Trash to fresh – building a sustainable living lab with a circular economy approach

About the Challenge Collaborator

My name is Veronica and I am not only the course coordinator for the EuroTeQ Collider, but also a challenge collaborator in this round! ☺
Originally coming from a Bachelor in Geosciences, and with a great passion for nature and earth processes, I wanted to learn more about the consequences of human impact on our ecosystems, which lead me to the studies of Environmental Engineering. Here, I specialized in the Water-Energy-Food Nexus approach and Hydrogeology, Groundwater and Geothermal Energy. During my studies, I initiated and implemented the student organization *Plant a Seed*, a unique interdisciplinary educational project for sustainability at TUM, that was awarded as the first sustainable living lab and recognized as a promising practice by the UN Youth Habitat Initiative. With the intention to advance sustainable measures and inspire other universities to follow, I brought *Plant a Seed* to Mexico, where I was working with a local initiative and local students to work towards food sovereignty and capacity building in a small urban district. This project was wrapped up in my Master thesis, where I established a Theory of Change approach for a bottom-up urban farming initiative to strengthen food sovereignty and environmental protection in Mexico, which was also recognized as a promising practice by the Climate Change director of Puebla, and we are currently working to replicate the project in more urban neighborhoods.
In 2022, I joined the Professorship of Policy Analysis at TU Munich as a researcher and project manager for the "EuroTeQ Collider 2022" project. I am also a yoga instructor and coach. In the past 15 years, I have had the chance to visit and work on several sustainable projects, helped out on several farms and animal shelters and I got quiet a big experience in building up project from scratch. I have a great network and would be happy to share all these wonderful contacts with you in order to help you – help us – develop this absolute crazy, but very unique and colorful concept together! ;)

Introduction

With a rapidly growing population, the demand for water, energy and food will continue to rise at an alarming rate (Gondhaleker et al., 2019). Our current levels of consumption are already exhausting our natural resources beyond sustainable limits (Germanwatch, 2020). Rapid economic growth accelerates climate change and resource deficiency, as well as increasing potential areas of conflict in the near future. Hence, with more people on earth, the sustainable and sufficient management of our natural resources is crucial to maintaining and stabilizing supply, while also balancing our footprint on earth. To this end, the European Commission published the “European Green Deal” at the end of 2019. This plan covers the action and transformation of several sectors to help all European countries become carbon neutral by 2050. One of the key measures of this plan promotes sustainable and smart agriculture. Here, the focus lies on decreasing the use of harmful chemicals and forms of transportation, waste reduction and the protection of biodiversity (European Commission, 2019).

According to the Food and Agriculture Organization of the United Nations (FAO) global sustainability can only be achieved by understanding the interlinkages between the main sectors of water, energy and food security. As an example, a report from the FAO in 2011, stated that agriculture alone is responsible for 70% of the global freshwater demand and 30% of the global energy consumption (FAO, 2014). The WEF-Nexus approach offers different concepts to understand the interaction between water-energy-food sectors and help to create synergies between the sectors. In this approach, perspectives of multiple stakeholders are combines to optimize resource efficiency in a cross-sectoral perspective (Stijn et al.,

2017). A circular economy is created with the intention of using fewer natural resources by recycling and reusing products.

Problem Definition

With the progressive industrialization of urban areas and the sectors of food production, water supply and energy consumption were increasingly separated, resulting in the increase of transportation and carbon emissions (Watts, 2018). Through the separation of sectors, people lost their connection to nature and understanding of the importance of responsible consumption of natural resources.

Therefore, a need for sustainable projects is becoming increasingly important, as we urgently need to tackle climate change, ressource depletion and biodiversity loss. In this context, there is a growing recognition that reconnecting people to nature is a driving force to move towards a sustainable world. To achieve this goal, sustainable (community) projects are vital to educate people about sustainable practices, which can include -for instance – agricultural practices, housing and daily life choices. This can be achieved through a variety of means, including workshops, educational programs, and community events. By teaching people about sustainable practices, these projects can help create a mindset for sustainability and inspire people to adopt more sustainable practices into their daily lifes. By providing opportunities for people to experience sustainability while enjoying the mental and physical benefits of spending time in nature, these projects can improve health and wellbeing, while also creating a more sustainable future for us all.

What is the waste challenge?

Sustainability has become a buzz word and we do not need another project that looks good on paper, but is not feasible or not even really sustainable. Therefore, your challenge is to develop a concept for a sustainable and self-sufficient community farm with an integrated animal sanctuary, using the WEF-Nexus approach and establishing a circular economy system within the farm. To really work towards a sustainable farm, the goal is to build everything with natural materials or even waste.

Following questions (and maybe even more questions) might arise and should be addressed during the project weeks:

- ➔ How can the WEF Nexus approach/ a circular economy approach be translated in such a farm? What kind of synergies can be found between the different sectors of the farm?
- ➔ What kind of natural materials can be used to build up the farm in order to avoid waste?
- ➔ Waste comes in different materials: What kind of waste could be possibly used to build up different parts of the farm (houses, animal sanctuary, gardens, café, work space etc.) / Where would this waste come from? How would it be delivered etc?
- ➔ What regulatory and societal challenges could we face during the realization of building a smart sustainable farm out of waste?
- ➔ Why are existing self-sufficient and sustainable communities rarely ever include an animal sanctuary in their concept?
- ➔ What kind of stakeholders would be involved in building up the farm?
- ➔ How can this farm be used for an educational purpose and help promote a greater understanding of the value of nature and the need to protect it for future generations?

Desired Impact of Challenge

The aim of the challenge is to generate an innovativ and detailed concept for a smart and self-sufficient community farm, that could be replicated in different parts of Germany.

Skills needed/recommended

No special skills are needed, because we are in the concept development phase and every student can contribute with a different perspective. The more diverse the team is, the better! ☺