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Open Innovation Methodology - GEAR report cycle 2 - EU Crowd4SDG project

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Crowd4SDG Citizen Science for the Sustainable Development Goals

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Abstract:

This deliverable reports the activities carried out during the second cycle of the Gather, Evaluate, Accelerate and Refine (GEAR) methodology over the second year of the Crowd4SDG project. The GEAR methodology combines online coaching of teams with in-person challenge-based innovation for Citizen Science projects related with climate resilience.

For more information on Crowd4SDG, please check: <http://www.crowd4sdg.eu/>





Document history

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Project Partners

	Partner name	Acronym	Country
1 (COO)	Université de Genève	UNIGE	CH
2	European Organization for Nuclear Research	CERN	CH
3	Agencia Estatal Consejo Superior de Investigaciones Científicas	CSIC	ES
4	Politecnico di Milano	POLIMI	IT
5	United Nations Institute for Training and Research	UNITAR	CH
6	Université de Paris	UP	FR



Crowd4SDG in brief

The 17 Sustainable Development Goals (SDGs), launched by the UN in 2015, are underpinned by over 160 concrete targets and over 230 measurable indicators. Some of these indicators initially had no established measurement methodology. For others, many countries do not have the data collection capacity. Measuring progress towards the SDGs is thus a challenge for most national statistical offices.

The goal of the Crowd4SDG project is to research the extent to which Citizen Science (CS) can provide an essential source of non-traditional data for tracking progress towards the SDGs, as well as the ability of CS to generate social innovations that enable such progress. Based on shared expertise in crowdsourcing for disaster response, the transdisciplinary Crowd4SDG consortium of six partners is focusing on SDG 13, Climate Action, to explore new ways of applying CS for monitoring the impacts of extreme climate events and strengthening the resilience of communities to climate related disasters.

To achieve this goal, Crowd4SDG is initiating research on the applications of artificial intelligence and machine learning to enhance CS and explore the use of social media and other non-traditional data sources for more effective monitoring of SDGs by citizens. Crowd4SDG is using direct channels through consortium partner UNITAR to provide National Statistical Offices (NSOs) with recommendations on best practices for generating and exploiting CS data for tracking the SDGs.

To this end, Crowd4SDG rigorously assesses the quality of the scientific knowledge and usefulness of practical innovations occurring when teams develop new CS projects focusing on climate action. This occurs through three annual challenge based innovation events, involving online and in-person coaching. A wide range of stakeholders, from the UN, governments, the private sector, NGOs, academia, innovation incubators and maker spaces are involved in advising the project and exploiting the scientific knowledge and technical innovations that it generates.

Crowd4SDG has six work packages. Besides Project Management (UNIGE) and Dissemination & Outreach (CERN), the project features work packages on: Enhancing CS Tools (CSIC, POLIMI) with AI and social media analysis features, to improve data quality and deliberation processes in CS; New Metrics for CS (UP), to track and improve innovation in CS project coaching events; Impact Assessment of CS (UNITAR) with a focus on the requirements of NSOs as end-users of CS data for SDG monitoring. At the core of the project is Project Deployment (UNIGE) based on a novel innovation cycle called GEAR (Gather, Evaluate, Accelerate, Refine), which runs once a year.

The GEAR cycles involve online selection and coaching of citizen-generated ideas for climate action, using the UNIGE Open Seventeen Challenge (O17). The most promising projects are accelerated during a two-week in-person Challenge-Based Innovation (CBI) course. Top projects receive further support at annual SDG conferences hosted at partner sites. GEAR cycles focus on specific aspects of Climate Action connected with other SDGs like Gender Equality.

WP3 in brief

WP3 aims at the creation of CS projects and studies the mechanisms that lead to improved citizen science skills and high-quality scientific outcomes. In addition, this work package aims at producing economic and social outputs relevant to achieving SDGs through challenge-based CS events, with a special focus on climate change resilience.

The objectives in this WP are to:

- Organize 3 full innovation cycles (GEAR), from a call for ideas to the deployment of CS projects;
- Test and validate the research findings and software development in WP2 in the CS projects created in each cycle;
- Coordinate the technical communication between the data produced by the CS projects and the needs of the National Statistical Offices to monitor climate change effects;
- Manage the selection process of ideas in a transparent and inclusive way;
- Ensure the exploitation of CS projects and maximize their social impact.

This deliverable reports on the following tasks:

T3.2: Communication on the call for ideas, selection and online coaching (UNIGE, all)

This task concerns the first two phases of the challenge-based innovation methodology GEAR, namely Gather and Evaluate.

During the Gather phase, the following activities will be carried out:

- Call for projects – a call for CS projects on a specific climate impact challenge will be launched and widely publicized, notably through related ongoing EU Support Actions and European networks such as LERU.
- Application and selection - citizen-innovators can apply with ideas for projects to solve the climate impact challenge.

Best ideas will be selected based on: (1) Impact, (2) Feasibility, (3) Citizen Participation, (4) Relevance of the data generated (a detailed selection criteria will be provided in D3.1). Once the most promising citizen-applicants and ideas have been selected, multidisciplinary teams of around 5 members are formed to participate in the coaching sessions.

The full application and selection process (incl. selection of applications by the expert committee) will take 10 weeks and result in a group of 50 citizen-participants.

During the Evaluate phase, online coaching will be provided to the selected citizen-innovators with context about the Climate Impact challenge, and they will become familiar with the knowledge and tools necessary to transform good ideas into viable innovation projects. The focus will be on making sure that projects are concrete, achievable and relevant to the SDGs, either at a local, or at regional or global level. The coaching sessions will be delivered virtually over a five weeks' period (one session of 2 hours each week). A typical session will include: mentoring by staff with skills-based knowledge, contributions by global subject-matter experts and peer-to-peer support. Skill-transfers include: problem definition, the concept of Open Innovation and the use of open data, crowdsourcing, participatory research and human-centered design. During the coaching sessions, teams will become familiar with the CS Toolkit Solution and learn how to use the Toolkit when implementing CS projects. In-between coaching sessions, teams will also complete homework and may have one-on-one coaching sessions. At the end of the Evaluate phase, the 2 best online teams

(around 10 participants) will be selected and move on to the next phase: Accelerate (see Task 3.3). The selection criteria will be focused on the team cohesion, the evolution over the 5 weeks coaching period, the documentation provided using SDG in Progress tool (enhanced in WP4), and the quality of their pitches.

T3.3: Development of the Challenge Based Innovation programme (CERN, UNIGE)

The Accelerate phase of the GEAR methodology will be executed through the Challenge Based Innovation Programme (CBI). The CBI will be set up as a comprehensive set of training materials and methodologies to form a turnkey toolkit.

Based on prior experience in running programmes for fast product development challenges at their IdeaSquare lab, CERN will deliver a first version of the toolkit for a first course pilot and fine-tune it for each subsequent workshop cycle. Further CBI cycles (called CBix) will be introduced at different locations to ensure flexibility across participating teams and expansion of the CBI approach. All the pedagogical experience, feedback from new metrics developed in WP4, and knowledge on how to run effective innovation-driven projects at IdeaSquare will be used to build a robust and hands-on training programme for the citizen science teams so that they can fast prototype their first Minimum Viable Solution and move on to the next step in the process. This step can be inter alia: entering the political debate with their concept/prototype (by way of illustration: see the Ocean Clean-up initiative), submitting an application to a start-up incubator, putting together a consortium for a regional/national/European project, etc. CERN will also develop a 'train the trainer'-course for staff at off-site locations across Europe in order to expand the CBix approach and establish and support more citizen science teams.

Assessment and evaluation criteria will be developed to measure the success and effectiveness of CBix sessions in addressing SDGs. This starts by assessing whether an external location (called 'design factory' or 'makerspace') has sufficient resources and expertise to run a CBix. A process for holding random audits will be formulated to test the quality of the CBix workshops delivered and a system for the continuous collection of qualitative and quantitative impact data from completed CBix will be developed. To maximise the visibility of successful CS projects, two CBI-team members will be invited to showcase their concept(s) during an international event on SDGs. This event, called SDG workshops, will be organized at the end of each GEAR cycle. The first SDG workshops will be in Geneva at Campus Biotech, the second will be in Paris at CRI, and the final one will be organised at IdeaSquare in CERN. Representatives of various stakeholders (UN agencies, National Statistical Offices, academic CS experts, private sector and NGO representatives) will attend these events and provide the teams with feedback. In addition, Crowd4SDG partners will also work with regional incubators to provide successful teams with opportunities for subsequent further development of their concept/prototype.

T3.4: Data collection and evaluation (UP, UNIGE)

This task will run at the end of each GEAR cycle to assess all data regarding citizen participation, gender balance, inclusion, new metrics from WP4, technical results achieved by each team, and their experience in using the CS Toolkit Solution. The data is important to validate and further improve the GEAR methodology for CS projects. The findings of T4.2. to assess the diversity, robustness and adaptivity/appropriateness of the knowledge produced in the context of each citizen-team as well as by the entire group of citizen-participants across all CS projects within Crowd4SDG.

1. Introduction

The goal of the Crowd4SDG project is to research the extent to which Citizen Science (CS) can provide an essential source of non-traditional data for tracking progress towards the SDGs, as well as the ability of CS to generate social innovations that enable such progress. The Crowd4SDG proposes a novel methodology which combines online coaching of CS teams with in-person challenge-based innovation for CS projects. The Crowd4SDG project carries out the execution of GEAR methodology 3 times, one per year of the project. Each GEAR execution is improved based on the feedback from the different work packages, including recommendation of CS data quality, usage of CS tools, and dynamic of the coaching sessions.

This deliverable focuses on reporting the activities carried out for the execution of the second GEAR Cycle.

This deliverable is organized as follows: section 2 presents a summary and origin of the GEAR Methodology. Section 3 reports the execution of the different phases of the GEAR cycle 2. Section 4 presents a summary of the differences between the GEAR cycle 1 and GEAR cycle 2. Section 5 describes the improvements planned for the GEAR cycle 3. Section 6 presents the collaborations with other WPs. Section 7 summarises changes implemented in the execution of the GEAR cycle because of the COVID-19 situation, and finally conclusions are presented in section 7.

2. The GEAR Methodology

Crowd4SDG proposes a GEAR methodology, which combines online coaching of CS teams with in-person challenge-based innovation for CS projects related to climate resilience. The methodology, as illustrated in Figure 1 consists of a sequence of competitions leading over an 8-month period from a field of 250 applicants to a handful of CS projects that are judged to have significant social innovation potential for the SDGs, and in particular climate action.

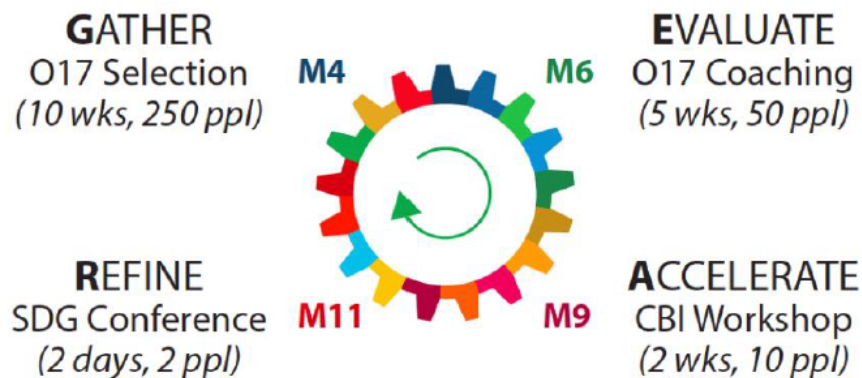


Figure 1. The GEAR phases

Crowd4SDG proposes three one-year cycles following a GEAR Methodology to iteratively develop, and test new citizen science projects. Each GEAR cycle is composed of 4 different phases:

1. Gather: In this phase of GEAR, a call for CS ideas on a specific SDG theme is launched and widely publicized, notably through related EU support actions such as EU-Citizen Science. This phase lasts 10 weeks, including a two-week period where a committee selects a set of 50 participants from a pool of 250 applicants, based on a series of objective criteria.

2. Evaluate: in the second phase of GEAR, the selected participants take part in the Open Seventeen Challenge (Open17) 5-week coaching programme, to develop their CS ideas in virtual teams towards compelling pitches. The objective of this phase is to challenge participants with real-world constraints that their CS projects would face if deployed. The pitches are judged by a panel in the final week of the coaching programme.

3. Accelerate: in the third phase, between 10 and 20 participants, corresponding to 2-4 projects, selected from the Open17, based on both the quality of their projects and specific soft skills demonstrated during the coaching sessions, are invited to participate in a two-week intensive workshop at CERN. During this workshop, participants work on improving their projects, create prototypes, and practice their pitching skills. Other participants are encouraged to develop their projects locally in satellite events held in parallel with the CBI workshop at CERN, using similar methods.

4. Refine: in the final phase, two participants representing the most promising projects from the CBI phase are invited to present themselves during an international event on SDGs, lasting two days, held in Geneva or Paris. Representatives of various stakeholders (UN agencies, National Statistical Offices, academic CS experts, private sector and NGO representatives) provide the projects with concrete feedback. Also in this phase, Crowd4SDG partners work with regional incubators for technology and social innovation to provide the projects with concrete opportunities for subsequent development.

Each phase of the GEAR methodology filters the field of participants by a factor of about 5, while helping the projects to advance towards practical deployment. Recognizing that some deserving projects may not pass through the filter, Crowd4SDG develops and provides a series of guidelines for running local CBI Training events, called CBix, and actively reach out to partners in maker spaces in Europe and globally that can host these events, with technical support and guidance from the Crowd4SDG partners.

GEAR Origins

The GEAR methodology has been developed through successive iterations of education programmes for university students: the six-week [Open Seventeen Challenge](#) (Open17), an online coaching programme launched in 2015, and the two-month SDG Summer School launched in 2016. Both these programmes involved UNIGE as a lead, with key academic partners universities in Europe, USA and China. Further inspiration comes through over 30 CBI workshops for university students that CERN IdeaSquare has hosted over the past five years. While components of this methodology have been tested and refined with university students, their application to a broader audience of social innovators from all walks of life is inspired by experience of UP, CERN and UNIGE in hosting public hackathons, and in particular the Open Geneva festival of hackathons launched by UNIGE in 2015 (>30 hackathons and >1000 participants over two days in March 2019) and the Port Hackathon at CERN IdeaSquare (50 participants/year from around the globe, since 2014), where participation is carefully curated. Based on this track record, the partners have established fair, transparent and effective approaches to selecting people and projects for such events, which applies to the Gather phase of the GEAR methodology.

GEAR Cycles

Over the course of the three-year Crowd4SDG project, the GEAR methodology is executed three times. While the CS projects developed in the three GEAR cycles of Crowd4SDG all aim at SDG 13, as indicated below, each GEAR cycle explores a specific sustainability dimension of climate preparedness, in connection with another SDG: sustainable cities (SDG 11), women empowerment (SDG 5) and human rights (SDG 16).



Figure 2. GEAR cycles in Crowd4SDG

This approach emphasizes the fundamental interconnectedness of different SDGs, as well as the trade-offs that must be made when addressing simultaneously environmental and human development goals. The choice of complementary SDGs is made to build on areas where individual Crowd4SDG partners have relevant research track records.

3. GEAR Cycle 2 report

This section reports the activities carried out on the 4 different phases of the GEAR Cycle 2, Gather, Evaluate, Accelerate and Refine. The phases have been executed over a time period from August 2021 to March 2022. The second GEAR Cycle was themed **Climate Resilience and Gender**, linked with SDG 5 (Gender Equality) and SDG 13 (Climate Action).

3.1. Gather phase

The Gather phase started on 2 August 2021. It started with launching a call for ideas, targeting participants aged 16 years and above. The call for ideas remained open for submissions until 3 October 2021 (2 months).

The backbone of this launch was the Goodwall¹ platform, which remained the portal for the participants to apply. The call for ideas was communication through social media with posts regularly put on the Crowd4SDG Twitter and LinkedIn accounts featuring:

- A leaflet detailing the call ([Annex 2](#));
- A video² that showcases the benefits to potential participants taking the example of a success story from a past challenge.

The Consortium partners shared within their Twitter and LinkedIn networks the above information adding as well their own Facebook and Instagram accounts when available. Through these actions multiple organizations like the Guild network and the Circle-U European University Alliance³ were informed and relayed the information to their memberships.

Direct contacts were also taken by the consortium partners to share the information of the call within their networks of high schools and up to PhD students programmes. Dedicated information sessions were organized for these target audiences as well as articles published in the Consortium partners internal newsletter and/or magazine.

Besides the elements of communication referred above, the challenge was displayed on the Open17 website⁵.

3.1.1. Submission of Ideas through the Goodwall Platform

Goodwall is a professional development network and a next-generation community for students and young professionals, with over 1.7 million users across the world. The collaboration with Goodwall enabled us to reach out to a vast network of next-generation innovators. In the call for ideas provided at the Gather phase the participants were invited to upload a one to three min video pitch, using the hashtag [#Open17ClimateGender](#)⁶ on the Goodwall platform (See Figure 3).

¹ <https://www.goodwall.io/>

² <https://videos.cern.ch/record/2729303>

³ <https://www.the-guild.eu/>

⁴ <https://www.circle-u.eu/>

⁵ <https://openseventeen.org/>

⁶ <https://www.goodwall.io/tags/open17climategender>

[Announcements](#) [Social Impact](#)

The 2021 #Open17 Challenge on Climate & Gender

Join the 2021 #Open17 Challenge to pitch your ideas on how to address challenges around the world related to the climate and gender equality, using crowdsourcing. Win top prizes including online coaching, challenge-based innovation workshops, and even an invitation to pitch your idea to UN experts in Geneva! Open for applications 1 August – 3 October. See details of challenge topics, how to apply and selection criteria below.


 Goodwall Team
August 10, 2021



Figure 3. Call for Ideas on the Goodwall Platform

With the aim of increasing its effectiveness, the call for ideas were divided into 4 specific challenges, and were elaborated using a blogpost as reference for the full explanation of how to participate in the challenge (e.g. sign up, selection criteria, etc). The announcement of each challenge took place in an interval of 15 days during the Gather phase.

- **Announcement of challenges:**

16 August 2021: Challenge #1 - Measuring the differentiated impacts of disasters on women and men. For example, in a given community or region, how much worse is the impact of a flood for women than for men on lost lives, assets or other aspects of their lives?

30 August 2021: Challenge #2 - Assessing women's vulnerability to climate change effects on natural resources. For example, what is the impact of damage to crops or pollution of ground water on women's personal security, livelihoods or the time spent on

taking care of parents or children?

13 September 2021: Challenge #3 - Improving data on women’s participation in environmental management. For example, how can you track the ways women are contributing to managing wetlands or waste recycling?

