**EU GREEN Research Week 2024**

**Citizen Science Brainstorming session**

**Attendees**:

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The attendees were given the draft EU GREEN Citizen Science document to read for ten minutes. The group discussed that the CS goal is to have a collaborative and co-creative approach in terms of engagement. For birdwatchers, CS has always played an active part in monitoring and now has an increasing role in conservation through provision of live records for databases. We discussed the fact that Citizen Science (tasked to WP5) is intrinsically linked with WP3 as researchers are involved (staff and students), that we already have active projects within the universities but that there is scope for plenty of further actions. We also discussed that Citizen Science can be linked with other work packages, giving WP2 and WP7 as examples.

An initial discussion elucidated the difference between Environmental Education and Citizen Science. The rationale in the document (see Annex) was provided to the group, but it was interesting to see that a clear definition is needed in order to plan events and determine the impact of their outcomes. There was also a hypothesis that CS may be viewed in terms of conspiracy theories by certain members of society who may consider it to be a form of biased influence for society.

We should not only follow projects already happening within university(ies), but also new projects. We had a long discussion on the implementation of a proposed toilet flushing project. This Project involves pupils at schools and helps to monitor the wastage of water in regions with water-problem (counting and measuring “Flush activity”: how many times you flush the toilet during a week? Collecting data and giving feedback including suggestions on how to save water & then see if water has been saved). This could also be rolled out to use of water in bathroom sinks. Identification of schools will be required at the start of the school year, with training rolled out in Sept/October 2024. The idea is to keep it simple: calculate the volume of water used (cistern vol. should be available readily) and keep a chart in the bathroom. The impact could be high as it involves saving considerable amounts of toilet water that is in fact treated to drinking water standard.

Another idea was to trial a Citizen science project on fast fashion. Students could be engaged in surveying fast fashion use among other students and in communities.

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We can also map the projects of the EUGREEN partners to use the alliance as an amplifier for engagement. Researchers in citizen science from countries other than where the projects originated can help implement these projects in their own countries.

**Frances Lucy 30-6-24**

**ANNEX 1**

**WP 5 – Task Force “Citizen Science”**

**Preliminary Considerations**

1. **Definition and understanding of Citizen Science**

There are a variety of different definitions of “Citizen Science”, some of which differ from one another. This can be problematic, especially when it comes to finding a starting definition, but at the same time it also leaves open options for action:

“On the one hand, the lack of a concrete definition is a problem for people who are interested in learning about the field, providing policy support, or creating funding programmes. On the other hand, because the activities of citizen science cover a wide range of academic research fields – each with its own objectives, worldview, and approach to the construction of knowledge (what is known as epistemology), methodologies, and classification of the world (known as ontology) – a single or narrow definition would risk the exclusion of a variety of activities from citizen science.” (Haklay et al. 2021: 19)

Aware of this problem, we still decide on an initial definition, which is not "carved in stone" but is intended to act as an (adaptable and flexible) guideline. Since we are working within an EU project, we have chosen the definition proposed in the "White paper on citizen science for Europe"[[1]](#footnote-1):

“Citizen Science refers to the general public engagement in scientific research activities when citizens actively contribute to science either with their intellectual effort or surrounding knowledge or with their tools and resources.” (Serrano Sanz et al. 2014: 8)

This basic definition is interpreted as follows:

“In Citizen Science, a broad network of people collaborate. Participants provide experimental data and facilities for researchers, raise new questions and co-create a new scientific culture. While they add value, volunteers acquire new learning and skills and gain a deeper understanding of the scientific work in appealing ways. As a result of this open, networked and transdisciplinary scenario, science-society-policy interactions are improved, leading in turn to a more democratic research based on evidence and informed decision-making.” (Serrano Sanz et al. 2014: 10)

Further support for our understanding of citizen science are the 10 principles of citizen science as established by the European Citizen Science Association (ECSA). The principles listed there serve also more to formulate guidelines rather than strict specifications (see ECSA 2015). Additional explanations of the points core concepts, disciplinary aspects, leadership and participation, financial aspects, and data and knowledge can be found in the paper "ECSA’s characteristics of citizen science" (see Haklay et al. 2020).

