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LIVING LABS AS PARTICIPATORY AND COMMUNITY LEARNING APPLIED TO REGIONAL DEVELOPMENT

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Abstract

The ARSINOE project is part of the H2020 programme and aims to provide natural resource managers with adaptation strategies to accommodate the new conditions imposed by the climate as well as the socioeconomic impacts caused by the escalating climate migration crisis. Because climate change is a complex process and is linked to other challenges, such as food security and water scarcity, it is no longer sufficient to use traditional approaches to innovation that focus on only one aspect of the problem. This is why there is a need to integrate a participatory process such as the Living Lab into the project.

Living labs are based on the open and collaborative participation of various stakeholders connected by the same topic. To be successful, it is important that the theme of the Living Lab is well defined, in our case, the increase in temperature and the main crops in the Canary Islands, to achieve better results when working with people on a specific topic. For the Living Lab, three sessions have been organized, spaced 6 months apart, where project stakeholders have met to discuss the different possible obstacles and difficulties they will face when trying to adapt to climate change, specifically in agriculture in the Canary Islands.

Keywords: Participatory process; common learning; stakeholders; innovation in approach to climate change.

1 INTRODUCTION

The challenges facing ecosystems today require multidisciplinary profiles to be able to address the most relevant aspects of the topic under the umbrella of climate change. A collaborative process that allows the presence of multidisciplinary profiles where dialogue is encouraged is precisely a definition of Living Lab [1].

It could be said that the main challenge of the Living Lab is to find innovation gaps within the topic under study so that a novel solution can be found that will allow the problem to be addressed in the future. For this, it is vital that the following aspects are present (Figure 1):

- Finding people willing to participate in the collaborative process.
- Search for different profiles with diverse backgrounds.
- The aim is not only to have academic profiles but also to allow the participation of any person actively involved in the sector in question, such as citizens, policy-makers, industry, researchers, NGOs, etc.
- To narrow down very well the topic to be discussed, to avoid debating on open topics and to look for concrete topics to find concrete solutions.
- Establish different sessions with well-defined objectives to find the innovations sought in the process.

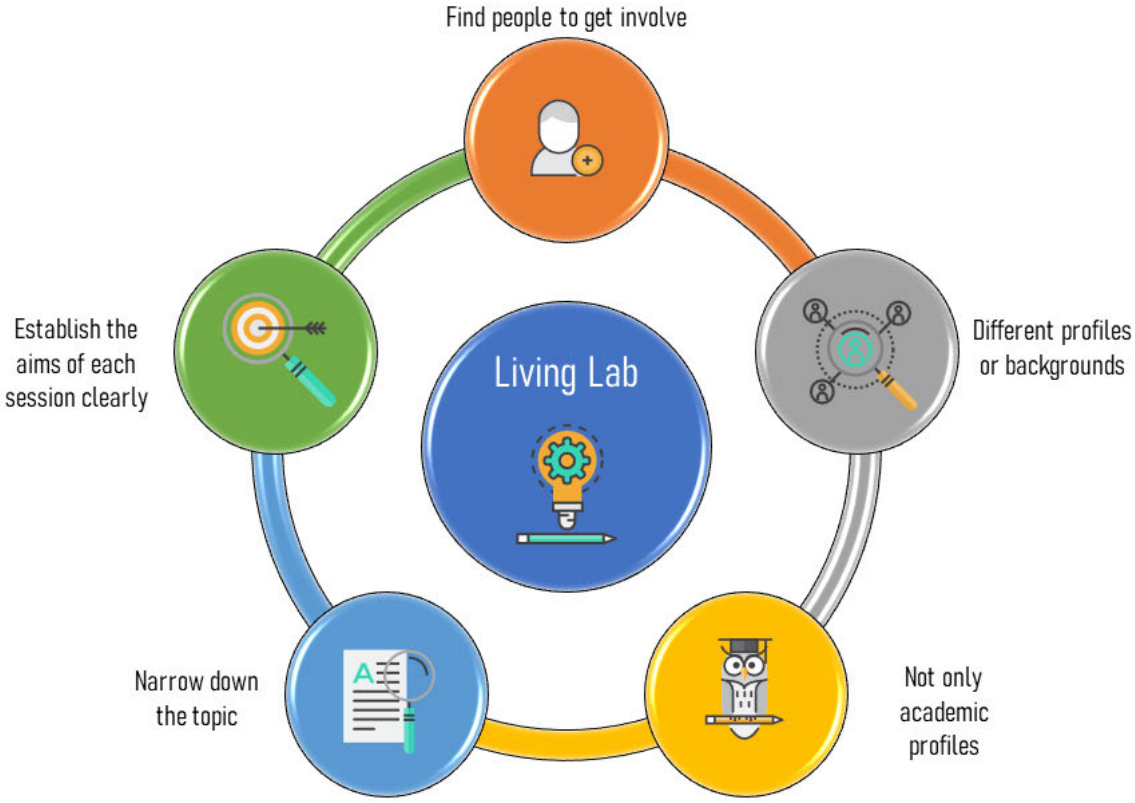

Figure 1. Features of a Living Lab

One of the most positive aspects of the Living Lab is that the people who run it have the mission to encourage all participants to talk and communicate their views and to provide a safe space for calm discussion. The aim is to have a space for dialogue where everyone can intervene and, unlike other learning processes, the aim is not to teach the participants (top-down) but rather for the participants to take control of the session (bottom-up). In other words, it is a living procedure that is fed back only by the participants themselves [2].