20 September 2021: Challenge #4 - Measuring the health of ecosystems in a systematic way with women’s contribution. For example, how can women provide unique insights into the ways local plants and wildlife are being affected by climate change?

An exclusive hashtag page (refer to [Annex 3](#)) was set up for the submissions, which eases the management of submissions while keeping it transparent to other users. The Participants were encouraged to apply either as individual participants or as teams.

An online chat group was created on Goodwall so that applicants could clarify their doubts and also to help nudge other applicants toward shaping their ideas. Community managers from Goodwall and the consortium monitored the chat group and answered relevant queries.

In order to stimulate people to submit regularly, to avoid a pile-up of pitches at the end of the application period, cash prizes were announced every 2 weeks. Goodwall awarded 100 USD cash prizes to 22 such applicants.



Figure 4. Announcing the winners of the Cash Prizes on the Goodwall Platform⁷

By the end of the deadline, we had received 61 submissions, including those submitted as a team of two to four. 51 ideas were short-listed to be evaluated by the consortium.

⁷ <https://www.goodwall.io/tags/open17climategender>

3.1.2. Ideas selection process

In order to simplify the selection of best ideas we used the Citizen Science Project builder⁸ (CSPB) tool supported by the Crowd4SDG project.

The **Citizen Science Project Builder (CSPB)** is an online tool that enables people with limited technical knowledge of crowdsourcing to create citizen Science Projects. It also allows volunteers to collaborate on solving data analysis tasks.

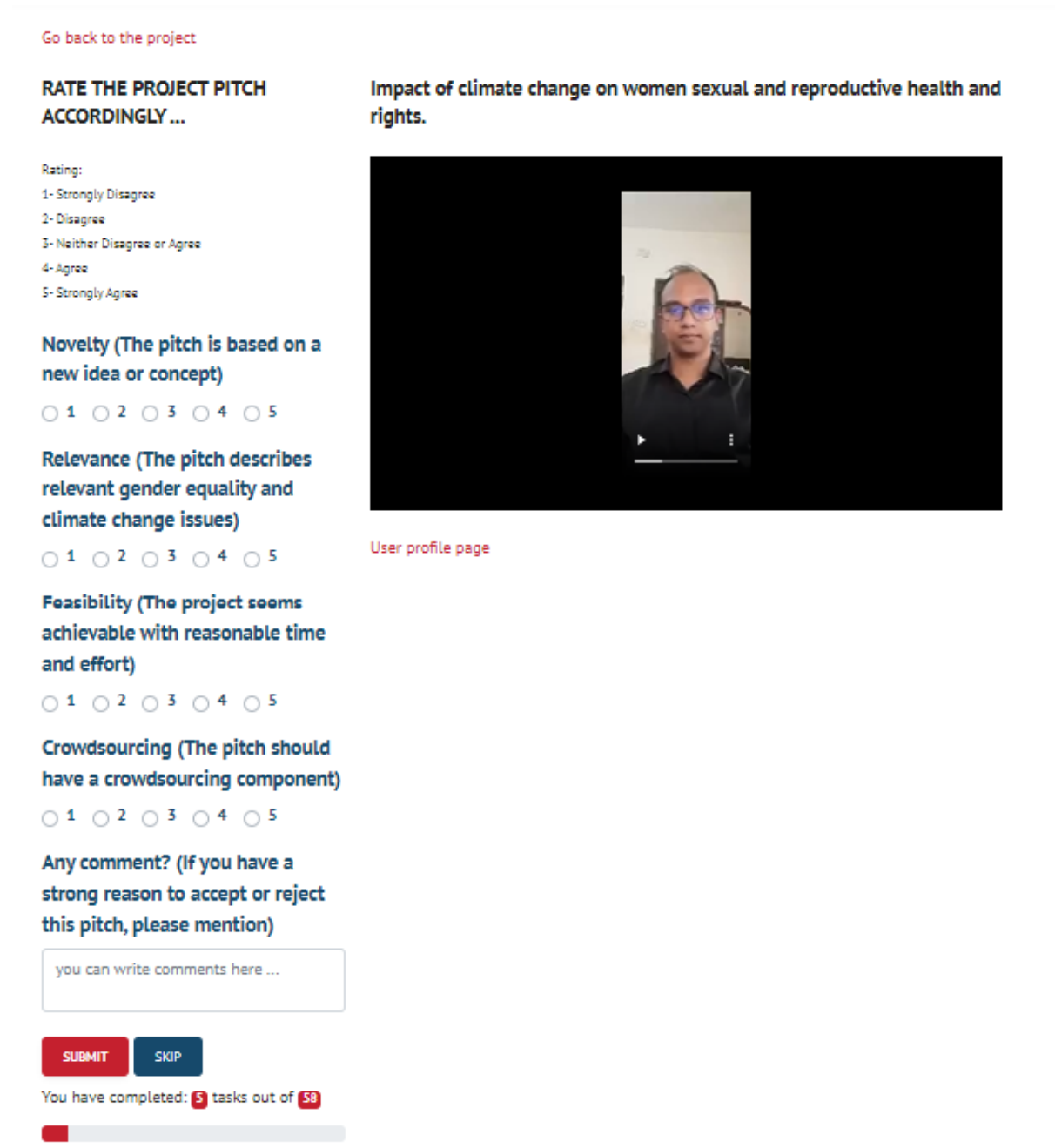


Figure 5. Screenshot of CSPB interface set up to select the submitted ideas

⁸ <https://lab.citizenscience.ch/>

Twelve members from the Crowd4SDG consortium partners and the Open17 team members participated in the selection process. Each pitch was reviewed at least 3 times by different reviewers.

A screenshot of the interface for reviewing ideas is shown in Figure 5. Submitted ideas are displayed on the right side in the form of text and/or video. On the left side is a form for scoring pitches based on the following criteria:

- **Novelty** (whether the pitch is based on a new idea or concept)
- **Relevance** (whether the pitch talks about gender related issues in the climate change context)
- **Feasibility** (whether the project is doable with reasonable time and effort)
- **Crowdsourcing** (whether the pitch has a crowdsourcing component)

Evaluators in the selection process were also asked to leave comments on ideas which showed high potential. Of the fifty-one ideas that were shortlisted, thirty-four ideas were chosen based on their final scores. The total number of participants were fifty-two. The selected participants were contacted by emails, and they were instructed to fill in a registration form and send a signed letter of acceptance. Forty-one candidates registered and returned the acceptance letter. By the end of the Gather phase, we had 38 individuals on board for the Evaluate phase.

3.2. Evaluate phase

The Evaluate phase is structured over 5 weekly 2h online sessions (refer Annex 4). The teams received interactive online mentoring and coaching from international experts, mentors and coaches, to conceive ways to use open data, crowdsourcing technologies, and low-cost open source solutions to develop prototypes suitable for deployment and tackle sustainable development, and ultimately to achieve concrete steps towards the SDGs, at a local, regional or global level.

The Evaluate phase was completely online and was aimed at coaching people over 16 years old. It took place over five weeks, from 20th October to 17th November 2021, with 2hrs/week of online sessions, and 2-3hrs/week of team-based assignments.

During the program, participants refined their solutions iteratively, thanks to the feedback provided on a weekly basis by mentors and experts from UN organizations, NGOs and private sector partners from around the world. As part of the challenge, teams learned to structure and deliver a compelling pitch for their project. As well as doing project-based work, participants benefited from the chance to meet experts from organizations such as WMO, UNOSAT/UNITAR and CERN.

The Evaluate phase promoted to the participants a collection of open-source digital tools supported by the Crowd4SDG project, called Citizen Science Solution Kit (CSSK)⁹. Participants were presented with a CS tool every week, as illustrated in [Annex 4](#). Annex 4 contains the detailed agenda for the Evaluate phase.

The Citizen Science Solution Kit is a set of tools for developing and running Citizen Science (CS) projects. The tools enable anyone to design and launch their own CS project, and support teams that are developing innovative CS projects. Some of the tools are being enhanced with AI features by the Crowd4SDG partners (see Deliverable 2.2 for more details about the evolution of AI enhanced CS tools).

⁹ <https://crowd4sdg.eu/about-2/tools/>

The tools were adapted from existing Open Source solutions that can support a wide range of crowdsourcing projects for the SDGs. They range from crowd-based data collection and classification to distributed volunteer computing to project design and community mapping tools. The tools are aimed to quickly build and test a crowdsourcing solution for the SDGs, ideally without coding skills.

38 participants were invited to the Evaluate phase and took part in the Open17 program. The 2021 Open17 Challenge on Climate resilience and Gender promoted challenge-based innovation through student teams working on the development of practical solutions to challenges that address the issues of climate change and gender equality, for which crowdsourced data would be particularly valuable.

3.2.1. Team Building and Communication

As a novel approach in contrast to Gear Cycle 1, where we had asked the participants to form their teams, we introduced a teaming algorithm Edu2Com¹⁰. Edu2Com is an heuristic algorithm that generates team allocation based on a certain strategy, which were in this case, competence, preference and personality of the participants. The participants were asked to fill in a survey¹¹ answering questions related to the competencies, skills and personality ([Annex 8](#)) and a preference survey, where they ranked the pitches of all the selected ideas from 1 to 5, based on how interesting they found the idea. These surveys were needed so that the algorithm could propose possible options for team formations. Eight of the twenty pitches were team pitches, and twelve were individual pitches. A majority favored fourteen of the ideas. The Algorithm proposed six combinations of teams retaining the existing teams and six combinations with a completely new proposal of teams. The team profiling algorithm proposed six alternatives for team formations altering the weightage between competence, personality and preferences.(Refer Table 3.1). From the six alternatives provided, The final selected team profiling was based on a weightage that had 10% match of their competencies, 20% match of their personalities and 70% of their preferred choices.(Refer Table 3.2). This particular alternative was chosen since it gave an ideal combination of teaming up individuals as a team along with the pre-formed teams.

competence	personality	preferences
5%	20%	75%
5%	35%	60%
5%	45%	50%
10%	20%	70%
10%	40%	50%
20%	40%	40%

Table 3.1 : Combination proposed by the Teaming Algorithm.

¹⁰ Georgara, Athina, Carles Sierra, and Juan Antonio Rodríguez. "Edu2Com: an anytime algorithm to form student teams in companies." (2020).

¹¹ [Crowd4SDG Surveys \(igem-ties.info\)](https://www.gem-ties.info)

Team Name	No. of Members	
T1: Up Get App/CitiCERN	2	Pre-formed
T2: Water Warriors	3	Pre-formed
T3: Andapé Institute	3	Pre-formed
T4: Women & Technology Against Climate Change	3	Pre-formed
T5: TEAM FOILED	3	Pre-formed
T6: PAM	3	Pre-formed
T7: SDesiGn (Old name: Rhythm of Bamboos)	2	Pre-formed
T8: Eco Winners	3	Pre-formed
T9: WOMER	2	Algorithm
T10: Flood Rangers	2	Algorithm
T11: Women 4 Sustainable World	2	Algorithm
T12: Climate Gender Justice	3	Algorithm
T13: DonateWater	4	Algorithm
T14: Rights of Climate	2	Algorithm
Team formed by Algorithm - Weightage - 10% Competence, 20% Personality & 70% Preference		

Table 3.2 : Final team formation.

A Crowd4SDG Slack channel was created to coordinate the Gear Cycle 2 and to provide a communication channel between the participants, mentors and the core team members of both the Evaluate and Accelerate phase. Emails remained as the official communication channel, Slack demonstrated to perform well facilitating discussions. A total of 63 people participated in the slack channel, 38 participants, 8 organisers, 7 mentors, and Crowd4SDG partners. A detailed analysis of the Slack usage and users' interactions can be found in the public deliverable D4.2. Figure 6 shows a screenshot of the slack channel used for the Evaluate phase.

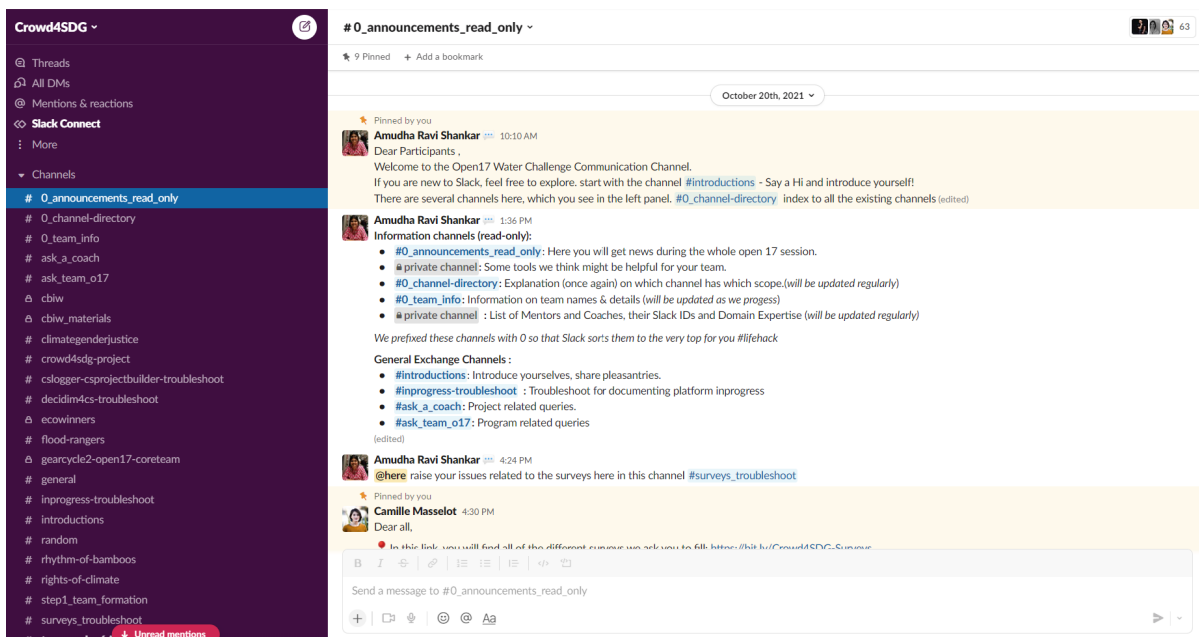


Figure 6. Screenshot of Evaluate phase Slack channel

3.2.2. Evaluate phase Program Structure

The Evaluate phase program ran for 5 weeks, with 2 hours online coaching per week. The learning outcomes included, without being limited to:

- Define and describe a problem in a clear and specific way (problem definition module Week1)
- Identify and formulate solutions for the identified problem (theory of change week 2)
- Map the stakeholders, identify their needs and design solutions tailored to those needs (value proposition week 3)
- Design, develop and test a prototype (or at least have a plan to test the solution with potential users) (Personas)
- Recognize how their project can potentially use the crowdsourcing tools and contribute to monitoring and achievement of the SDGs
- Devise and confidently pitch an idea to the audience

The structure remained the same as that of the first GEAR Cycle, where the first hour of the session included:

- Presentation by invited experts, followed by a Q&A;
- Introduction to a Design Method (Problem Definition, Theory of Change & Value Proposition);
- Introduction to one of the Citizen Science Toolkit (CS Logger and CS Project Builder, InnProgress, VisualCit & Decidim4CS).

The second hour included a Pitching session from the participant teams. Each team was allotted a 5min pitching time followed by a 5-7min Q&A. The teams were divided into breakout rooms , with 4 to 5 teams and 2 to 3 mentors per room. After each weekly session, participants received homework preparing them for the following session and shaping their project. To record the weekly progress of their project, the participants (teams) were given a project canvas (refer to [Annex 5](#)), which they presented at their final pitch.

Rather than collect participant feedback at the end of the Evaluate phase, as in the first cycle, participants were invited to answer weekly surveys to provide information about their activities, learning, and satisfaction levels, their weekly progress, their contributions to their projects, their interactions with team members, mentors, coaches, and their cohort, and feedback on the talks and presentations they attended each week. The surveys are all presented in Annex 8 and the findings are summarized in section 3.5.

There was not much change in the Agenda from the previous cycle (refer to [Annex 4](#)).

Week 1 : Team Building and Problem Definition

Participants were provided with an overview of the program, the challenges, and the deliverables during the first week. The teams were introduced to the project documentation platform *InnProgress*¹², instead of *SDGinProgress*, which was used during the first GEAR Cycle. The participants were encouraged to document their respective projects. The participants also learnt to define and describe a problem in a more specific way.

Additionally, the participants were given a presentation on the Teaming algorithm and various other surveys that they will be filling out. A roundtable was arranged during the second hour of the first session for participants to pitch their ideas. The preference ranking and the personality and competencies survey they filled out was used for the teaming algorithm.

¹² <https://innprogress.app.cern.ch/>



Week 2 : Testing the Methodology

During the second week of the program, participants attended the invited expert presentation by Angela Baschieri of the United Nations Population Fund¹³ (UNPFA). She oriented them through the organization's work on gender and climate change. Following her presentation, participants learned how to identify and formulate solutions to their problems using the *Theory of Change*. Participants were also introduced to the Crowdsourcing tools CS Logger and CS Project Builder¹⁴.

The second hour was reserved for student pitching sessions. By the end of the first week, 15 teams were formed and invited to give a five-minute pitch about their projects. The newly formed teams found a way to reach a consensus on the idea they wanted to build on. The teams were assigned to three break-out rooms, which housed three mentors and two coaches. Each break-out room had five teams pitching their projects.

At the end of each team pitch, the coaches and mentors gave their feedback to the teams. They were also asked to fill in a weekly evaluation form indicating whether the pitch was *Very Good/Satisfactory* or *Needs Improvement*. Using this form, Coaches and Mentors shared their willingness to mentor a team as well as their input and feedback on the project.

Week 3 : Value Proposition

During the third week the participants learned to understand who the stakeholders are, their needs and whether their solution meets their needs. The participants were introduced to **VisualCit**¹⁵ - an image based social sensing tool that allows extraction of visual evidence about a situation from Twitter by searching for images posted and geolocating them. We also had an expert presentation on Climate Resilience and Disaster Preparedness by **Einar Bjørgo**, Director, United Nations Satellite Centre (**UNOSAT-UNITAR**)¹⁶.

The coaches and mentors provided feedback during the weekly pitching session and on the weekly evaluation form. The teams communicated with mentors via Slack and email. In addition to Open17 Core team members, we also had mentors from Crowd4SDG. Some participants had access to external experts in their respective fields. Mentors rated the weekly pitches as Very Good/Satisfactory or Needs Improvement. They also indicated (i) *whether the project gathers/generates, or validates data?* (ii) *whether the project uses any of the CS Toolkit* (iii) *whether the project has a mockup or a prototype*.