Citizen Science is, in summary, a participatory research format in which citizens are the main actors as they are actively involved in the processes of the production of knowledge. This can happen in different phases, including during data collection and data transfer, when planning the project or when designing the research design or when preparing the results. It is not necessary for citizens to be involved in all phases. These are usually projects with citizens for citizens, whose results are relevant for civil society. Citizen science projects differ therefore decidedly from commercial activities:

"If a direct commercial benefit is the main aim of an activity, and of results from the use of data [...], it is generally not considered as citizen science. This also applies if motives for activities are perceived solely to support a marketing or business strategy, rather than supporting a unique research goal and a justified involvement of citizens." (Haklay et al. 2020: 4)

The breadth of the spectrum is also reflected in the difference in the status of citizens as subject and participant: in certain projects - for example in the field of medicine - citizens are the subject of research, in others they conduct research themselves, although there are also approaches where both roles coincide (see Haklay et al. 2020: 2).

Through the participation of citizens in research projects, new resources can be mobilized (e.g. in the case of data collection, for example in biodiversity projects or bee counts, etc., which would otherwise be difficult to implement). At the same time – and this is one of the central aspects – by participating in research projects, citizens gain insights into the way the “science as system” works: a look behind the scenes, so to speak, which serves to give the public a more differentiated picture of scientific processes. Participatory approaches to research can raise awareness of the diverse dimensions that make up scientific projects.[[2]](#footnote-2)

Another aspect that should not be neglected is that participation also changes the understanding of science, which is no longer seen as something that happens in the ivory tower, in the quiet chamber or in secluded research facilities behind high walls. In this sense one can speak of a democratization of science through participation.

Participation and democratization in turn go hand in hand with transparency: projects involving the public should make their results publicly accessible and be transparent in every phase.[[3]](#footnote-3) Even in the phases in which citizens are not actively involved, processes must be able to be understood thanks to appropriate communication. Professional scientists will therefore not simply be replaced by committed citizens. Of course, they continue to play a central role in citizen science projects, which now has to take greater account of the dimensions of mediation, science communication and organization. Scientists supervise, accompany and advise citizen science projects. By doing this, they do important translation work.

1. **Citizen Science and EU GREEN: The role of WP5**

The aim of EU GREEN is not only to contribute to the development of universities, but also to the development of societies. Citizen science is seen as a central activity to achieve these goals. Therefore, and in order to assist Citizen Science to live up to its vast potential to extend beyond individual projects and disciplines, EU GREEN will provide opportunities for strengthening the relationship between Citizen Science and education so that appropriate support can be offered, and integration achieved.

Within this strategy, WP5 with its focus on “engagement” plays a central role. The WP5 stands at the interface between universities, local government, external partners and institutions and civil society. Its task is to implement a citizen science culture not only in universities, but especially in society. Some of the tasks of the Engagement Hub can also be seen in this context. However, the aim is not to organize projects for other institutions upon request, but rather to accompany such projects in an advisory capacity and to support them with knowledge and experience. In addition, citizen science projects are of course also implemented from our own ranks (see part 4). Another aspect of the collaboration concerns the cooperation between different WPs within EU GREEN. With a view to citizen science projects, WPs 2, 3, 7 and 8 would come into question. This cooperation should be taken into account at an early stage.

1. **Framework**

The global goal is therefore to implement Citizen Science projects inside the EU GREEN Network and in cooperation with stakeholders outside the university, in order to increase the understanding of science in the society through participatory approaches. However, this does not mean that the objectives of the individual projects always have to be aimed directly at the alliance as a whole. The local dimension of the projects does not contradict the global objectives of WP5, on the contrary: The interest and the participation among students, lecturers and the citizens is higher if it is about something present in the own “backyard”, which in turn leads to the concrete realization of projects and thus to the achievement of the specified goals. When looking for the appropriate project partners and specifically planning the implementation, it is therefore advisable to start from the specific project ideas. Even where cross-location projects are to be carried out, the local reference of the project must always be taken into account.

These collaborations between the EU GREEN Network and the external stakeholders take place at different levels, even if individual cooperation partners can "serve" different levels at the same time. As a first orientation, one could differentiate between the following levels:

1. “operational” level, i.e. the level at which the specific projects are implemented;
2. “infrastructural” level, i.e. the level at which the infrastructure necessary for implementation is made available;
3. “communicative” level, i.e. the level at which information is disseminated.

