exchange knowledge, support business development and promote international cooperation.

Planetary Service is a mediator for internships between education institutions and companies or foundations active in the Global South with a focus on food production and cross-cultural entrepreneurship.

Both organisations are working together to provide a list of international partners with promising projects and initiatives to higher education institutions, to stimulate enthusiastic and creative students to contribute with their solution-oriented ideas and knowledge to real-life challenges.



## Challenge description

Amelia Agro Africa is a circular regenerative AgriFood center of excellence, with research and development living labs focussing on keeping improving their zero-waste carbon negative company mission for the African agricultural sector especially in Uganda.

For that purpose, they provide high quality products and services such as:

- Growing organic vegetables, fruits, herbs, and spices
- Production of seeds & seedlings
- Rearing healthy livestock like goats, cows, poultry, fish, pigs & rabbits
- Production of healthy animal feeds from aquatic weeds & insect proteins
- Production of high-value compost using waste streams from the farm and food industry
- Production of liquid fertilizers & organic crop protection

Amelia Farms is located in the region around Jinja, city near Lake Victoria and one of the sources of the Nile river, in Uganda, a place with a high potential for excellent farming opportunities. Despite that, poverty among farmers is at historically high levels due to climate change, lack of knowledge about modern farming practices, depleted soils, and virtually non-existing export markets for fresh produce and processing of horticultural crops.

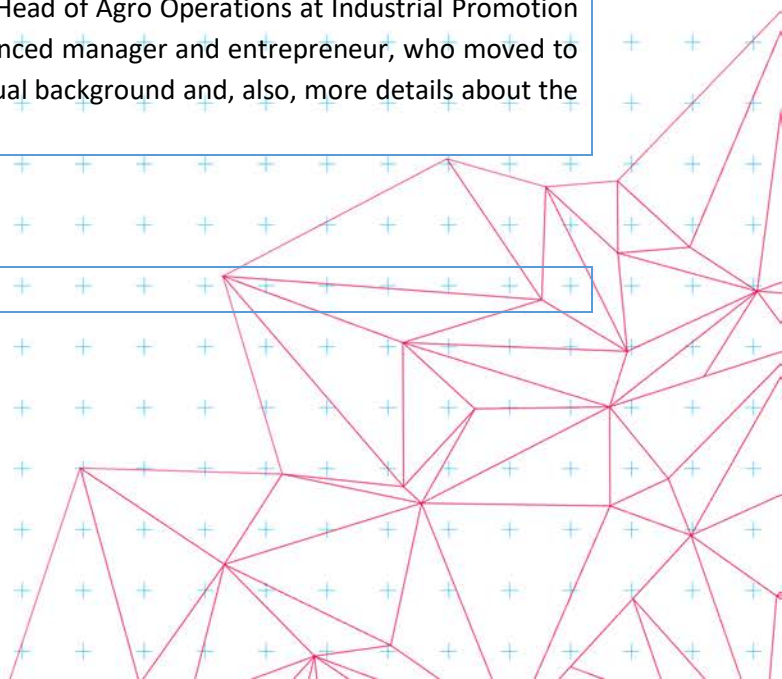
Therefore, the company's overall aim is to improve farming efficiency with cradle-to-cradle techniques that promote sustainable agriculture practices, enhances soil quality and to increase local building capacity by fostering employment and social welfare.

The goal of this challenge is to create an improvement plan for regenerative horticulture based on the most recent knowledge and experiences found in literature that is suitable to the African context (e.g. in terms of environmental conditions, technological & economic feasibility, implementation requirements, etc).

There are several research directions that students can follow such as the development of liquid biological fertilizer, solar energy implementation and uses in greenhouses, growing lights, compost making, water footprint, amidst other possible contributions.

The students work under local supervision of the Head of Agro Operations at Industrial Promotion Services in Uganda, Jan Willem van Es, an experienced manager and entrepreneur, who moved to the country in 2017 to provide a valuable contextual background and, also, more details about the current research initiatives in Amelia Farms.