Week 4 : Measuring Impact and Persuading the Audience

In the fourth week, we had a guest speaker Sara Duerto Valero from UN Women, speaking about gender data gaps. Chiagozie Udeh, a team member from Open17's organization, accompanied us live from COP26 and provided a brief overview of what was happening there. The penultimate week's objective was for the teams to have a business strategy for their project and start reaching out to the right people. This week encouraged teams to present a prototype where possible. The teams also received pocket resources on how to effectively pitch their project. The project partner from CSIC-III A presented **Decidim**¹⁷, the crowd deliberation tool as part of the toolkit.

The participants were reminded of their deliverables, which included:

¹³ <https://www.unfpa.org/>

¹⁴ <https://citizenscience.ch/en/>

¹⁵ <http://visualcit.polimi.it:7778/>

¹⁶ <https://www.unitar.org/maps/unosat-rapid-mapping-service>

¹⁷ <https://decidim4cs.iii.a.csic.es/>

- 60s pitch on the Goodwall platform using the hashtag #open17ClimateGenderFinal;
- One page write-up on their project;
- 5 min presentation slides.

The teams were made aware of the evaluation criteria for their final pitches.

Week 5 : Final Pitch and Planning for the future

On the final day of the Evaluate phase, a brief introduction was given on what's in store during the Accelerate phase (Challenge Based Innovation Workshop). Three external and three internal jury members from the Crowd4SD consortium were invited to evaluate the projects on their final pitch. Each team had 5 minutes of pitching time followed by 2 minutes of feedback time. Two Jury members were invited after every presentation by the room facilitator to provide oral feedback for each team. All the Jury Members were then invited to evaluate each team after their presentation using an [evaluation form](#)¹⁸. The team mentors were also evaluating the presentations. Table 3.3 shows the list of jury members and other evaluators within each breakout room.

The evaluation criteria for the final pitch were as follows :

- **Novelty:** is the pitch based on a new idea or concept or using existing concepts in a new context?
- **Relevance:** is the solution proposed relevant to the challenge or potentially impactful?
- **Feasibility:** is the project implementable with reasonable time and effort from the team?
- **Crowdsourcing:** is there an effective crowdsourcing component?
- How would you rate this team's overall **presentation skills** during this pitch?

Jury Members	Name and Affiliation
Jury Members	Davide Faniculle - SDG Lab
	Daniel Emejulu - Microsoft
	Ye Seong Shin - Seed Studio
	Madina Imaraliev -UNITAR
	Jesus Cerquides - CSIC IIA
	Romain Muller - CERN Idea Square
Coaches and Mentors	Francois Grey - UNIGE
	Barbara Pernici - Politecnico di Milano
	Rosy Mondardini - Citizen Science Centre Zurich
	Jose Luis Fernandez Marquez - University of Geneva
	Oguz Mulayim - CSIC IIA

¹⁸ https://bit.ly/FinalPitch_EvaluationForm



	Laura Wirtavuori - CERN Idea Square
	Valentina Rossi - UNITAR
	Camille Masselot - CRI
	Stephanie Chuah - CRI
	Hafiz Budi Firmansyah - UNIGE
	Amudha Ravi Shankar - UNIGE
	Pingpanya Phommilath - UNIGE
	Franziska Kurz - UNIGE

Table 3.3 : Jury Members and Mentors at the final day - Evaluate phase

We developed an assessment grid to evaluate the teams in detail. The assessment grid included an evaluation of the final pitch by jury/mentor and aggregation of the evaluation of the weekly pitches and deliverables by coach/mentor. Figure 7 illustrates the evaluation criteria, process, and weighting of scores. The final pitch evaluation made up to 50% of the final score and the remaining 50% included the detailed assessment by mentors.

Five teams out of the fourteen teams were selected to proceed to the Accelerate phase. The selected teams were:

- Team **Womer** - a two member team that was working on a project to bring visibility to climate actions led by indigenous women.
- Team **Donate Water** - a three member team working on crowdsourced data collection of broken hand pumps in the rural areas and its impact on gender.
- Team **Andapé institute** - a three member team working on designing an ecological sidewalk from recycled materials.
- Team **Climate Gender Justice** - a two member team measuring climate change impacts on women's sexual and reproductive health and rights.
- Team **Poli4SDG (Water Warriors)** - a three member team measuring women's contribution towards a safer ecosystem by crowdsourced data collection.

All participants received a [Certificate of Participation](#)¹⁹ (refer to [Annex 7](#)), a summary of feedback from the jury members and mentors and suggestions on moving forward with the project. The Certificate was provided jointly by the Crowd4SDG partners. The Certificate of Participation was as per UN Institute of Training and Research (UNITAR) criteria of Certificate issuance; hence the Certificate is recognized by the UNITAR.

¹⁹<https://docs.google.com/presentation/d/19frmyDJ4SaBC73Tpd9NAWEHT38ek6mYB/edit#slide=id>

Open17ClimateGender project assessment

A summary of what will happen

	Jurys and mentors pitch assessment	Mentors and coaches in-depth assessment
Summary		
Date	November 17th	November 17th to November 21st
Criteria	<ul style="list-style-type: none"> • Novelty and originality of the solution • Relevance to the challenge of Open17 • Feasibility of the implementation • Potential for crowdsourcing • Overall presentation skill 	<ul style="list-style-type: none"> • Commitment to continue the project • Appropriateness of the methodology • Use of the CStoolkit • Data collection and relevance for NSO • Other considerations (participation, etc)
Process	<ul style="list-style-type: none"> • Based on pitch • Using Google Form, jury and mentors assess directly after the pitch 	<ul style="list-style-type: none"> • Based on project documentation • Using Google Form, at least 3 assessments per project, including the coach(s) of the team
Score	/50	/50

Figure 7. Assessment Grid for evaluating the Teams

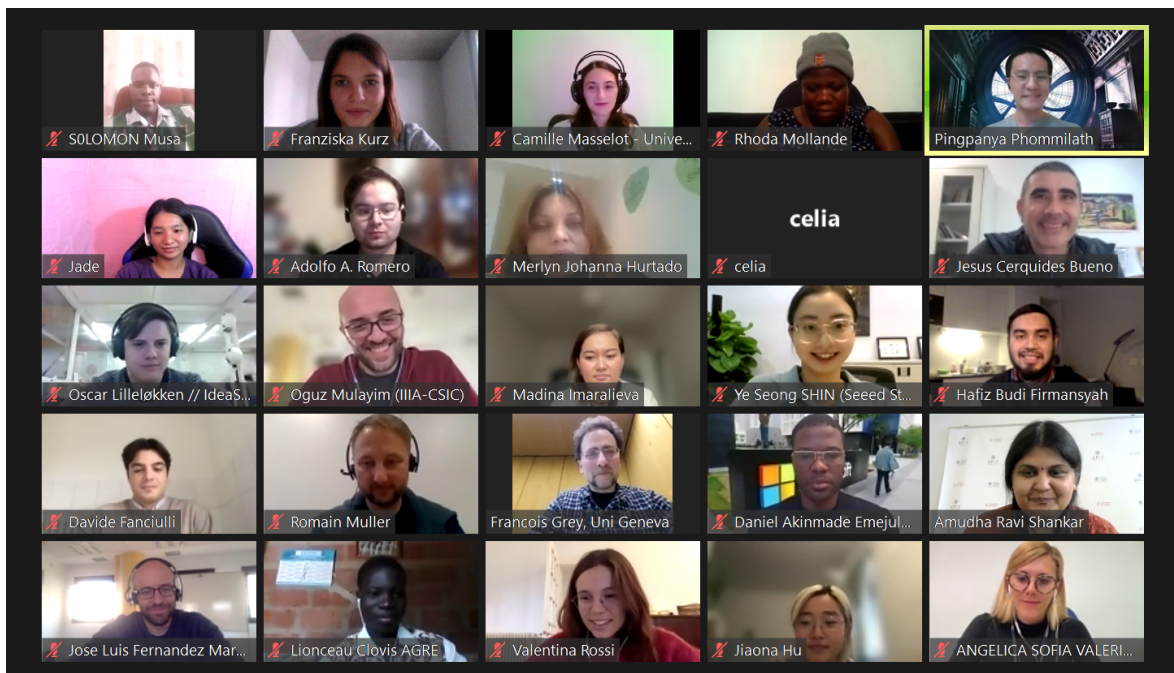


Figure 8. Screenshot from final day - Evaluate phase

3.3. Accelerate phase

The Accelerate phase was built following the philosophy of giving a “license to dream”. Inspiration was drawn from the accumulated experience on the challenge based innovation courses organized for a total of over 1,200 students by IdeaSquare (CERN) and its university partners since 2014, but also on the experience gained from GEAR cycle 1. The entire consortium came together in May 2021 to discuss the GEAR cycle, and from those discussions emerged a few major changes to the Accelerate phase:



- A stronger focus on prototyping / building the solutions, implemented through checking the prototypes each week, involving the tool owners to act as concrete support throughout the Accelerate phase, and reserving more time for prototyping.
- Dividing the hours spent on the programme over a longer time period.
- Inserting sessions on community creation and management and data management.
- Adjusting the goals of the Evaluate phase to be stronger on using one of the crowdsourcing tools provided by the consortium and to already have a mock-up level prototype ready when finishing the Evaluate phase.

When teams entered the Accelerate phase, called Challenge Based Innovation Workshop by CERN IdeaSquare (CBIW), they already had a project they wanted to work on including a defined challenge and suggested solution, a pitch, and a low-fidelity prototype. The Accelerate phase was divided into 5 weeks, two half days per week, as opposed to a full two week programme as in GEAR cycle 1 (the total number of contact hours remained around 40). The first week was held before Christmas break, and the following four in January-February 2022. This gap gave the teams the time to identify critical stakeholders and contact them for support. The longer duration also enabled the participants to find more time for working on their projects, especially on their prototypes, in between the different sessions. The Accelerate phase focused on moving the projects to a state where they would be ready to start gathering real data, and to be ready to build their projects further without the continued support of the Crowd4SDG consortium.

Aligned with the goals of the Accelerate phase, for the participants, the Accelerate phase has four major learning objectives:

1. **Professionalism:** identify opportunities in citizen science and effectively use open data, crowdsourcing and low-cost open-source technologies in developing solutions in support of achieving the SDGs
2. **Collaboration:** collaborate effectively with other citizens and experts from different countries and cultures, using a range of online communication tools
3. **Communication:** communicate clearly and concisely about projects and goals through rounds of pitching and project presentation
4. **Problem-solving:** design and develop a prototype of a project, define stakeholders that could be potentially involved in the project and effectively interview them
5. **Leadership:** plan the next steps and further ahead to ensure project continuity

Five weeks is a short time to fully move a project from mock-up level to a functioning prototype, while simultaneously improving the project in a holistic manner. For this reason, the key outcome of the CBIW is to foster a sense of self-efficacy in the participants and provide needed tools, so the participants become capable of taking their projects into implementation after the GEAR cycle ends for them.

3.3.1. Communication channels

The initial contact with the selected teams was handled through email, after which each participant was added to a dedicated Slack channel in the same Slack workspace as was used for the Evaluate phase. Since then, all of the written communication should have happened on Slack. There were separate channels for

- each team, in which they could ask questions directly to the organizers and communicate within the team,

- general chat about the programme, and
- sharing materials, such as presentations, useful links, and templates.

All of the sessions themselves were organized on Zoom, benefitting from breakout rooms.

The teams chose themselves what channel to use for communications between them. Participants used at least Zoom, Miro, Google Drive, and their own Slack workspaces. One of the teams was co-located, and four teams collaborated fully online.

3.3.2. Project teams and participants

From the Evaluate phase, five teams were selected.

Team **Andapé institute** had three members, all in Brazil. They had already worked on a more sustainable material for sidewalks, and now continued that project to include data gathering on the status of sidewalks. This information could be used by people with limited or hindered mobility, and by local authorities to grasp the situation.

Team **Climate Gender Justice** had two members, one in Bangladesh and one in Namibia. Their project was to gather data on the effect that climate change related crises' can have on women's sexual and reproductive health and rights. This data is to be used for improving national crisis preparedness plans to take into consideration women's sexual and reproductive health and rights.

Team **Donate Water** had three members in Nigeria. Their work revolved around gathering information on the status of water pumps and using that information to improve access to clean water, through partnerships enabling them to install solar powered water pumps to replace broken ones. They were chosen to move on to Refine.

Team **Water Warrior** was a two member team from Italy. They wanted to make visible the effects of natural crisis through collecting data on an app, where the team created a separate section for women to report their experiences.

Team **Womer** consisted of two members, one from Columbia but located in France, and one from Nigeria. Their mission was to make visible the sustainable practices that indigenous women in Columbia have, so that they could have a voice in local decision-making. They were chosen to move on to Refine.

All of the team one-pagers are presented in [Annex 6](#).

3.3.3. Accelerate phase program structure

Like in the previous GEAR cycle, the Accelerate phase was held fully virtual. For this second GEAR cycle the change from the originally planned in person event to a fully online event was taken into consideration, and although the number of hours spent remained the same, the hours were divided over a considerably longer time. The overall agenda and the content of each session were designed specifically for the virtual format. The program consisted of lectures with an interactive component such as time for teamwork, presentations, and pitching practice. The plan is to organize the Accelerate phase as virtual also in the third and final GEAR cycle.

The flow of the Accelerate phase was designed so that previous sessions would always support the later ones. Each week with contact hours was called a block. In the first block, figure 9, the focus was on getting to know each other, creating a safe environment for

everyone to contribute in, and getting started with prototyping and stakeholder mapping through workshops and interaction with tool owners.

Block 1: Introductions and getting started with prototyping and stakeholder mapping			
Wed 8. Dec		Thu 9. Dec	
30min	Introduction to organising institution and agenda	110min	Introduction to prototyping: why, what, how, and when. Time to work on prototype / build first prototype.
60min	Getting to know each other: who you are and if you were a superhero, what would you be fighting for?	10min	Break
15min	Break	60min	Q&A on citizen science tools. In break-out rooms.
90min	Each team presents key aspects of their project, what tools they plan to use, what they have learned, and what they need next, followed by feedback from other teams and the organisers.	45min	Stakeholder mapping.
15min	Wrap-up	15min	Wrap-up
Homework	Fill in the impact canvas and work on the feedback given.	Homework	Work on prototype, including using the chosen tool. Create stakeholder map.

Figure 9 Block 1, Getting started

The second block, figure 10, was focused on reaching out. After the participants had figured out who they would want to talk with and started building something to show in order to better explain their concepts, they learned about communication, community management, pitching, and interviewing. When creating the stakeholder maps after the first block, the participants were already encouraged to set interview times with their stakeholders for the week after the second block.

Block 2: How to create and engage a community, how to interview.			
Wed 12. Jan		Thu 13. Jan	
60min	Present prototype, feedback	30min	Icebreaker: Movement workshop
60min	Talk and workshop: Communication / reaching your audience.	120min	Introduction to pitching: 1 minute pitches
15min	Break	15min	Break
60min	Talk and workshop: Community management	60min	How to listen / interviews.
15min	Wrap-up	15min	Wrap-up
Homework	Create a plan on how you get citizens to engage with your solution. Work on your 1 minute pitch for next day.	Homework	Interview stakeholders, work on prototype

Figure 10: Block 2, Reaching out

In the third block, figure 11, most of the time was reserved for working together. Again, the results of the homework they had were checked, and the participants shared their progress on their prototypes and gained support on how to move forward. The tool owners were present. The teams also did a challenge swap, gaining new perspectives from another team on a specific challenge they were facing in their own projects. Time was also dedicated for reflecting on the teams' learning and ability to work together.

Block 3: Working together.			
Wed 19. Jan		Thu 20. Jan	
60min	Present results from interviews, feedback	45min	Challenge swap: share your solution
120min	Time for teamwork. Organisers go from team to team giving feedback and checking prototypes.	60min	Prototyping. Organisers go from team to team. Tool owners are present.
30min	Challenge swap: share a challenge you are facing with another team.	15min	Break
15min	Wrap-up	90min	Facilitated feedback session
Homework	Work on the other team's challenge	15min	Wrap up
		Homework	Improve prototype: Test it with users / show it to stakeholders.

Figure 11: Block 3, Working together

The fourth block, titled "looking forward" (figure 12), was focused on giving the participants an overview of the practical issues that would rise up when the project moves to the

implementation phase. There were talks on data management and financial sustainability, as well as project management and potential future scaling up.

Block 4: Looking forward, data management, financial sustainability, planning and scaling.			
Wed 26. Jan		Thu 27. Jan	
60min	Data management for open data and sharing data.	60min	Financial sustainability / social entrepreneurship
15min	Break	15min	Break
120min	Time for teamwork. Organisers go from team to team giving feedback and checking prototypes.	30min	Talk on planning and scaling
Homework	Make a data management plan, how to format it so that it can be useful for intended users?	60min	Workshop (breakout rooms)
		15min	Wrap up
		Homework	Prepare for final pitch and showing the prototype

Figure 12: Block 4, Looking forward

The fifth and final block (figure 13) was reserved for preparing for and giving the final pitches. There was also time for reflecting on the experience.

Block 5: Final pitch practice and presentations.			
Wed 2. Feb		Thu 3. Feb	
90min	Pitching practice one team at a time	120min	Final pitches
	Meetings with organising team one team at a time	60min	Jury deliberation and "I like I wish I learned" participants and Laura together
Homework	Prepare for final pitch and showing the prototype	60min	Feedback from jury and wrap up

Figure 13, Final pitches

On top of the sessions, the teams were given each day a homework to be done before the next session. The tasks were always based on what had been done during the day, such as finalizing something that was started in an interactive session, or improving their projects based on their learnings from the day. The homework ranged from filling in canvases such as the stakeholder map or the impact canvas, to interviewing stakeholders, prototyping, and improving the pitches. More detailed information about the Accelerate phase structure can be found in Deliverable 3.2 Training Corpus.

At the end of the Accelerate phase, the teams had to deliver a pitch and a prototype of their projects. Smaller deliverables were the communications material (material for one pagers), impact canvases of their projects, and their stakeholder maps.

Throughout the Accelerate phase, the IdeaSquare team was available for providing support outside of the sessions, and could be contacted via Slack. Unlike in the first GEAR cycle no team mentors were assigned, as it was deemed better that the teams focus on working with the tool owners on their prototypes instead of gaining more general feedback.

3.4. Projects selection for the Refine phase

As part of the GEAR methodology, 2 teams were selected to move forward to the Refine phase. The selection of the projects was carried out using a similar evaluation criteria than the previous phases. Namely, the projects were evaluated based on the following criteria:

- **Novelty:** is the pitch based on a new idea or concept or using existing concepts in a new context?
- **Relevance:** is the proposed solution relevant to the problem the team is aiming to solve?
- **Impact:** does the potential impact of the solution justify the effort and costs that the project requires to be implemented?
- **Feasibility:** based on the team and the plan forward, how convinced are you that the solution will be implemented?

- **Crowdsourcing:** is there a meaningful crowdsourcing component?
- **Communication:** was the team able to present their project in a convincing way?