The (1) “operational” level includes cooperation partners such as schools (especially science clubs in schools), but also scouts, students, clubs and associations. The (2) “infrastructural” level includes such cooperation partners such as universities, independent research institutions, museums, while the (3) “communicative” level includes, among others, cooperation partners who take on the role of multipliers or where information events for the public can be held (public libraries, community centres, town halls). Schools would be examples of institutions that serve all three levels.

It is planned that during the project period (2023-2026), parallel to the implementation of already planned projects, training and information events will also be offered at universities and other public institutions in order to raise public awareness of citizen science formats and also to attract interested members of the public to prepare the scientists involved for the challenges that come with citizen science projects. EU GREEN members will join forces in organising science and cultural events dedicated to the communities, where local and international guest lecturers will present or lead discussions in different educational fields, thus transforming citizens into active members of the European education system. This should take place in collaboration with relevant stakeholders, some of whom have already been contacted. The combination of information, training, advice and implementation provides the basis for establishing a citizen science culture that remains effective in the long term.

One point that is part of the framework and needs to be taken into account at an early stage concerns legal and ethical issues. As part of the project and with a view to the guidelines that apply in the respective countries, data protection issues and conditions of participation for minors, for example, must be clarified. Here you rely on the support of cooperation partners and the exchange of best practice examples.

1. **Planned and possible actions**

Concrete proposals for citizen science projects are already included in the WP5 Action Plan. These are:

* “School of Ants” (UNIPR)[[4]](#footnote-4);
* “Bioblitz Herdade da Mitra” (UÉ)[[5]](#footnote-5).

Other projects that are being carried out at the partner universities mentioned and that fall under the profile of EU GREEN are:

* “Introduced Bird Interaction Survey” (IBISurvey) (lead by UÉ);[[6]](#footnote-6)
* “Citizen Science for monitor biodiversity” (CS4Bio) (UNIPR).[[7]](#footnote-7)

In addition, there are overarching programs that, due to their objectives, are close to citizen science projects or within which citizen science projects can be located:

* “Estremoz Linig Science Center” (UE)[[8]](#footnote-8);
* Alliance “Extremadura is future” (UEx)[[9]](#footnote-9).

The exchange between universities is a central component of the EU GREEN network. This also applies to experiences with Citizen Science projects. Such projects should be shared among the EU Green-Partners to see if the ideas can be adapted and developed further in different contexts (“best practices”).

There are also other suggestions that should be taken into account in further planning. This includes:

* Workshop “Train the trainers”: This format is useful to give an idea about what kind of projects are possible. At the same time we can receive new ideas and further suggestions as well as develop projects together. The added value also lies in the fact that the trainers can work as ambassadors;
* Living Lab-Concept (not only useful for Citizen Science but also for other kind of projects);
* We should not only follow projects inside the university, but also projects that are implemented outside the university. A good example could be the “Water Conservation Project” .This Project involves pupils at schools and helps to monitor the wastage of water in regions with water-problem (count of the “Flush activity”: how many times you flush the toilet during a week? Collecting data and giving feedback including suggestions how to save water & then see if water has been saved);
* We should map the projects that are already there in the region & make connections.
* We can also map the projects of the EUGREEN partners to use the alliance as an amplifier for engagement. Researchers in citizen science from countries other than where the projects originated can help implement these projects in their own countries
1. **Measurement of success and internal reporting**

Appropriate reporting is necessary to document that the objectives set have been achieved. The planned events, workshops and projects should be visible in the EU GREEN event calendar and on the public pages of the participating institutions. Documentation (even minimal) in the form of photos, (press) reports and summaries is also necessary. (As a suggestion: For this purpose, uniform templates or uniform to-do lists could be prepared within EU GREEN to support documentation.) In addition, the WP5 Action Plan should be updated annually.

Another tool would be to collect data on the number of citizen science projects within each university and/or the number of employees involved in such projects. This survey could be carried out once in 2024 and then again in 2026 to see how the numbers have changed (not only taking into account the number of projects, but also other factors such as the number of people involved or a kind of "network index" etc.).