## Challenge Picture







### Input and involvement of challenge owner

Seed2Feed & Planetary Service will support the student group by connecting them to the Head of Agro Operations at Industrial Promotion Services in Uganda, Jan Willem van Es, for local context background and more detailed information about the Amelia Agro Africa. Also, they can connect students with a Dutch and international network of relevant stakeholders that can provide their expertise and experience in this sector. Finally, both organization have extensive experience in supporting students in similar projects so they can guide students in the ISBEP project management.

## Resources

*What resources are necessary for the students to work on the challenge?*

Access to relevant literature and contact with experts in the field to a better understanding of the feasibility of the solutions found in literature.

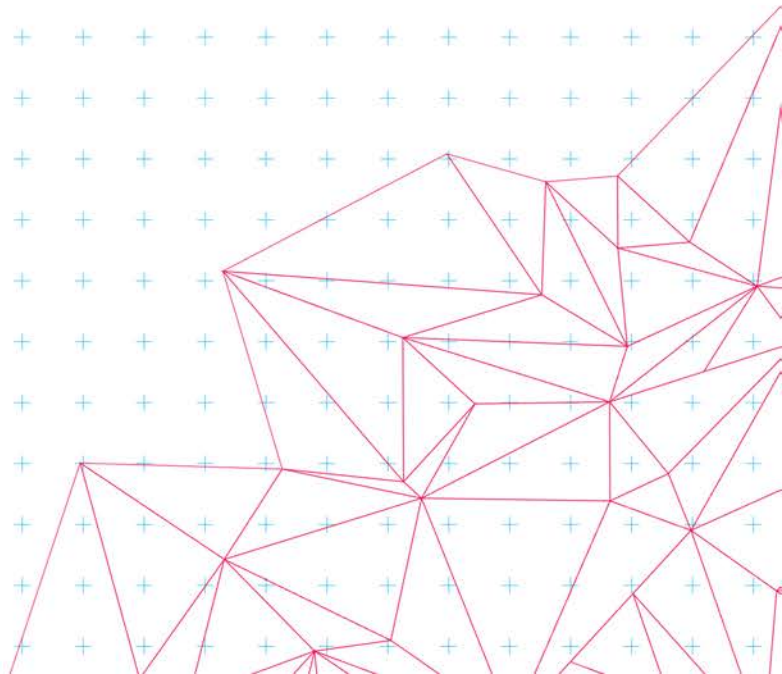
*What resources do you offer to students?*

x Expertise; ...

Materials; ...

Workplace; ...

X Other: Networking





## Roles of different disciplines (only for ISBEP)

Please describe possible contributions you expect to see from as many disciplines as you see fit for this project.

(On the next pages you find descriptions of the different departments).

Automotive Technology	N/A
Biomedical Engineering	N/A
Architecture, Urbanism and Building Sciences	Improvement on greenhouses structures for climate control, lighting availability, structure resilience to natural disasters. Creation of agriculture-related infrastructures & maintenance.
Computer Science and Engineering	N/A
Data Science	N/A
Electrical Engineering	Solar panels implementation, maintenance, & usage in greenhouses. Usage of growing lights for agriculture. Electrification of greenhouses to improve their efficiency.
Industrial Design	
Medical Sciences and Technology	
Psychology and Technology	
Chemical Engineering and Chemistry	Research on biological fertiliser for agriculture. Research on soil quality analysis, improvement & restauration.
Sustainable Innovation	Life Cycle Assessment and improvement of the technology and structures used in the sector, for regenerating farming (cyclical). Socio-Economic & Technological Systemic Analysis, improvement and embeddedness in the local context
Industrial Engineering	Agriculture Value Chain analysis & improvement. Logistics and Economic Feasibility of the suggested technological solutions.
Applied Physics	
Applied Mathematics	
Mechanical Engineering	Solar panels implementation, maintenance, & usage in greenhouses. Agriculture sector equipment improvement & maintenance.