The jury that evaluated the projects was comprised of the following external evaluators: Claudio Facchinetti, Office fédéral de la statistique (OFS) Switzerland; Hans Hagenes Bøe, Cosgear; Véronique Moreira, President of WECF France and Nadine Reichenthal, University of Geneva and Lausanne. Three internal evaluators joined them in the persons of: Jose Luis Fernandez-Marquez, University of Geneva; Oguz Mulayim, Artificial Intelligence Research Institute (IIIA-CSIC); Anaïs Zodeougan-Quist, United Nations Institute for Training and Research (UNITAR).

Their combined expertises covered the following perimeter: Statistics (data analysis, GLM, survey sampling), IT project management, full stack software development, geoinformation, enterprise architecture, production statistics. business administration, gender, application of Artificial Intelligence and software applications in general to improve the impact of Citizen Science on the well-being of the planet, AI in pattern recognition, Crowdsourcing, Prototyping, entrepreneurship, (customer centric) innovation, emerging countries.

Based on the Jury evaluation (both quantitative - through a scoring exercise alongside the criteria mentioned above - and qualitative through discussions amongst the jury members) the 2 projects selected by the jury were 'Donate Water' and 'Womer'.

The scoring and qualitative arguments brought up by the jury were reviewed in a WP3 and then a Work Package Leader meeting in presence of the internal jury members. Crossing the one-off assessment of the external jury members with the longer term vision of the involved Consortium partners in Evaluate and Accelerate, there was a convergence of views on Donate Water and Womer which were finally selected for the Refine phase.

3.4. Refine phase

The goal of the Refine phase is to expose the project to major stakeholders bringing them opportunities to collaborate and to increase the chance of broadening their impact.

For the GEAR cycle 1, the Refine phase consisted in maximizing the visibility of the two projects selected during the Accelerate phase by presenting them during an international event on SDGs organized by UNIGE and hosted online due to the current Covid-19 restrictions. This SDG conference called GenevaTriologue gathers academic, private sector and multilateral stakeholders to discuss knowledge and learning tools, platforms and initiatives for the Sustainable Development Goals (SDGs).

For the GEAR cycle 2, we extended the visibility efforts to all of the projects by organizing a presentation and feedback workshop with a diverse range of stakeholders at the Learning Planet Festival. We provided additional visibility to the two selected teams, Donate Water and Womer via the organization of the Geneva Triologue. Finally, we offered tailored support to all Accelerate teams with a focus on the two teams selected for Refine, which included linking them to relevant stakeholders, helping them refine their prototype, and sharing opportunities that would enable them to build their community of contributors and sustain their projects. This led the outcomes described below.

3.4.1. The learning Planet Festival

The #LearningPlanetFestival celebrates education and collective intelligence with a rich programme of local events and online activities. It builds on the need to learn to take care of oneself, others and the planet through fostering a culture of hope, collective engagement, sustainability, and overall youth empowerment.

First, Crowd4SDG was presented on Monday January 24th at the opening ceremony of the Learning Planet Festival (Figure 14).

Second, we organized an interactive workshop “**Mobilizing Youths for Climate Action: Citizen Science and Innovation in Monitoring and Achieving the SDGs**” with the participants who have been selected in the Accelerate phase on Saturday January 29th and a tailored audience composed of stakeholders that could specifically help them implement their projects locally. This interactive session aimed to gather the feedback and expertise of the attendees to explore ways in which youths can learn to become innovators for the SDGs, and opportunities for scaling up.

All of the projects of the Accelerate phase were presented and received tailored feedback in breakout rooms. Deeya Varidia, a San Jose high-school participant from the GEAR 1 also attended and presented her project, thereby fostering translation of knowledge and lessons learned across teams participating in different GEARS.

Then, we run another round of discussion on questions that were previously crowd-sourced from participants:

- **Volunteer engagement:** What are the key obstacles faced when engaging with volunteers to participate in citizen science projects? What could be the possible solutions to these obstacles?
- **Youth engagement:** How can we reach to mass Gen-Z? (born on 1997 and later)
- **Youth for climate & gender**
- What are some **concrete challenges** you’ve faced in empowering the youths to act for climate change/gender inequality in innovating for the SDGs? What are some solutions?
- **Sustainability projects:** How could we help move “student projects” to concrete and sustainable solutions?
- **Viability of projects:** How does a project survive you?
- **Open room**



Figure 14. Crowd4SDG workshop at the Learning Planet Festival on 29th of January 2022.

3.4.2. The Geneva Trialogue

This year, the Geneva trialogue was organized by UNITAR at the Campus Biotech in Geneva, and the University of Paris led the effort for the organization of the Crowd4SDG sessions. This SDG conference called GenevaTrialogue²⁰ gathers academic, private sector and multilateral stakeholders to discuss knowledge and learning tools, platforms and initiatives for the Sustainable Development Goals (SDGs). The Geneva Trialogue was held on the 17th of March 2022 and opened an open innovation festival called Open Geneva²¹, which lasted for 10 more days. The program is presented in Figure 15.



Figure 15. Program of the Geneva Trialogue 2022.

This year, the theme for our day of workshop was “Closing the gap between institutions and citizen science-generated data and solutions”.

It was the occasion to provide visibility to the two projects “Donate Water” and “Womer” both during the panels in front of an international audience of 200+ people (Figure 16) and during the morning and afternoon sessions.

²⁰ <https://gt-initiative.org/events/geneva-trialogue/>

²¹ <https://opengeneva.org/festival2021/>



Figure 16. Merlyn Hurtado - leader of the Womer project part of Crowd4SDG, as a panelist during the Geneva Trialogue Opening. Panelist, from left to right were: The panel was composed of Mirelle Betrancourt (UNIGE, FPSE, and Director TECFA), Yao Ydo (UNESCO IBE), Dannie Ivanova (Deloitte Consulting AG), Merlyn Hurtado (University of Paris)

Morning sessions - Discovery

This session fell under the objectives delineated by Unitar organization team: i) discover the landscape of challenges and opportunities, and potential (good) practices that can elicit scaling, ii) Collectively identify where the challenge lies, the targets they need to address, iii) Possibly delineate the innovation process to put in action during the Open Geneva Festival by applying impact design methods.

The morning session had the ambition to clarify and specify the challenges met by each of the stakeholders around the table on the theme **“Closing the gap between institutions and citizen science-generated data and solutions”**. The projects “Donate Water” and “Womer” were presented first to ground the discussion in the reality they experience. The stakeholders in the room (Table 3.4) were specifically chosen because they are either affected by the problem or part of the solution for bridging the gap between citizen science generated data and institutions. They shared their views on the projects, listed refined challenges or tensions and ideas for solutions, conditions to meet these challenges, and support for projects to move forward.

The flow of the roundtable was inspired by the four steps Appreciative Inquiry cycle.

First name	Last name	Institution
Stephanie	Chuah	Crowd4SDG
Camille	Masselot	Crowd4SDG
Romain	Muller	Crowd4SDG
Marc	Santolini	Crowd4SDG



Jose Luis	Fernandez-Marquez	SDG Accelerator
Dilek	Fraisel	International Institute for Applied Systems Analysis Global Citizen Science Partnership
Merlyn	Hurtado	Womer
Elena	Proden	Unitar
Ed	Stevenette	Learning Planet Institute
Martin	Muller	GESDA
George	Hodge	UNHCR
Sumit	Vij	Geneva Water Hub
Chiagozie	Udeh	Sam Sam Wota
Nanko	Madu	Afrilabs
Anne	Ibrahim	Nigerian NSO
Oloyede	Oluyemi	Nigerian NSO
Nolita	Mvunelo	Ubuntu Learning Circle/ Club of Rome
Carlos	Alvarez Pereira	Ubuntu Learning Circle/ Club of Rome
Rachael	David	DonateWater
Francisca	Timothy	DonateWater
Daniel	Ugwu	DonateWater
Longmun	Dawam	Womer

Table 3.4 List of attendees to the Crowd4SDG morning session at the Geneva Triologue

Moderators and participants used this [Mural Board](#) as a support of activities during the two workshops. A shared google document is currently under elaboration for sharing all resources that were mentioned, and follow up with collaboration opportunities.

We refined the main challenge “Closing the gap between institutions and citizen science-generated data and solutions” by focusing on the following issues:

- How to address lack of trust and institutional resistance to take on citizen generated data?
- How to support citizen science projects to connect with relevant stakeholders at local and national scale to identify the relevant data to collect and foster the integration of the collected data into existing information systems?
- How to motivate citizens to collect data to monitor the progress towards the SDGs and sustain their engagement and projects?

Afternoon session - Design

The afternoon session aimed at gathering all work package leaders, technical advisors, the two selected teams and external advisors present during the day (Table 3.5) to select the

most pressing challenges that Crowd4SDG can address via its activities or within the GEAR cycle 3.

Before we discuss Crowd4SDG capabilities to address these challenges, we identified a set of solutions which are presented below.

Proposed solutions (Design phase):

1. How to address the lack of trust and institutional resistance to take on citizen generated data?
 - a. Communicate on existing success stories on the benefit of citizen science generated data and their integration by national statistical offices
 - b. Continue to perform research and case studies that demonstrate the quality and value of citizen science generated data
2. How to support citizen science projects to connect with relevant stakeholders at local and national scale to identify the relevant data to collect and foster the integration of the collected data into existing information systems?
 - a. Sharing existing frameworks and methodologies on data quality for citizen science data to help them collect meaningful data (resolution, frequency, etc)
 - b. Train citizen scientists on global methodologies for data collection, and adaptation of these methodologies to their context
 - c. Passive and Active approach to data integration developed by Unitar
 - d. Encourage citizen scientist to complete existing data
3. Develop sustainable model for incentivizing citizen to collect data
 - a. Create early partnership with relevant local and national stakeholders to co-design citizen science projects
 - b. Leverage communities of citizen scientists

For each of the challenge identified we tackled these different topics:

- Feasibility: can Crowd4SDG be part of the solution? If yes, how? If not, who?
- Design: how can we tune or leverage our activities to better meet this challenge for the remaining time?
- Conditions: what are the key success factors or barriers to implement the proposed solutions?
- Sustainability: how can we secure uptake of the solutions?

Finally, as a consortium we committed to:

- Disseminate finding (research, case studies) related to citizen science generated data and their integration with NSOs and associated institutional changes we observed at Crowd4SDG or in other initiatives;
- Follow up with Crowd4SDG CS generated projects for training opportunities and learning material related to quality of data;
- Encourage Crowd4SDG generated projects to work on or complete existing datasets to monitor progress towards the SDGs, with the relevant temporality and frequency;
- Discuss monetized incentivisation to motivate citizen to collect meaningful data in the frame of our partnership with the Yoma project;
- Support Crowd4SDG generated projects to connect as early as possible with relevant stakeholders at local and national level;
- Leverage Crowd4SDG existing community of citizen scientists to sustain the generated projects.



First name	Last name	Organization
Camille	Masselot	Crowd4SDG
Stephanie	Chuah	Crowd4SDG
Jose Luis	Fernandez-Marquez	Crowd4SDG (WP 1, WP3)
Barbara	Pernici	Crowd4SDG (WP 2)
Jesus	Cerquide	Crowd4SDG (WP 2)
Marc	Santolini	Crowd4SDG (WP 4)
Elena	Proden	Crowd4SDG (WP 5)
Romain	Muller	Crowd4SDG (WP 6)
Ed	Stevenette	Learning Planet Institute
Dilek	Fraisel	International Institute for Applied Systems Analysis Global Citizen Science Partnership
Merlyn	Hurtado	Womer
George	Hodge	UNHCR
Shannon	Dosemagen	Advisory board (GOSH)
Muki	Hacklay	Advisory board

Table 3.5. List of attendees to the Crowd4SDG afternoon session at the Geneva Dialogue



3.5. GEAR 2 evaluation

3.5.1. Data collection

All partners joined forces to co-design surveys in order to harmonize the collection of data related to the activity, learnings, satisfaction and other research questions we had that were not possible to collect systematically via the tools we used during the program. This enabled us to increase our capacity for evaluating internally the GEAR methodology across phases and between GEAR cycles.

The surveys and research questions received the ethical approval of the IRB committee attached to the University of Paris team, in charge of collecting the data.

Participants gave their consent to the collection of data as they registered to the Evaluate phase (See [Annex 8](#): Registration Form). The University of Paris team proceeded to the pseudo anonymization and storage of the data.

There were 38 participants in the Evaluate phase and 14 participants in the Accelerate phase.

We disseminated a total of 12 surveys on a weekly basis through Slack and during weekly sessions. Reminders were sent on Slack for weekly surveys and via email for Final ones.

Only the Registration Form was mandatory to participants for entering the program. We observed a higher response rate when we dedicated a 5 to 10 minutes time period during the weekly sessions for participants to fill the survey regarding their activities in the previous week.

All surveys are presented in [Annex 8](#).

Survey	Data collection platform	Respondents (% of total participants)
Evaluate registration Form	Google Form	38 (100%)
Evaluate weekly 1	CoSo	26 (68%)
Evaluate weekly 2	CoSo	26 (68%)
Evaluate weekly 3	CoSo	20 (53%)
Evaluate weekly 4	CoSo	22 (58%)
Evaluate Final Form	Google Form	22 (58%)
Accelerate initial Form and bloc 1	CoSo	11 (79%)
Accelerate block 2	CoSo	12 (86%)
Accelerate block 3	CoSo	11 (79%)
Accelerate block 4	CoSo	6 (43%)
Accelerate block 5	CoSo	7 (50%)
Accelerate Final Form	Google Form	11 (79%)

Table 3.6. List of surveys of the GEAR cycle 2.

In order to help the reader navigate the results presented below, we provide the name and furthest stage of the GEAR reach for each team.

Team name	Furthest phase reached
T5: WOMER	Refine
T9: DonateWater	Refine
T14: Eco Winners	Accelerate
T13: Andapé Institute	Accelerate
T10: Water Warriors	Accelerate
T12: Women 4 Sustainable World	Evaluate
T1: SDesiGn (Old name: Rhythm of Bamboos)	Evaluate
T6: Women & Technology Against Climate Change	Evaluate
T8: Climate Gender Justice	Evaluate
T7: UpGet app - CitiCERN Project	Evaluate
T4: PAM	Evaluate
T3: TEAM FOILED	Evaluate
T11: Rights of Climate	Evaluate
T2: Flood Rangers	Evaluate

Table 3.7. Furthest stage reached by teams.

3.5.2. Audience reached through the Gather phase

From the initial data gathered from Goodwall, 92 pitches were presented for the Call of which several concerned the same project (Figure 17). This concretized into the submission of 61 projects (section 3.1).

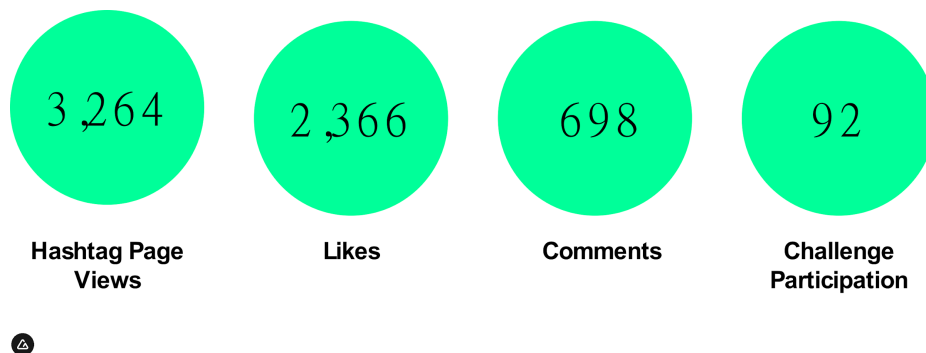


Figure 17: engagement data on Goodwall during the Gather phase

A vast majority (61%) of traffic to the landing page of the #Open17ClimateGender challenge was through the crowd4SDG.eu website (Figure 18). The second highest source of traffic

(17%) was the direct link to the challenge page while social media and emails summed at 3% of traffic maximum. This shows that our communication through the crowd4SDG.eu website is effective whereas our social network has a limited engagement capacity. With a 2 million people audience on Goodwall, we see an opportunity for an increased traffic from Goodwall - 776 unique page view for the #Open17ClimateGender challenge page, with a more tailored messaging and collaboration at the beginning of the Gather phase.

Source ?	Pageviews ? ↓	Unique Pageviews ?	Avg. Time on Page ?
	1,044 % of Total: 0.24% (431,686)	776 % of Total: 0.35% (223,536)	00:04:19 Avg for View: 00:00:40 (544.85%)
crowd4sdg.eu	644 (61.69%)	459 (59.15%)	00:03:56
(direct)	180 (17.24%)	150 (19.33%)	00:05:11
google	64 (6.13%)	53 (6.83%)	00:07:06
openseventeen.org	52 (4.98%)	37 (4.77%)	00:02:35
t.co	35 (3.35%)	28 (3.61%)	00:03:12
admin.goodwall.io	19 (1.82%)	14 (1.80%)	00:07:08
ec.europa.eu	12 (1.15%)	8 (1.03%)	00:05:49
linkedin.com	12 (1.15%)	10 (1.29%)	00:02:53
mail.google.com	8 (0.77%)	5 (0.64%)	00:04:27
l.facebook.com	7 (0.67%)	3 (0.39%)	00:05:29

Figure 18. source of traffic to the landing page of the #Open17ClimateGender challenge on Goodwall

We asked participants how they heard about Crowd4SDG and the #Open17ClimateGender challenge. Goodwall, direct communication (emails, and direction contact), the crowd4SDG.eu website were the top three sources of information of the participants who enrolled in the Evaluate phase (Figure 19). Of the five teams selected to move to the Accelerate phase, all of them share multiple source of information and at least one of their members had heard about #Open17ClimateGender from direct communication.