1. **Bibliography**

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1. “For example, when applying for European Union (EU) funding for a citizen science project, the White Paper on Citizen Science for Europe (Serrano Sanz et al. 2014) definition might be the best one to use.” (Haklay et al. 2019: 14). [↑](#footnote-ref-1)
2. Particularly in the course of the global experience of the pandemic, it became clear in some cases what false (because one-sided) expectations are placed on “the” science and how trust in “the” science becomes fragile when it does not meet the expectation of clarity. The fact that science inherently works through controversies and debates, that questions, methods, designs, but also research resources, financing, infrastructure, schools of thought and styles of thinking play a role in the production of results that can certainly differ from one another, are points that unfortunately often remain unconsidered or do not correspond to the hegemonic idea of “exact” science. [↑](#footnote-ref-2)
3. Here, too, there are exceptions in which the data is only available to certain stakeholders or where publication is subject to certain restrictions. Overall, however, the following principle should be taken into account: "It is preferable for participants to own the data they generate, and they should be made fully aware of why, when and how it is used by others." (Haklay et al. 2020: 6) [↑](#footnote-ref-3)
4. “School of Ants is an ongoing scientific research project promoted by the Laboratory of Insect Ethology, Ecology and Sociobiology (IEES Lab) of the Department of Chemistry, Life Sciences and Environmental Sustainability of the UNIPR. The aim of this citizen science project is to value anthropic effects for urban biodiversity. Due to these reasons, ants were selected, being biomarkers and common in Parma.” (Action Plan: 13) [↑](#footnote-ref-4)
5. “Bioblitz Herdade da Mitra was an activity aimed at students, researchers, and the general public. The main objective was to record the maximum number of species in 24 hours at the specific location of Herdade da Mitra – the Experimental Farm of UÉvora. There were sessions with birds, butterflies, reptiles, mammals, plants, and mushrooms, among others, both at night and during the day. People were asked to take photos or

record audio and submit them to the iNaturalist app.” (Action Plan: 13) [↑](#footnote-ref-5)
6. For more information visit <https://ibisurvey.uevora.pt/>. [↑](#footnote-ref-6)
7. This new project aims to involve secondary schools in monitoring biodiversity of arthropods in natural and agricultural ecosystems. [↑](#footnote-ref-7)
8. “The ESTREMOZ SCIENCE CENTRE (CCVEstremoz) was established by a protocol between the Ministry of Science and Technology, the UE, and the Estremoz City Council. It belongs to the CIÊNCIA VIVA - NATIONAL AGENCY FOR SCIENTIFIC AND TECHNOLOGICAL CULTURE national network of science centres, whose

mission is to promote active citizenship based on scientific knowledge. It promotes scientific culture for all audiences, particularly young people and the school population. Although Earth Sciences was predominant in CCVEstremoz activities, a multidisciplinary approach is favoured. Therefore, sciences, technologies, and arts are often interconnected to explain the cultural space in which CCVEstremoz operates. Among the wide range of initiatives, it is possible to emphasise: Science in the Street - a Science Festival that brings together more than 100 artists and scientists in the Centre of Estremoz annually (www.ccvestremoz.com/en/ciencia-na-rua); Solar System at Scale of the Estremoz Municipality, a unique project at the Iberia peninsula scale where the planets and their orbits are at the same scale (www.ccvestremoz.com/en/sistema-solar); Sustainability - TIME IS COUNTING...- a web platform where it is possible to follow, in real-time, the evolution of more than 75 parameters since January 1st of each year, through four major themes (Who we are... What we eat... What we dirty... What energy we use...), helps us to understand better the world we live in (www.ccvestremoz.com/en/sustentabilidade); Several thematic Interactive Exhibitions and Other Projects (e.g. Science In The Market, Scientific Holidays, Cinema With Science, Science In The Summer, etc.)” (Action Plan: 13) [↑](#footnote-ref-8)
9. “In October 2021, the Social Council of the UEx launched a public-private collaboration alliance to mobilise the entire society and especially young people, promoting opportunities that value the potential of the region,

under the motto ‘EXTREMADURA IS FUTURE’', and recognizing the important social function that the University fulfils. This is a framework agreement promoted by the Social Council, which integrates the UEx and the Fundación Universidad Sociedad. There are six action axes: 0- Social fundings. 1-Paid Internships plan and entrepreneurship boost. 2-Student Plan-Mentoring Programme. 3-Sustainable economy observatory. 4- ‘Extremadura is future’ Forum. 5- Prizes University-Society from-Social Council UEx.” (Action Plan : 14) [↑](#footnote-ref-9)