Within European programs, citizen participation is valued, and this type of collective learning is encouraged to be introduced in their development. That is why the H2020 ARSINOE project, which studies the resilience of territories in the face of climate change, has included the implementation of a Living Lab in each case among the tasks of its 9 case studies. The Living Lab of the case study of the Canary Islands is linked to the search for innovations that will allow us to successfully face the impact that the increase in temperatures will have on the main crops of the Canary Islands archipelago.

The Canary Islands, due to its subtropical nature, has crops of great importance in the field of exports, such as bananas, avocados and mangoes, among others, which may be seriously affected if temperatures rise in the archipelago. Therefore, it has been sought to bring together in the same place people linked to agriculture, water and energy in the Canary Islands so that, over three sessions, innovative solutions can be found that can be applied through the financing of the same through the Open Call that will be opened for that purpose under the project.

2 METHODOLOGY

Three workshops of approximately 3 or 4 hours will be held, where an agenda will be set, which may or may not be provided to the invited stakeholders, and where the following will be sought:

- Workshop 1: The project, the case study and the methodology to be used in the Living Lab will be presented. The main objective of this session is to create a mind map on the subject studied in the Living Lab, in this case, how rising temperatures will affect the main crops in the Canary Islands. Finally, a problem statement will be created by all participants, which will define the main problem facing the Canary Islands in this respect and which is the most important for the group that makes up the Living Lab.

- Workshop 2: The group meets 6 months later, and the first step will be to validate the Mental Map created in the first session, as well as the Problem Statement. This will be followed by the second session, whose main objective is to imagine the future (you can set any future date you consider) and try to think that the problem we are concerned about has been solved and how it has been solved. Imagining these problems and their solutions will open the window of opportunities and innovations we are looking for.
- Workshop 3: The last session again identifies the innovations referred to in the Future Narrative created in the previous session. In this workshop, we will focus mainly on the Backcasting technique and, situated in the Future Narrative created, we will gradually move towards the past, trying to identify in a more concrete way the innovations necessary to achieve the goals we are looking for.

3 RESULTS

The Mental Map created by the group was based on 4 pillars: temperature increase, applied technology, water availability and water scarcity, and insularity.

With regard to the situation of tropical crops in the islands, it was determined that the main factors that define the agricultural sector in the archipelago are the following:

- The increase in temperature increases crop evapotranspiration, which directly impacts water availability in the islands, especially in agricultural water demand, which is the highest in the archipelago [3].
- The possibility of shifting crops within the island, however, is linked to urban and rural planning, which can be critical due to the lack of natural space
- It is important to highlight the tendency for monoculture on the islands, encouraged by subsidies, which favor the same crops and do not allow us to explore other crops that are better adapted to the future climatic situation.
- In addition, the food sovereignty of the archipelago is a challenge, as it is highly dependent on imports from abroad, which increases the carbon footprint linked to agriculture in the islands.

Furthermore, after discussing the topic, the group decided to establish this problem statement:

"To have a quantitative and qualitative, open, participatory and intersectional database that includes environmental, agronomic, economic and social aspects and takes advantage of the opportunities provided by digital tools. All of this is aimed at facilitating cross-cutting governance, for the transfer of knowledge and the adaptation of primary sector to climate change and for its ecological transformation and sustainability".

Subsequently, in the second session and making use of the Sustainable Development Goals (SDGs) of the 2030 Agenda most relevant to the theme of the Living Lab, a narrative of the future of the Canary Islands in the year 2050 is created. The SDGs selected were 2 Zero Hunger, 6 Clean Water and Sanitation, 9 Industry, Innovation and Infrastructure and 11 Sustainable Cities and Communities. For the development of the activity, the group is divided into subgroups of 4 or 5 people, and each group is asked to create its own future narrative. Afterwards, each group will present to the rest what they have imagined for the Canary Islands in the proposed horizon year, and finally, the facilitators of the session will create the common future narrative, with the aspects that are repeated in the work developed by all the subgroups.

Later, in the last session, different innovations or objectives were found that would allow us to achieve the imagined future of the previous session for the Canary Islands. The role of a facilitator to improve communication between the scientific or educational sector and farmers, fishermen and stockbreeders was named, as well as the promotion of the use of regenerated and rainwater. To meet these objectives, different innovations were proposed: the adaptation of drone flights to capture data on crops in the Canary Islands, as this is more difficult due to its rugged terrain; the use of Sustainable Urban Drainage Systems (SUDS), so that the rainwater that is lost infiltrates into the ground or is used for irrigation or street watering; and the improvement of systems for monitoring the current state of crops to establish more precise action plans.

4 CONCLUSIONS

Living labs have proven to be a great learning tool, as they involve people from different fields who bring their perspective of the problem and support each other to face and propose different solutions. In the

specific case of the Canary Islands, as it will be strongly affected by rising temperatures due to climate change, this participatory process has helped to establish a common problem related to the primary sector and the water shortage that will be aggravated. Furthermore, through this collaborative technique with different profiles, it has been possible to come up with different innovations specifically applicable in the Canary Islands, which was the main objective, but which can be taken to different territories in this search for resilience against climate change.

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