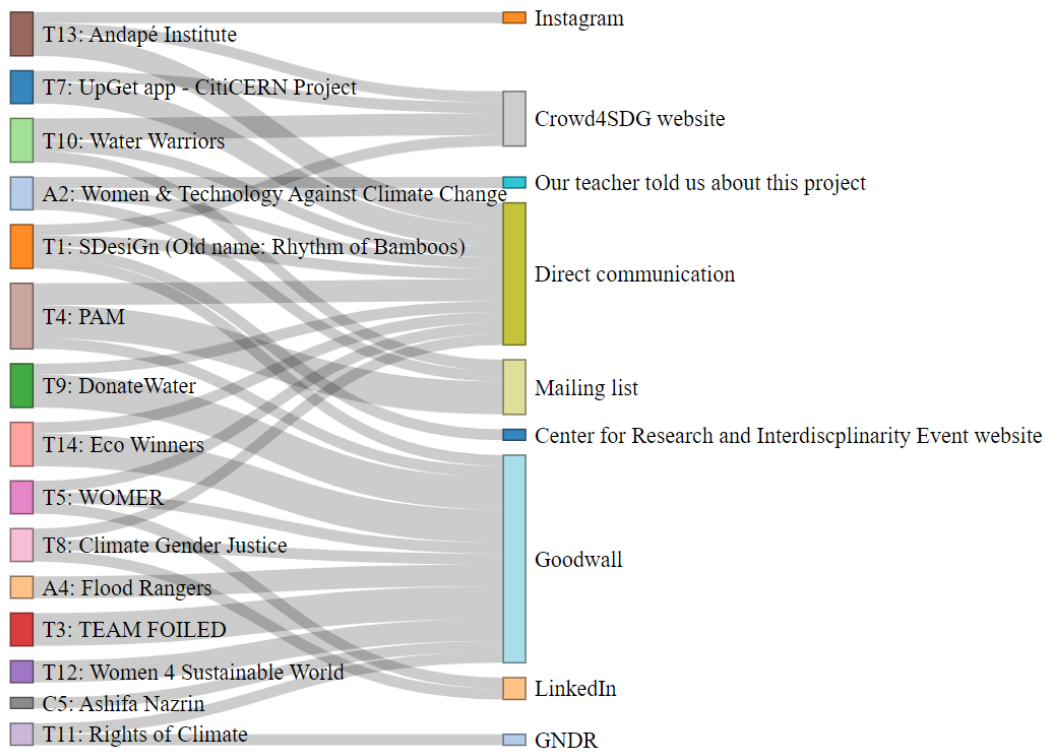


Figure 19. Sankey diagram showing the teams (left) and their source of information about the #Open17Climate Gender challenge (right).

3.5.3. Profile of participants

In this section, we describe the profile of participants who enrolled in the GEAR cycle. Our ambition was to reach young people, from diverse backgrounds and nationalities while having a representation of European countries. We aimed at forming gender-balanced teams that could address problems at the local level.

In total, the GEAR cycle 2 generated fourteen teams which counted for a total of 38 participants.

Geographic distribution

Seventeen nationalities were represented during the #Open17ClimateGenderchallenge, which is two more than during the GEAR cycle 1 (Figure 20). Nigeria and Italy were the top two most represented countries (Figure 21), respectively in three and six teams. Similar to the GEAR 1, Goodwall's audience in low resource settings influenced the geographic distribution of the participants. Hence, we saw representation from Africa, Asia and South America. However, two of the five teams selected for the Accelerate phase had members in Italy and France. Indeed, one team was from Polimi and one member of Womer - which was one of the finalist projects, was studying at the Learning Planet Institute (former Center for Research and Interdisciplinarity), both being partners of Crowd4SDG. Relying on our own institutions student's programs and our network of education and academic partners in Europe is a strategy we consider to increase even more the European representation of participants.

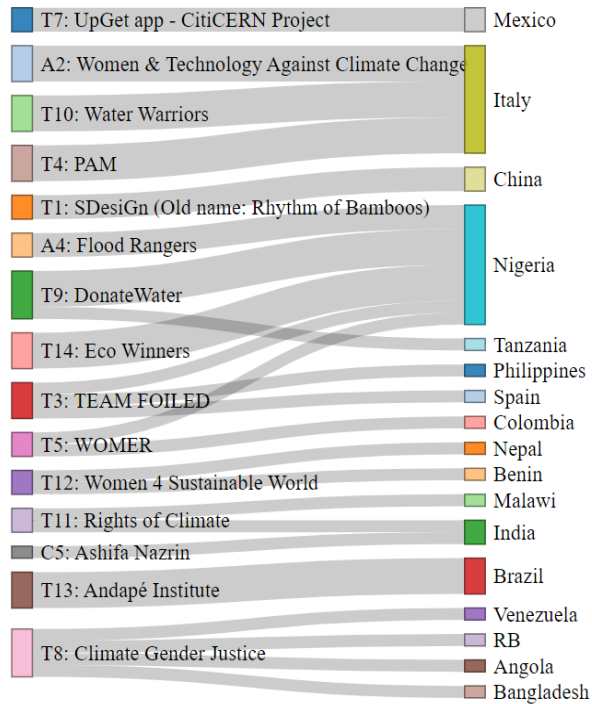


Figure 20. Sankey diagram of teams (left) and the country of origin of their participants (right).

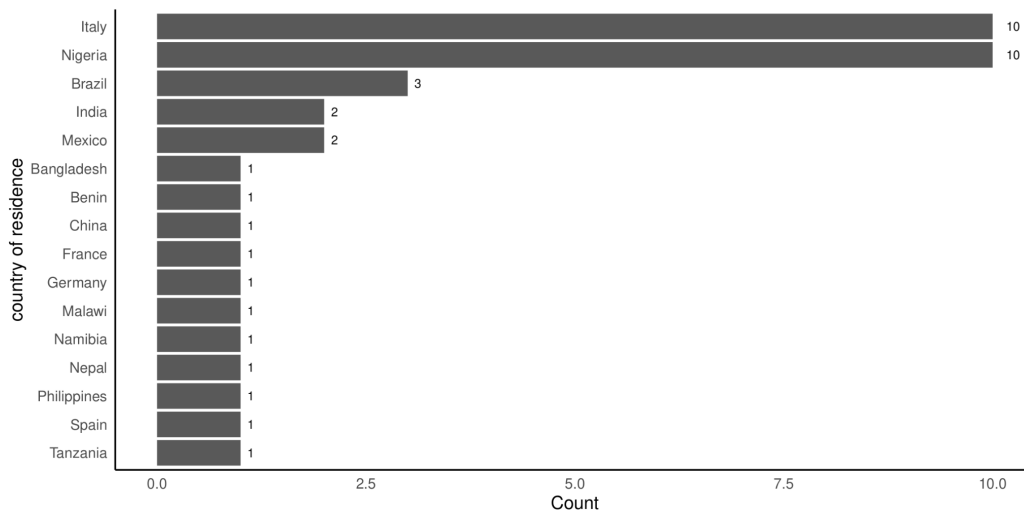


Figure 21. Barplot of the country of residence of the participants.

Age

Of 38 participants, 68.4% were between 15 years and 25 years old (Figure 22). This confirms that our recruitment strategy is appropriate to engage the youth in the GEAR cycle. We do not observe a gender difference in the age repartition of participants. However, several teams had an age gap which approximated 10 years. This is the case of the teams “Rights of Climate”, “WOMER”, “Climate Gender Justice” of which two went to the accelerated phase. The [deliverable 4.4](#) demonstrated that age gap was correlated to team performance. Therefore, we will encourage more age diversity in teams for the GEAR cycle 3.

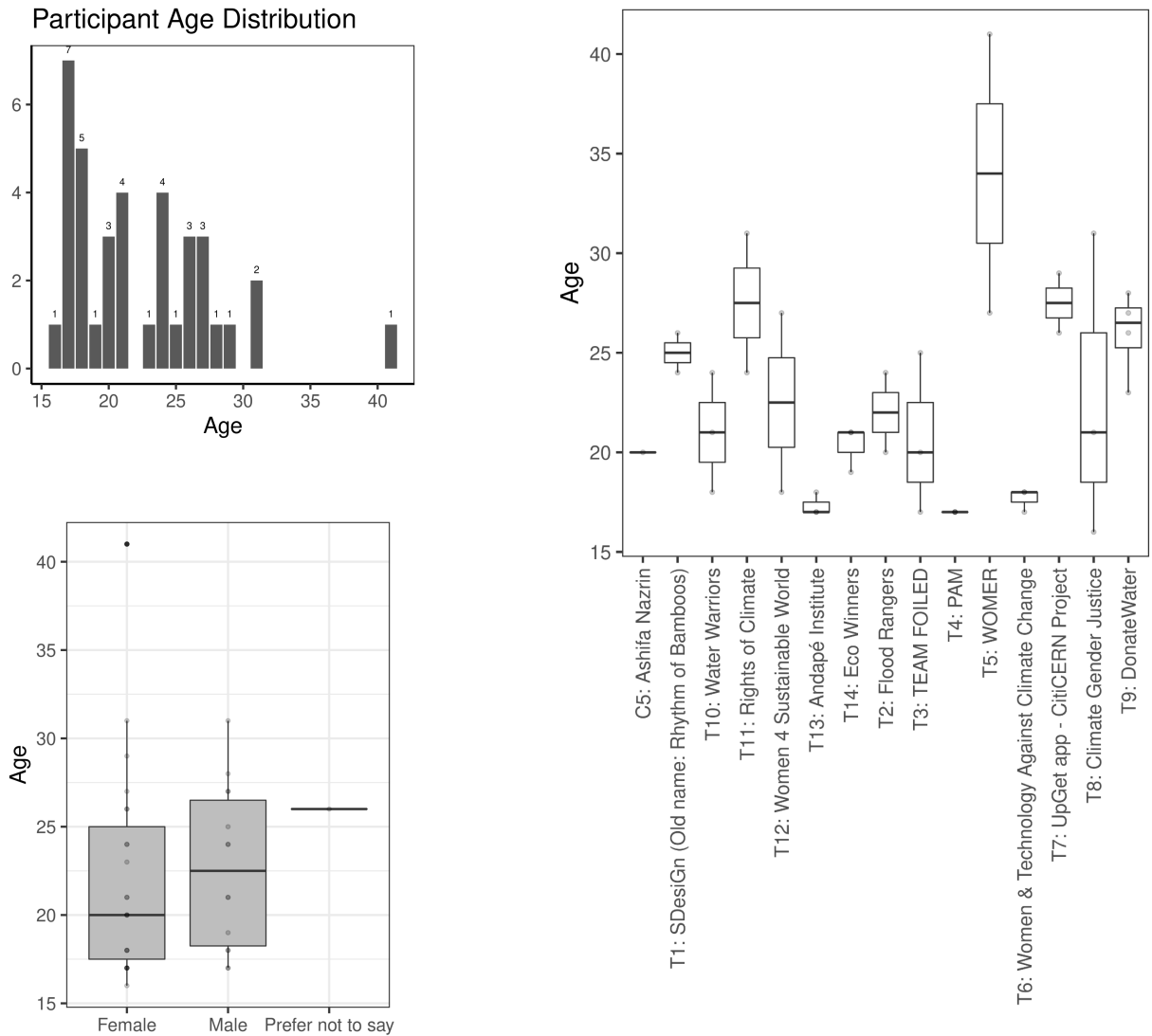


Figure 22. Age distribution of participants to the Evaluate phase, total (top left), by team (right) and by gender (bottom left).

Gender

Gender was at the core of the #Open17ClimateGender challenges and of our internal strategy to promote gender equality within our program.

All teams, with the exception of the team “Water Warrior” and “Eco winner”, showed a gender balance geared towards more female representation with at least 50% of their members identifying themselves as such (Figure 23). Of the twelve participants selected for the Accelerate phase, nine were women (top five teams in Figure 23). One team stressed the importance of not limiting the gender-related-issues spectrum to the representation of women but rather include all types of gender and the problem they face depending on the socio-cultural and political context they live in. This view was supported by our jury members during the final pitch session.

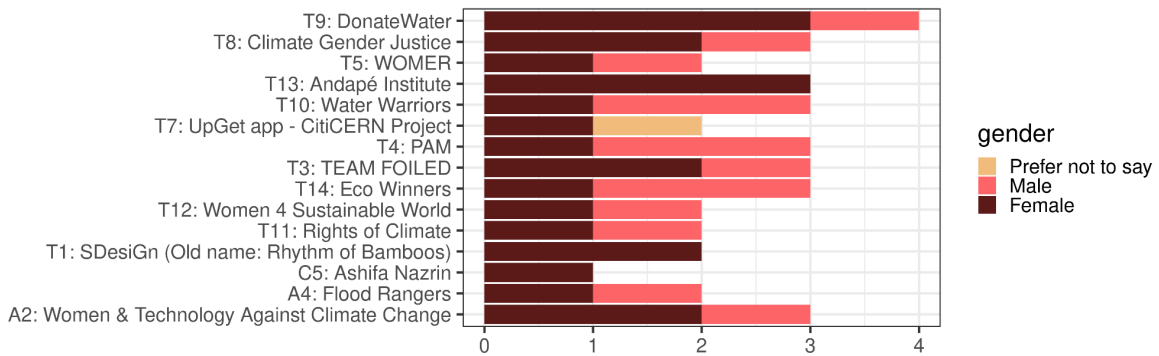


Figure 23. Gender repartition of team during the Evaluate phase.

Background

Our assumption, based on the research performed by the work package 4 and prior deliverables, was that diversity of skills within teams were associated with better team outcomes. Hence, the teaming algorithm accounted competencies as 10% of the decision to match team members, the other 90% being composed of personality match (20%) and preferred choices (70%).

Here, we consider that background encompasses the highest level of study, occupation, and academic background.

Overall, teams observe a high level of intra-team homogeneity in terms of level of study but a high intra-team interdisciplinarity.

Of 14 teams, 12 had members whose current or highest level of education if they are currently employed was university (Figure 24a). Six teams had members in high school. Only “Water Warrior” and “Climate Gender Justice” had members with various level of educations. Interestingly, the team “Climate Gender Justice” composed of members whom highest level of education was middle school went to the Accelerate phase. While all of the teams were composed of students, we note that the two teams who went to the Refine phase “Donate Water” and “Womer” had at least one of their members employed (Figure 24b).

We note that Crowd4SDG had a limited capacity to engage with people outside the education system, who are often the most affected by the climate crisis and gender-related issues. These people may engage at a later stage of the projects in data collection, through the activity of the project leads who participated in the GEAR cycle 2.

High levels of interdisciplinary in academic terms can be observed within teams (Figure 25). Not only were they formed of members from diverse backgrounds (Figure 25a), spanning from psychology to agriculture in the case of “Womer” and from mathematics to social sciences and business for “Andapé Institute”, but members had also a diverse set of skills at the individual level (Figure 25b). The work package 4 found a positive correlation between the number of unique skills within a team and its progress throughout the GEAR cycle.

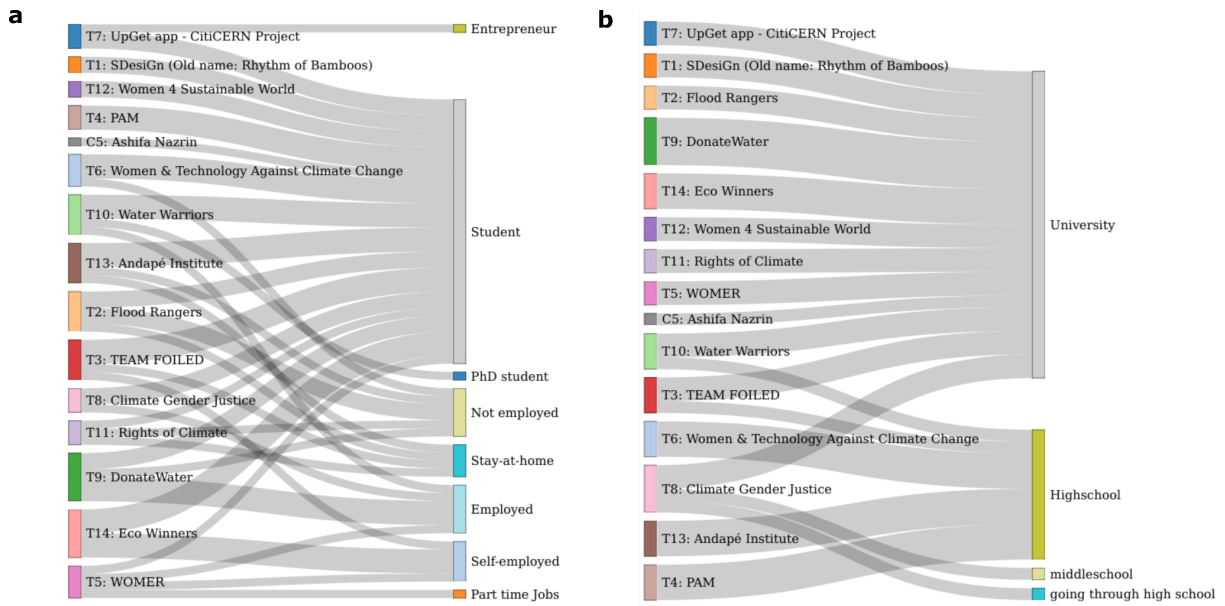


Figure 24. **a.** Sankey diagrams of teams and the current or highest level of study of their members. **b.** and the occupations of their members.

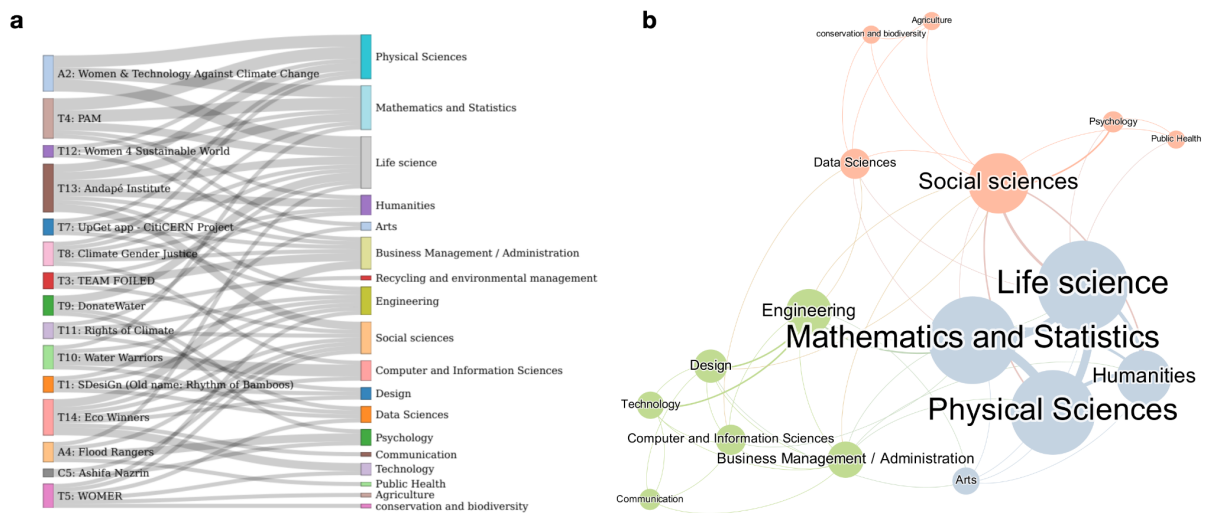


Figure 25. **a.** Sankey diagrams of teams (left) and participant disciplinary backgrounds (right). **b.** Network of academic backgrounds linked by the number of times they are co-reported by a participant (Evaluate phase).

Previous contribution to SDGs and citizen science projects

Previous contribution to the SDGs and citizen science projects seems to correlate with the furthest stage reached by project in the GEAR. Indeed, 10 out of the 38 participants had participated in data projects or contributed as citizen scientists to data production before, while all of the projects which entered the Accelerate phase had at least one member with previous experience. The description of their previous experience with citizen science data or projects is described in the Supplementary Table 1 (Annex 9)

Figure 26 shows that, by design, we gathered participants who had a previous experience in addressing the two SDGs “Climate Action” and “Gender Equality” which were the focus of the GEAR cycle 2 simultaneously with other SDGs of which the most central was “Sustainable

cities and communities”. Together, previous experiences of participants cover almost the full spectrum of the SDGs.

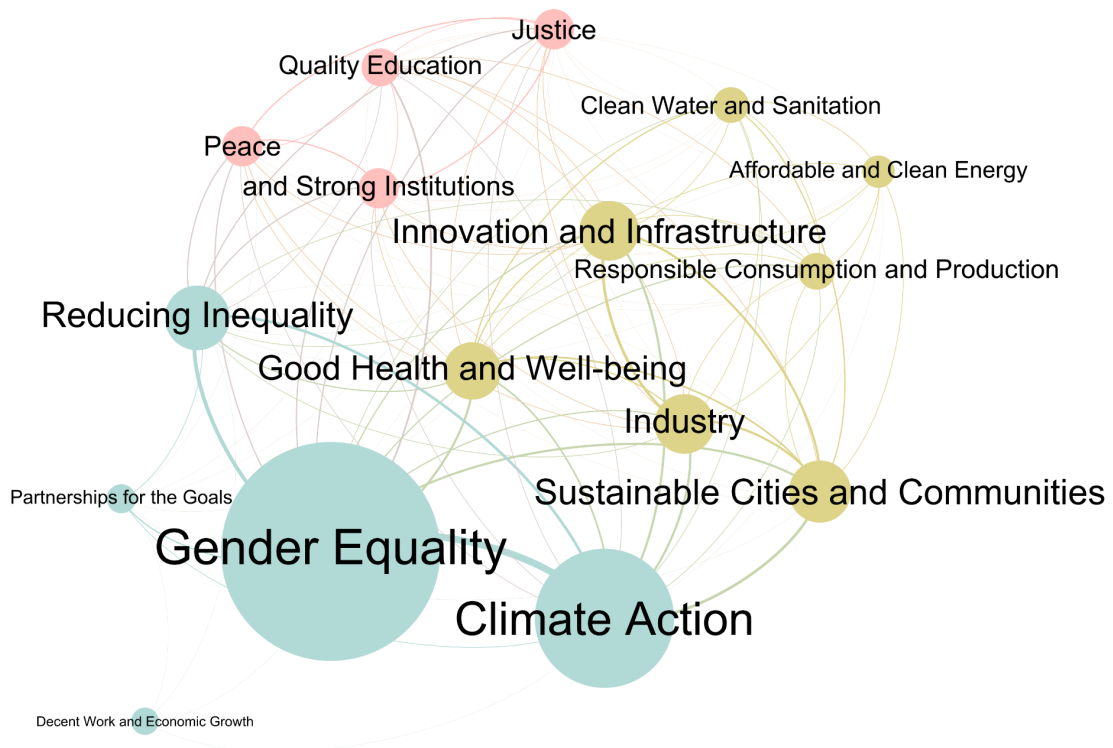


Figure 26. Network of SDGs (nodes) addressed by previous projects carried out by participants (edges).

3.5.4. Activity of participants

In this section, we explore the different tasks participants declared they performed weekly. They choose the tasks among the list of 18 tasks we gave them in the surveys disseminated on CoSo at the end of each module. A better understanding of the tasks performed by teams helps us adjust the methodology of each phase and ultimately gives us indication on the adequacy between our methods and the objectives we set.

Throughout the course of the Evaluate phase, participants predominantly spent time writing or preparing pitches, brainstorming and planning (Figure 27).

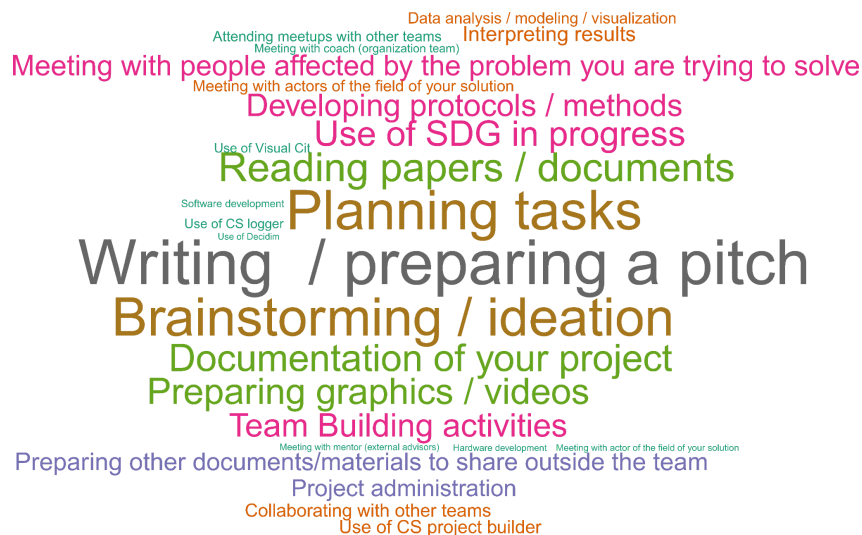


Figure 27: word cloud of activities performed by participants during the Evaluate phase. Size of characters is proportional to the number of declarations by participants.

During the Evaluate phase, the realization of tasks followed closely the agenda of the Open17 program (Figure 28). During the first and second week, participants focused on writing, planning and brainstorming while in the use of tools slowly progressed on using the tools documenting their project on Inprogress during the third week. During the fourth and last week of Evaluate, participants spent more time preparing videos and pitch in preparation of the final jury assessment. The use of tools slowly progressed from the second to the fourth week of Evaluate but remained low compared to other project design types of activities. Inprogress was the most used tool since it helped them document their project. During the Accelerate phase, the use of CS project builder ranked second in the most performed task, just after writing and preparing a pitch which shows a progression towards more prototyping of their project. Similarly, meeting with people affected by the problem and preparing material to disseminate their project were more often performed than during Evaluate, confirming the maturation of the projects between these two phases. However, the use of other tools such as Visual Cit and Decidim, meeting with actors of the field and attending meetings with other teams remained the least performed activities

Meeting with mentors and coaches, and collaboration with other teams were amongst the least declared activities (Figure 28). Similarly, the use of tools enabling data collection, analysis and dialogue with communities were the least performed activities.

However, the teams who moved to the Accelerate were significantly more in contact with mentors (Figure 29).

We acknowledge the importance of mentoring, close collaboration with affected communities and local partners on the relevance of solutions produced and the stage of advancement of the project (see Figure 29 below). Thus, we will encourage the teams to be more active on these aspects by supporting them in identifying the communities to reach out to early on during the program, and by facilitating mentorship and community management on Slack.

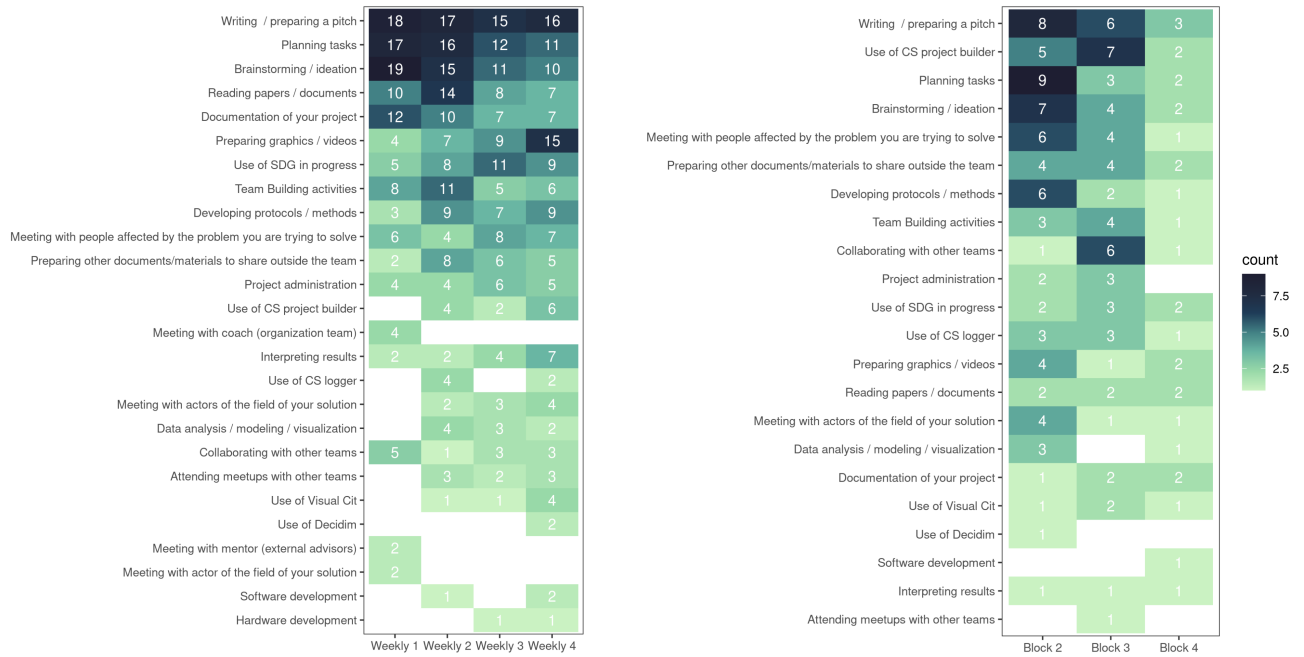


Figure 28: Heatmap of activity of participants over time during the Evaluate phase (left) and the Accelerate phase (right). Count is the number of participants declaring performing a certain activity at the end of each week.

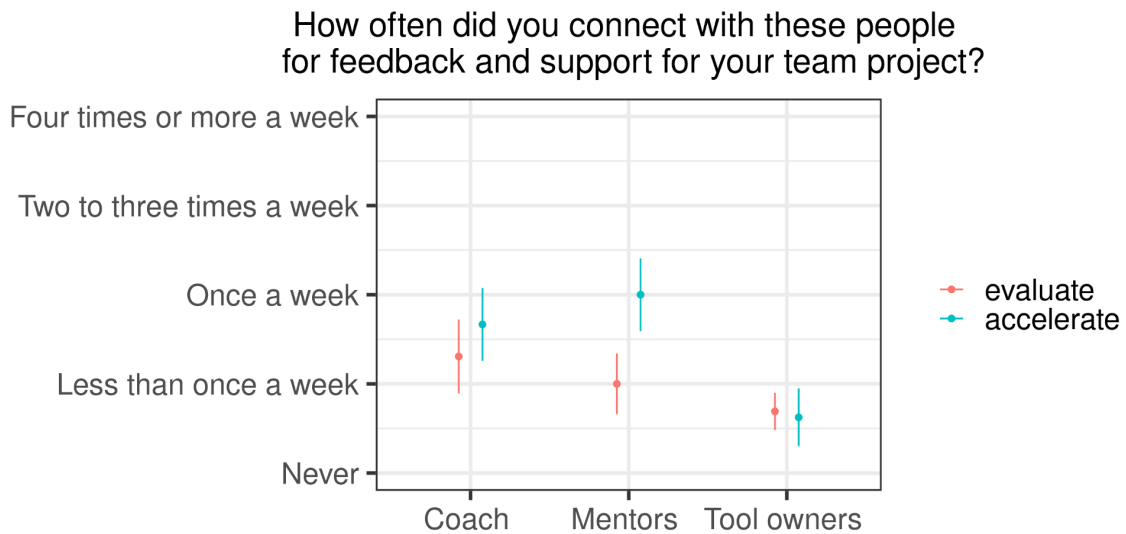


Figure 29. Frequency of contact with coaches, mentors and tool owners declared by participants across phases. Dots are means and bars are standard deviation.

3.5.5. Communication and support of teams

At Crowd4SDG, we try to align to the needs of the participants in terms of communication tools to ensure no one is left behind due to a technology gap.

The communication platforms used by the Crowd4SDG team seem appropriate for the #Open17 challenge, especially Zoom, Slack and Google Drive (Figure 30). Indeed, Zoom was at least often used by 70% of the 22 respondents which almost never experienced issues. Similarly 12 people declared using Slack as another tool, and 15 of the respondents declared never experiencing issues with it. Preference of participants over Whatsapp and email will be explored since together with Zoom, they were systematically used by at least 75% of the respondents.

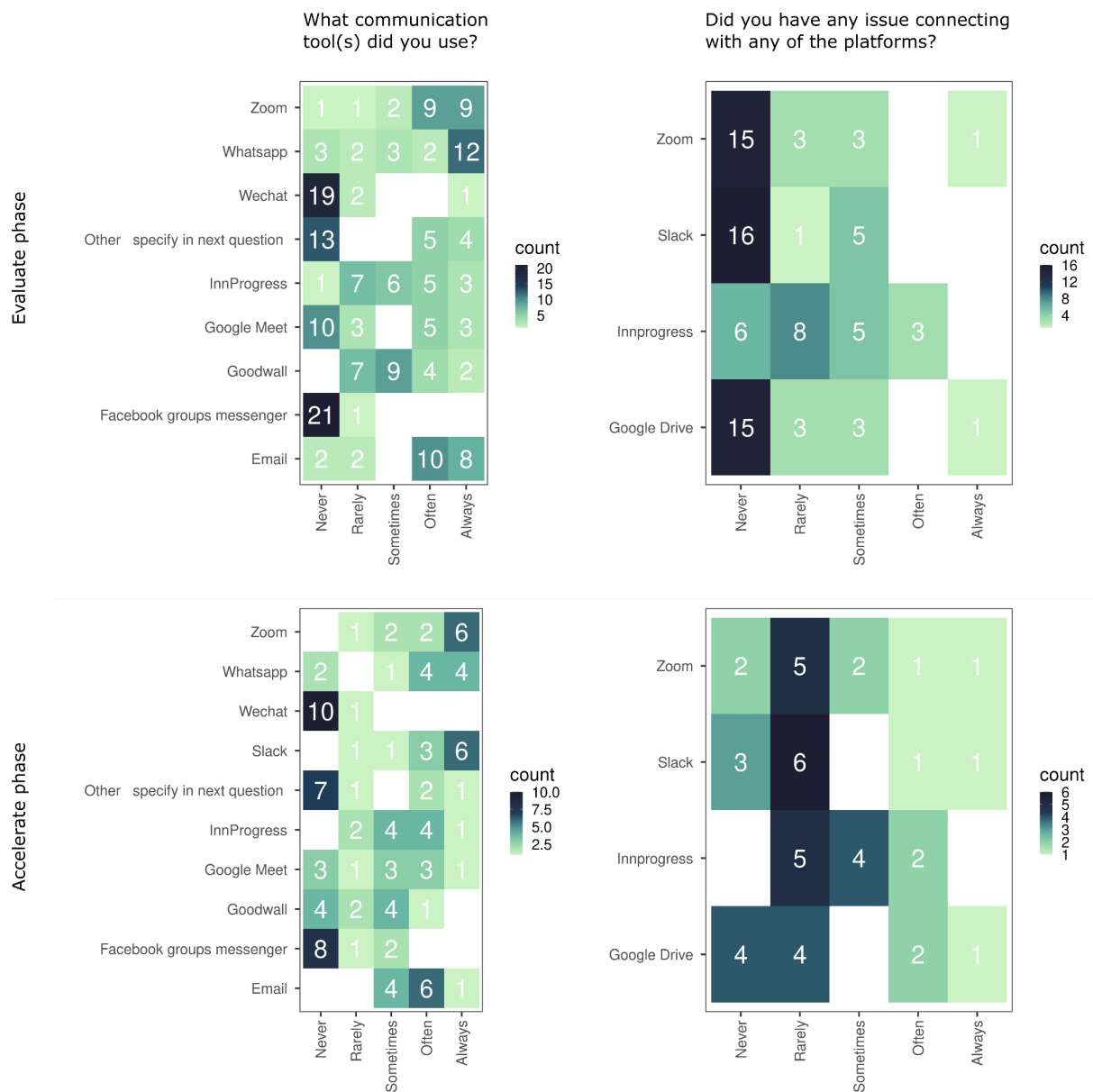


Figure 30. Usage and issues of communication tools by participants during the Evaluate phase (top) and Accelerate phase (bottom).

3.5.6. Use of tools

Here, we discuss the use of the tools provided by the Citizen Science Solution Toolkit (See Deliverable 2.2 CS tools beta release) at the disposal of participants and on which they were trained. The tool owners made themselves available to participants to support them in using them.

While almost 75% of the participants didn't know any of the tools when they first registered (Figure 31), 50% of them declared using Citizen Science Project builder at the end of Accelerate phase. Similarly, 25% of participants declared using CS Logger and Visual Cit at the end of the Accelerate phase. Whereas 20% of participants intended to use Decidim4CS, none of them used it at the end of the Accelerate phase. This can be explained by the fact that projects were at an early stage and not yet ready to build and interact with their potential community which is at the core of Decidim4CS.

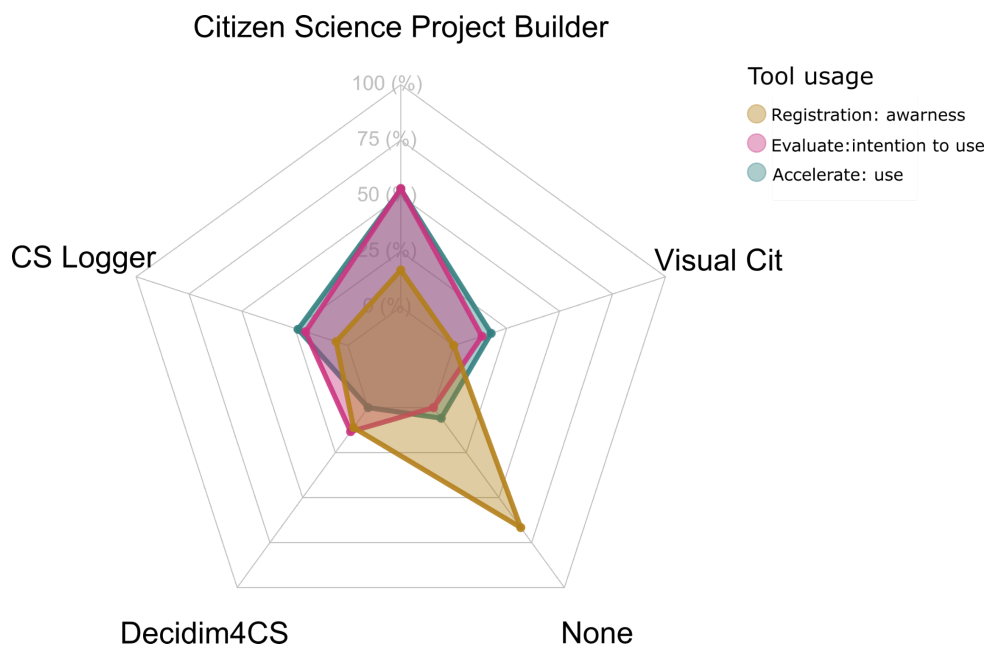


Figure 31. Radar plot of the awareness, intention to use and use of tools during the different phases of the GEAR cycle 2.

3.5.7. Motivations, learnings and achievement

In this section, we compare the motivations and expectations of participants to what they achieved at the end of each phase. This allows us to verify that the objectives of each phase were well communicated and aligned with the needs of participants, and to recommend for improvement in the GEAR cycle 3. To do so, we analyzed the responses participants gave in the Registration Form, the Final Evaluate form and the Final Accelerate Form ([Annex 8](#)).

Motivation

Participants joined the #Open17ClimateGender challenge because they were generally interested in the topic or wanted to address a problem in their community by launching a project or developing their existing one (see Table 7 and Supplementary Table 2). While some participants came from the realization that they and their community underestimated the

effect of climate change on their lives and those of the most vulnerables “I realized that I was not the only one who underestimated the severity of climate change, but that the majority of my community did as well, despite being affected by it practically every year. Women and children are the most vulnerable, which is why I took part.” , number of them mentioned the urgency to act as a key driver: “Overtime, I have come to realize that combating the worst effects of climate change will require urgent action, informed by a clear understanding of where we are now and where we might go if nothing is done about the climate crisis.”

Four teams came with existing projects and aimed at developing it by getting access to coaches and a network of partners, as well as financial and technical resources “ [...] my climate enterprise, which is focused on environmental advocacy and education across communities in Nigeria. Since inception, we have sensitized over 7000 youths on the dangers of climate change” - Eco Winners, “I already have a community project in gender equality and climate change” - SDesign, “Participating [...] is for me an opportunity to make my solutions known to a large audience in order to be able to gaining their support for technical contributions to better refine my project, or for financial support or agreements of partnerships to be able to establish my project for the benefit of the target population.” - Women 4 sustainable World. Interestingly, almost none of these projects advanced to the Accelerate phase. We will reflect on how to tailor the GEAR 3 as early as the Evaluate phase to better equip and support existing projects.

When teams who progressed to the Accelerate phase were asked which skills, knowledge, or experience they expected to get from the CBI workshop they first mentioned the capacity to use the citizen science tools, prototyping their projects and to increase their ability to pitch. This is aligned with the learning objectives of the CBIW. Some participants specified the need to learn data science and managing CS data, or learning agile methodologies and working with diverse stakeholders (See Table 3.8 and Supplementary Table 2). These will be considered for the design of the GEAR 3.

Phase	Motivation (number of mention)
Motivation of participants to join the #Open17ClimateGender challenge	<ul style="list-style-type: none"> ● General interest for the topic (12) ● Addressing a problem (8) ● Gain knowledge (5) ● Bringing their idea to life (4) ● Developing existing projects (4) ● Access to coaching (3) ● Networking and visibility (3) ● Financial support (1) ● Technical support (1)
Skills or knowledge, or experience participants expected to get from the CBIW	<ul style="list-style-type: none"> ● Citizen science tools (3) ● Pitching (3) ● Prototyping (3) ● Data science (2) ● Project management (2) ● Computer science (1) ● Other (1)

Table 3.8 Summary of the motivation of participants during the Evaluate and Accelerate phase of the GEAR cycle 2.

Learnings and achievement

At the end of each phase, we asked participants to rate how much they related to the phase specific learning objectives and to describe what they achieved or learned. We also tested their knowledge by using before and after questions about the SDGs and citizen science generated data.

At the exception of one person, all of the participants declared they improved their ability to pitch, to innovate, and to address the SDGs (Figure 32). At the end of the Accelerate phase, all of the current participants felt comfortable launching their projects except one person, and all of them declare they have the ability to communicate their idea efficiently, work as a team, and find solution to the problem they face (Figure 32).

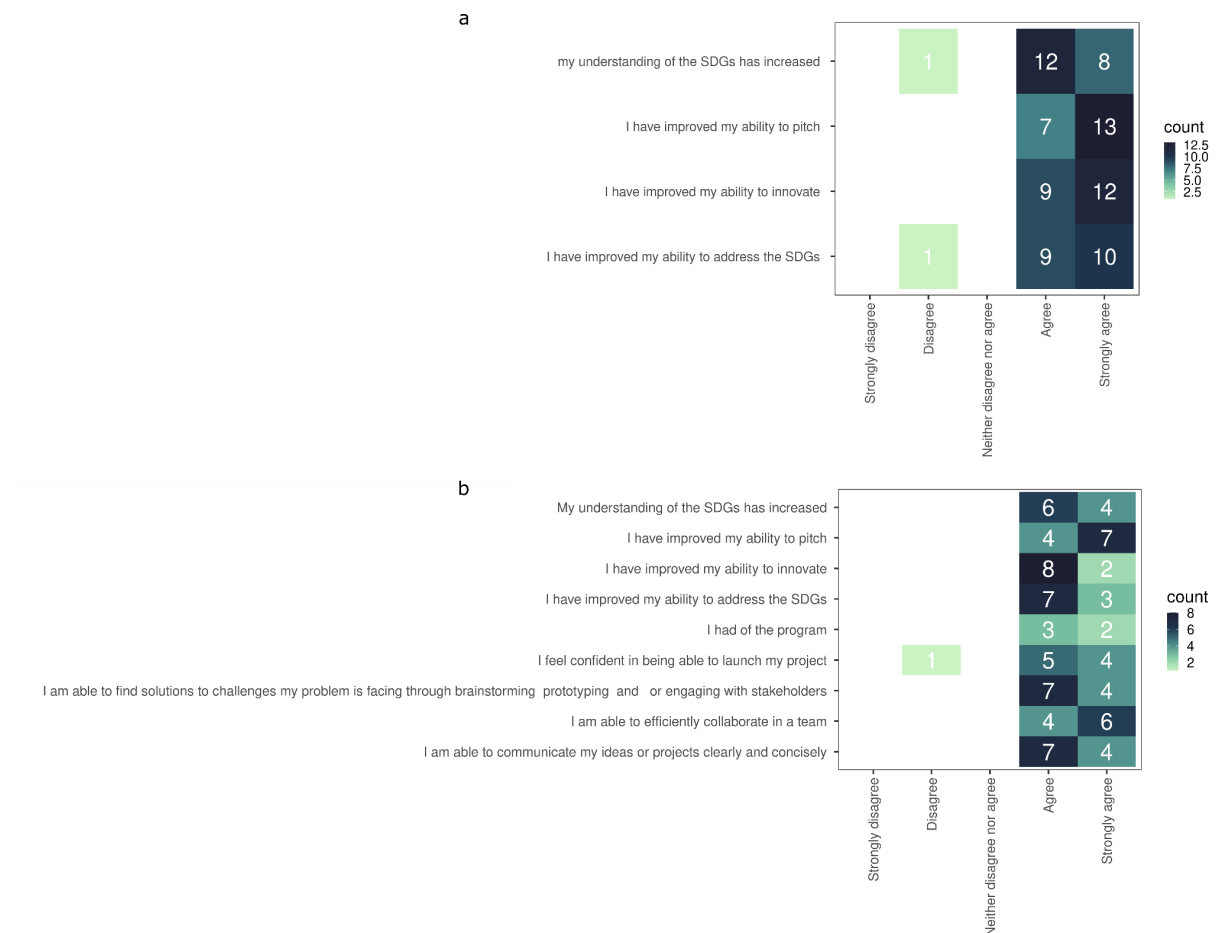


Figure 32. Heatmaps of the learning of participants at the end of a. Evaluate phase, and b. the Accelerate phase.

During both the Evaluate and the Accelerate phases, participants learned about pitching, team work, and tools and technology for citizen science (Table 3.9 and supplementary Table 3). The evaluate phase specifically taught them about Crowdsourcing and SDGs, gender-related issues and innovation whereas the Accelerate phase was specific in teaching them about project management and prototyping. When testing their knowledge related to data produced by citizens before and after each phase observed an increase in the knowledge of participants on the generalities of data production (Figure 39). However, they did not show an evolution in their knowledge related to citizen science generated data. Eleven of the participants had the intention to use the knowledge gained during the GEAR cycle to design their project (See Table 3.10).



In light of the participant's expectations listed in the previous section on motivation, we conclude that both phases succeeded in meeting them.

Table 3.9. Summary of learnings declared by participants during the Evaluate and the Accelerate phases.

Phase	Learning (number of mention)
#Open17ClimateGender challenge	Tools and technologies for citizen science (5) Crowdsourcing and SDGs (4) Pitching (4) Innovation (2) Team work (2) Gender-related issues (1)
CBIW	Project management (4) Pitching (4) Prototyping (2) Team work (2) Tools and technologies for citizen science (2)

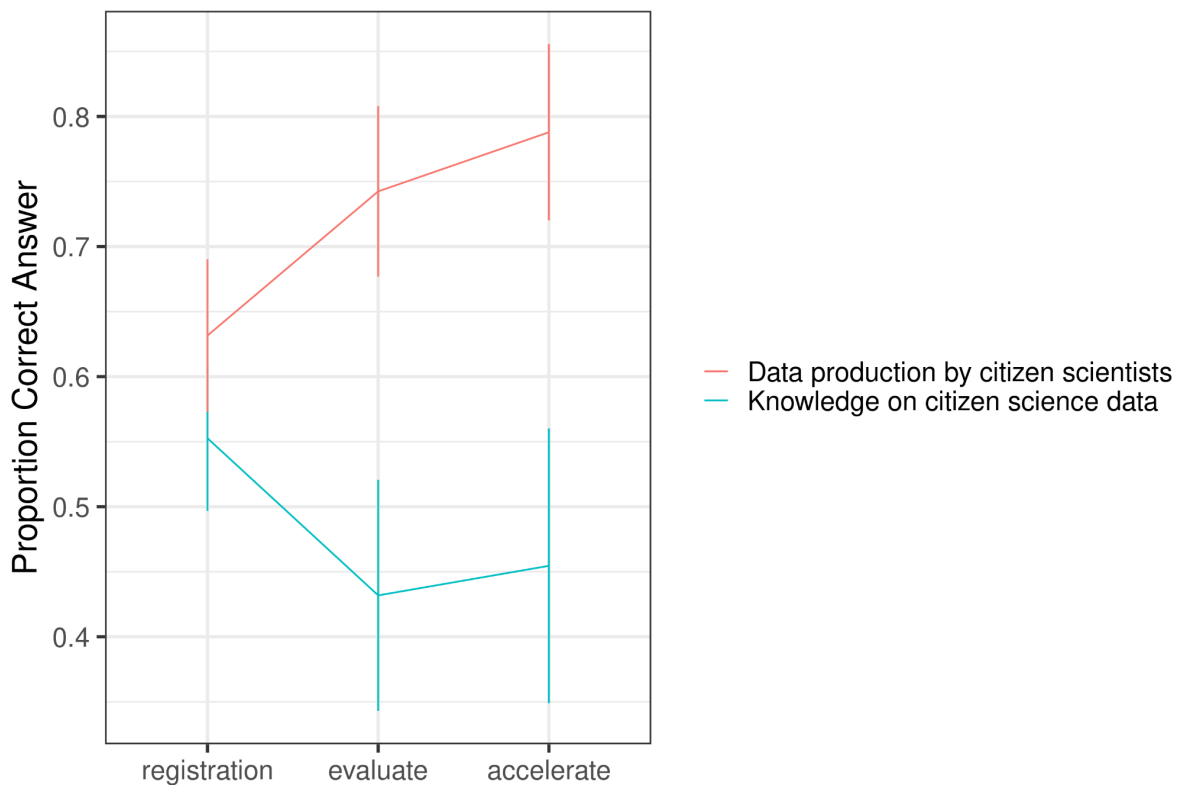


Figure 33. Learning trajectory of participants throughout the different phases.
 Data production by citizen scientists: 3 correct answers out of 4.
 Knowledge on citizen science: 2 correct answers out of 4.

Phase	Intention to use knowledge and skills acquired (number of mention)
After the #Open17ClimateGender challenge	<ul style="list-style-type: none"> • Design of project (11) • Personal use (1) • Dissemination of knowledge (2)

Table 3.10. Summary of the intention of use of the knowledge and skills learned during the Evaluate phase.

3.5.8. Satisfaction of participants

Satisfaction over the Evaluate phase

The satisfaction over the Evaluate phase is unanimous among the participants (Figure 37).



Figure 34. Heatmap of satisfaction of participants related to the Evaluate phase workshops.

Satisfaction over the Accelerate phase

The satisfaction over the Accelerate phase is unanimous among the participants (Figure 35). Overall, at least 90% of the 11 respondents agreed or strongly agreed with each of the items presented below. The stakeholder mapping, the introduction to prototyping, the Q&A on citizen science tools, and the introduction to pitching were on average the most appreciated

workshops by participants (Figure 36). On the other end, the session on data management and the facilitated feedback session were declared on average unhelpful to participants. Less than two out of the 11 respondents found the workshops very unhelpful which drives the average score down (Figure 36).

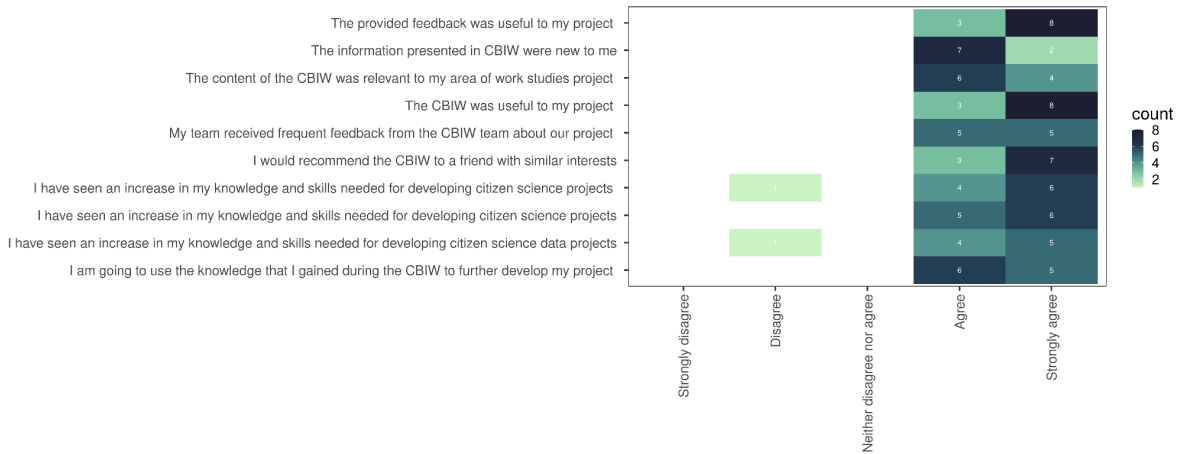


Figure 35. Heatmap of satisfaction of participants related to the Accelerate phase workshops.



Figure 36. Heatmap of satisfaction of participants related to the Accelerate phase workshops.

Feedback of participants on the Evaluate phase and the Accelerate phase



Suggestions for improvement to the Evaluate phase are presented in Table 3.12. They range from community management, internal and external support for what should be added, to the enforcement of tools and parts of the program design for what could be removed, and the teaching methodology as an opportunity for change.

Suggestions for improvement to the Accelerate phase are presented in Table 3.11. They encompass face to face interactions, a need for shorter online sessions, stronger link with stakeholders, integration with students curricula and visibility opportunities.

Phase		Feedback (number of mention)
#Open17Climat eGender challenge	Add to the program	<ul style="list-style-type: none"> ● Internal support (3) ● External support (3) ● Inter-team collaboration (2) ● Communication tools (2) ● Online session flexibility (2)
	Change in the program	<ul style="list-style-type: none"> ● Workshop methodology (3) ● Online session flexibility (1) ● Persona workshop (1) ● Inclusion of people outside Goodwall (1)
	Remove from the program	<ul style="list-style-type: none"> ● Persona workshop (1) ● Goodwall (1) ● Enforcing tools (1)
CBIW	Add to the program	<ul style="list-style-type: none"> ● Face to Face interactions and duration (4) ● Internal support (3) ● External support (1)
	Change in the program	<ul style="list-style-type: none"> ● Nothing (3) ● Long sessions (3) ● Timezone management (2) ● Integration with curriculum (1)
	Remove from the program	<ul style="list-style-type: none"> ● Nothing (4) ● Long sessions (2) ● Connectivity (1)

Table 3.11. Summary of feedback of participants during the Evaluate and Accelerate phase

3.5.9. Moving towards implementation

Roadblocks identified by participants

The main roadblock faced by participants to move towards the implementation of their projects were the network with relevant stakeholders, technical capacities to develop their solutions, and financial resources (Table 3.12). They are described by phase respectively in Supplementary Table 6 and Supplementary Table 7.

Phase	Roadblocks (number of mention)
#Open17ClimateGender challenge	Team capabilities (6) Community building (1)



	Stakeholder engagement (2) Resources (5)
CBIW	Team capabilities (2) Community building (1) Stakeholder engagement (6) Resources (2)

Table 3.12. Summary of the anticipated roadblocks to their project implementation identified by participants during the Evaluate and Accelerate phase.

Current stage of implementation

The Crowd4SDG partners joined forces to provide the right opportunities to projects in order to overcome the roadblocks they were facing, especially regarding the connection with relevant stakeholders and technical support to use the tools.

As a result, “Donate Water” is currently in discussion with Afrilabs - an incubator in Nigeria, the Nigerian National Statistical Offices, Water Organisations such as UNICEF and people belonging to the circle of Rome in Nigeria. They received tailored support from Unitar on data management.

Similarly, we provided “Womer” the stage for an increased visibility to relevant partners at the Geneva Trialogue and following events such as the UN Building Bridges. Financial support from external sources are currently being explored for this team. The University of Paris and the University of Geneva are hosting one of their members as an intern to continue the project.

In addition to tailored support offered to all projects that belong to the Accelerate phase, all projects have access to a pool of resources including documents on quality assurance for data, list of platforms for community building, contacts of relevant partners and list of events they can attend.

4. GEAR cycle 1 vs GEAR cycle 2

At the evaluation of the first GEAR cycle three major issues were identified and reported in D3.3. GEAR Report Cycle1. These three issues were:

- No CS data produced by the GEAR cycle projects that have been generated (so far);
- Limited use of CS tools that the partners presented during the Evaluate phase;
- Moving the Accelerate phase online due to the pandemic resulted in limited data being acquired about user interactions during this workshop.

Following the recommendation from the first GEAR cycle the following actions have been implemented:

- Accelerate phase remains online for the second GEAR cycle, due to pandemic uncertainties. Accelerate phase was divided into 5 weeks, two half days per week, as opposed to a full two week programme as in GEAR cycle 1
- Analytics data from the different tools have been gathered in order to monitor and report the usage of the tools.
- UNITAR has led the creation of the challenges in collaboration with NSO in order to maximize the adoption of the solutions provided by the GEAR participants.
- Communication about the CS tools enhanced within the crowd4SDG project has been carried out at both Evaluate and Accelerate phases. WP2 members have collaborated in coaching and supporting GEAR participants in the usage of the tools.
- New data collection procedures have been implemented, adapted to the covid restrictions (i.e. online Accelerate phase). In this way, the evaluation at the end of Accelerate was both quantitative (through scoring in a survey tool) and qualitative (through discussions) for the GEAR Cycle 2 compared to a primarily quantitative evaluation in GEAR Cycle 1.

In addition at the Evaluate phase a teaming algorithm using AI has been implemented to ease the creation of the teams based on their preferences, skills and personality test.

5. Planned improvements for GEAR Cycle 3

The results of the GEAR Cycle 2 evaluation were presented in an internal workshop organised on the 12th and 13th of May 2022 in Geneva. All crowd4SDG partners attended the workshop and participated at the breakout sessions to discuss and plan the improvements for the GEAR cycle 3. This section summarises major issues found and potential mitigations actions for the next GEAR cycle.

The two major limitations found were found at the first GEAR: (1) the lack of data coming from the CS projects generated over the first GEAR cycle, since even those with potential to generate data are in very early stage of their implementation, and (2) the fact that the the Citizen science tools proposed by the consortium partners were not widely used by the projects developed in the GEAR Cycle. To overcome these limitations, participants have been encouraged to use the tools and to provide solutions which aims at data production. While this have a positive impact in terms of number of projects using our tools, we found this solution Interfer with their project to get what we need. In the GEAR cycle 3 we will balance the trade off between forcing tools and data generation, and let them have more freedom to develop their solutions. In addition, the participation of UNITAR over the different GEAR phases from designing the challenges together with NSOs, coaching on data quality from the NSO perspective, and connecting the projects with NSOs have been very useful for the evolution of the project. In GEAR cycle 3 UNITAR will follow this collaboration within the GEAR phases. As improvement, relevant NSOs or other official statistics producers will be connected to the projects at an earlier stages to help increasing the potential of the teams' work to actually being used in the future by NSOs for monitoring SDGs.

At the Gather phase, the communications activities and the collaboration with Goodwall allowed us to reach a wide number of nationalities and to involve people affected directly by the problems we were addressing in the challenges. However, we think a larger number of submissions could help us to improve the quality of the projects and we would like to increase the number of participants coming from European countries. In the 3rd GEAR cycle communication activities will simplify the language of challenges, and will leverage the many communication tools and channels of Goodwall. The consortium will increase the effort on contacting multiplier organizations and specially within European Networks. In addition the challenges for the GEAR cycle 3 will be defined in collaboration with OHCHR who will have the role of challenge setter.

The GEAR methodology has managed the creation of projects addressing specific SDG topics while involving people affected by the problem. The projects selected for the Refine phase (last phase) generated high traction within the international community and have the potential to be further supported beyond the GEAR innovation cycle. There are two major issues we would like to address for the GEAR cycle 3: (1) the lack of teams engaging with 3rd parties, and (2) the maturity level of the prototypes when finishing the Accelerate phase. The following actions are proposed for the GEAR cycle 3:

1. CS Solution kit tools will be present in advance, thus increasing the time participants have to prototype solutions. Additionally, the use of the tools will be advice but not mandatory thus giving more freedom to the projects to choose the tools better suit their needs.
2. Evaluation of the sessions will be considered in order to enforce those sessions evaluated as very helpful by the participants.
3. Building long-lasting partnerships takes time and elaborating implementation plans as well. For this reason, we anticipate to start the Refine activities earlier (during Accelerate) for the GEAR cycle 3 and work with challenge owners and other partners



to insure venues for integration of the projects into existing initiatives if they are interested in pursuing this road.

6. Collaboration with other WPs

WP3 (project deployment) plays a central role within the crowd4SDG project. In this second GEAR cycle the collaboration with other WPs is described as follows:

- WP2 members have contributed to the different phases of the GEAR cycle by showcasing the tools and coaching participants to use them.
- WP6 led the Gather phase of the second GEAR cycle as part of the Crowd4SDG communication and outreach activities.
- WP4 organized the data collection and the analysis of the different phases of the GEAR methodology.
- WP5 provided coaching and recommendation regarding data quality and connection with NSOs for the projects participating in the GEAR methodology.
- We organized a communications working group, in addition to the strategy communications group in order to better plan the launch of GEAR Cycle 2 and revise the website giving more emphasis on the publications.

We developed a stronger collaboration between Learning Planet Institute (former CRI) and CERN towards the handover from Accelerate to Refine.



7.COVID-19 situation and deviations from Grant Agreement

Due to COVID-19 restrictions some activities in this WP were affected:

- The Accelerate phase was held online over 5-weeks instead of as a two-week in-person event at CERN, as had been planned originally;
- The Refine phase was held hybrid instead of as a one-day in-person event that was to be held originally in Paris for the GEAR cycle 2.

The activities affected by the COVID-19 restrictions were successfully adapted. They did not present any major negative impact on the evolution of the project.

8. Conclusions

Similarly to the first GEAR cycle, the four phases of the second GEAR cycle have been completed successfully. Individual evaluations and participant feedback exceeds initial expectations for this first attempt at combining different innovation programs (Open17 Challenge, CBI Workshop) in a coherent cycle. The deviations from the initial design of the GEAR methodology due to the COVID-19 restrictions have not had a major negative impact on the evolution of the project, although they have resulted in actions such as organising the Accelerate phase online instead of in person at IdeaSquare (CERN) or organising the Refine phase as a hybrid event, which will affect the 3rd GEAR cycle.



Annex 1 : List of abbreviations

Abbreviation	Description
AI	Artificial Intelligence
CBI	Challenge-based Innovation (in-person coaching)
CBix	Challenge-based Innovation (remote location)
CS	Citizen Science
CSSK	Citizen Science Solution Kit
IO	International Organization
GEAR	Gather, Evaluate, Accelerate, Refine
GTI	Geneva Tsinghua Initiative
NSO	National Statistical Office
O17	Open Seventeen Challenge (online coaching)c
SDG	Sustainable Development Goal

Annex 2: Gather phase: Call for Ideas - Leaflets



#Open17ClimateGender

Pitch your idea for tackling climate and gender challenges with crowdsourcing solutions

 **30** Deadline 30 September 2021 midnight CEST

The Challenge

The **#Open17 Challenge** is about tackling the 17 Sustainable Development Goals (SDGs). This year's challenge focuses on SDG 5 (Gender Equality) and SDG 13 (Climate Action). Your challenge is to develop a project that tackles these SDGs using crowdsourcing: information gathered or actions taken by large numbers of ordinary citizens. This project can be at the scale of your community, your region, your country or the entire world.

Pitch your idea

On how to address one of the following specific challenges and you may be selected for online coaching, to develop your idea into an impactful project and prototype.

- 1: Measuring the differentiated impacts of disasters on women and men**
- 2: Assessing women's vulnerability to climate change effects on natural resources**
- 3: Improving data on women's participation in environmental management**
- 4: Measuring the health of ecosystems in a systemic way with women's contribution**
- 5: Open Challenge: crowdsourcing for climate resilience and gender equality**

Brought to you by:

 Crowd4SDG 

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 872944

REGISTER HERE





How it works

The selected 50 applicants amongst the applications received participate in an online coaching programme starting with team formation and lasting 5 weeks at 2hrs/week (20 October-17 November).

Five outstanding teams will be selected by a jury to participate in an online challenge-based innovation workshop, co-organized by CERN IdeaSquare (January 2022, dates to be confirmed). During this workshop, teams will learn how to build a functional prototype for their project and connect with communities and social innovation experts who can help to launch and sustain the project.

The top two teams selected by a jury will be invited to present their projects to potential UN and NGO partner organizations as well as impact investors during the Geneva Trialogue event in Geneva, Switzerland. (March 2022, dates to be confirmed).

Participants who successfully complete the online coaching program will receive a certificate of completion from the UN Institute for Training and Research, and similarly for the online workshop.

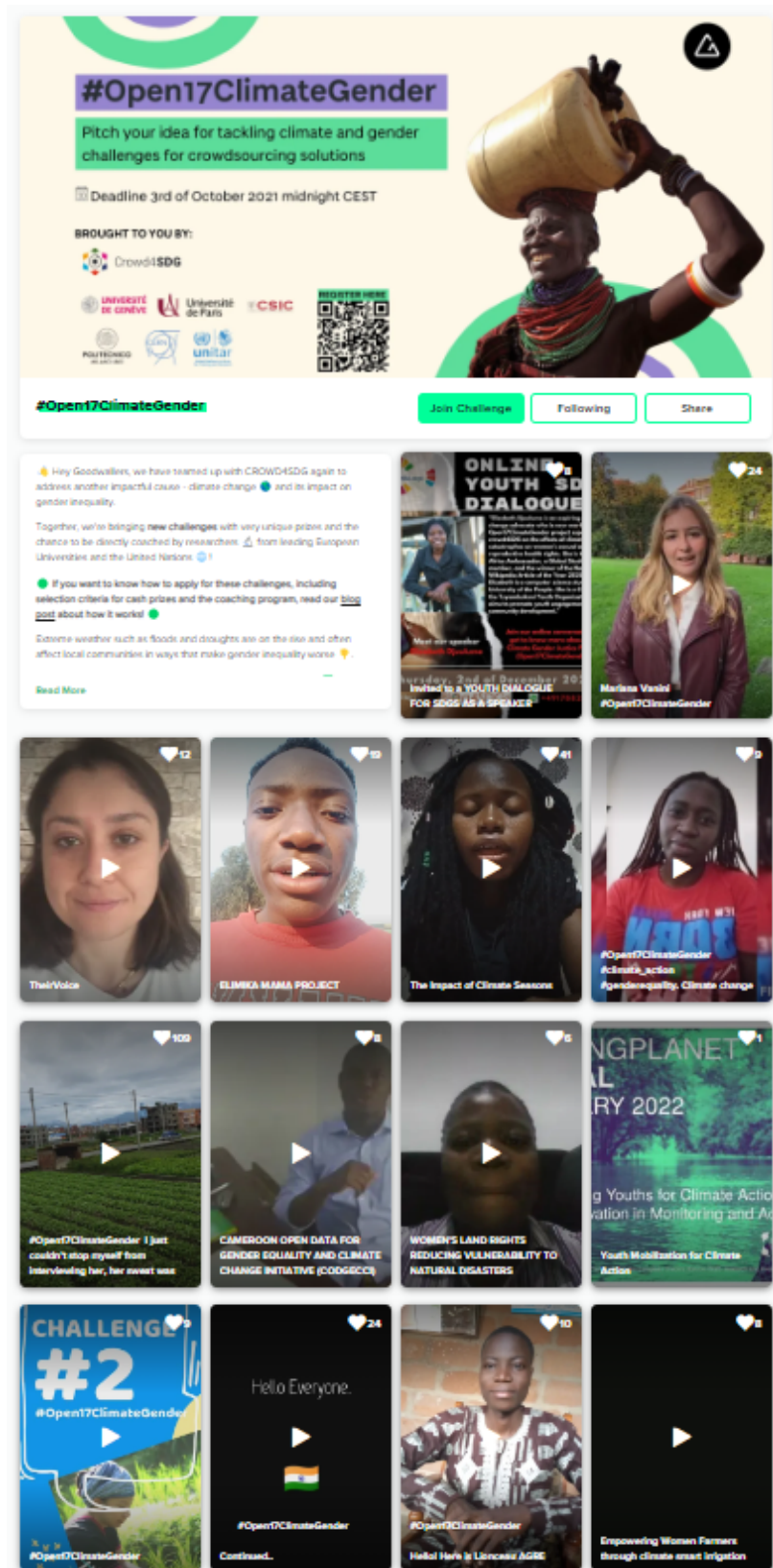
How to apply

The challenge is open to any individual or team of up to four people anywhere in the world. Applicants must be 16 or older. Applications must be in English, and participants should have a good command of written and spoken English. **Application deadline is 30 September, midnight CEST. Apply at [#Open17ClimateGender Challenge page on Goodwall](#).**

Crowd4SDG's partners:



Annex 3: #Open17ClimateGender page on Goodwall with the pitches.



#Open17ClimateGender
Pitch your idea for tackling climate and gender challenges for crowdsourcing solutions

Deadline 3rd of October 2021 midnight CEST

BROUGHT TO YOU BY:
Crowd4SDG
UNIVERSITÉ DE GENÈVE
Université de Paris
CSIC
POLYTECHNIQUE
UNILAR

#Open17ClimateGender Join Challenge Following Share

Hi Goodwallers, we have teamed up with CROWD4SDG again to address another impactful cause - climate change - and its impact on gender inequality.

Together, we're bringing new challenges with very unique prizes and the chance to be directly coached by researchers from leading European Universities and the United Nations.

If you want to know how to apply for these challenges, including selection criteria for cash prizes and the coaching program, read our [post](#) about how it works.

Extreme weather such as floods and droughts are on the rise and often affect local communities in ways that make gender inequality worse.

Read More

ONLINE YOUTH SD DIALOGUE
Thursday, 2nd of December 2021
Invited to a YOUTH DIALOGUE FOR SDG5 & 6 @ 10:00 AM

Marlene Vanted #Open17ClimateGender

ThairVoice

ELIMKA MAMA PROJECT

The Impact of Climate Seasons

#Open17ClimateGender #ClimateAction #GenderEquality, Climate change

#Open17ClimateGender | Just couldn't stop myself from interviewing her, her sweet one

CAMEROON OPEN DATA FOR GENDER EQUALITY AND CLIMATE CHANGE INITIATIVE (CODEGCCI)

WOMEN'S LAND RIGHTS REDUCING VULNERABILITY TO NATURAL DISASTERS

NGPLANET GLOBAL YOUTH FOR CLIMATE ACTION IN MONITORING AND ACTION
Youth Mobilization for Climate Action

CHALLENGE #2 #Open17ClimateGender

Hello Everyone.

#Open17ClimateGender Continued...

#Open17ClimateGender Hallel Hallel in Libreville AGRE

Empowering Women Farmers through climate smart Irrigation

Annex 4: GEAR 2 Evaluate phase (#Open17ClimateGender) - Agenda

WEEK 01	WEEK 02	WEEK 03	WEEK 04	WEEK 05
20 octobre 2021	27 octobre 2021	3 novembre 2021	10 novembre 2021	17 novembre 2021
<i>Welcome session : Introduction to Crowd4SDG and GEAR Cycle (Francois)</i>	<i>Dr Angela Baschier - UNFPA</i>	<i>Einar Bjorgo, UNOSAT - UNITAR</i>	<i>Sara Duerto Vallero , UNWOMEN</i>	<i>Final Pitch</i>
<i>Introducing the themes and the Challenges. (Elena)</i>				
<i>Method: Problem Definition</i>	<i>Method: Theory of Change</i>	<i>Method: Value Proposition</i>	<i>Chiagozie Live from COP26 Summit- Glasgow</i>	
<i>Introduction to Tool: SDG in Progress</i>	<i>CS Logger and CS Project Builder</i>	<i>Visual Cit</i>	<i>Decidim4CS</i>	
<i>Round table for Participant / Team Introduction. Pitches & Team formation. Orientation for Open17</i>	<i>Student Pitches in breakout rooms</i>	<i>Student Pitches in breakout rooms</i>	<i>Student Pitches in breakout rooms</i>	
<i>Project Canvas to be filled by team</i>				
<i>Creating the Project Canvas Inn progress.</i>				

Annex 5: #Open17ClimateGender Project Canvas Template

Open17 Climate Gender Challenge

TEAM Name

UNDERSTAND AND OBSERVE	POINT OF VIEW	IDEATE
<p>The problem I am tackling is ... What is the need?</p>	<p>The problem can be improved by... What is The Big Idea? What is the value proposition?</p>	<p>The way it will work is... What is the user experience?</p>
<p>The people most impacted by this problem are... Who is harmed?</p>	<p>This approach will have an impact because... What is the mechanism of beneficial change?</p>	<p>To make this happen, these changes need to occur... Who has to do what to make it happen?</p>
<p>I believe the major causes of this problem are... What are the causes of the problem?</p>	<p>The impact will be measurable because... Key metrics?</p>	<p>To undertake my big idea, I could work with... Key partners to execute? Key partners to help others evaluate your value proposition?</p>
<p>I believe this because... What is the evidence? Who can you interview? What experiment can you run?</p>	<p>Those with the greatest interest in change are... Who is most likely to be supportive?</p>	<p>The reason to do this now is... What are the precipitating events?</p>
	<p>Those most opposed to change are... Key foes? Who is most likely to be opposed?</p>	<p>Others working in this space include... Who else is in the field?</p>
		<p>My approach is better because... What's wrong? Missing? Not working?</p>
		<p>Key resources (besides financial ones) I will need to be successful... Physical, human and intellectual resources?</p>
<p>NEXT STEPS Strategy? How might this go wrong? How will I promote adoption?</p>		



Annex 6: One-pagers of the Accelerate phase teams and projects

Crowd4SDG

A two-parts project: one consisting in an ecological sidewalk and the other, in a mapping area software.

Objective of the project

The objectives of the project are: to abolish environmental and social issues related to current sidewalks (flood, heat, lack of accessibility and violence against women), to accomplish the 2030 Agenda by pressing physical improvement in current sidewalks with the collected data and to create a more walking society.

Problem addressed

Sidewalks are an essential part of urban cities' mobility, or at least it should be. According to the Brazilian Statistics Institute, there are 4 citizens for each car in Brazil, which expresses the lack of encouragement to walk on the streets. That is, current pavements are commonly forgotten factors of high rates of flood, heat and lack of accessibility, promoted by their low quality. Additionally, sidewalks are areas of violence against women, issue that also need data collection. This illustrates the necessity of mapping current sidewalks to replace and/or improve these infrastructures to approach the SDGs 5, 11, 13.

Solution proposed

We propose a model of ecological sidewalk produced with less amount of cement, which is substituted by scrap tire and sisal (two recycled and durable materials, that also increases the porosity). Besides that, we prototyped a mapping software to assist the community by tracing the best route for the user to walk to their destination, avoiding the obstacle selected by them, which improves the quality of life of people with disabilities, elderly and women, since they can feel safer in the streets. Furthermore, women can see, in the software, where is the most dangerous area to walk alone, since they are commonly susceptible to the issues tackled. These two-parts are fully independent, but we plan, in the future, to demand sidewalk changes/improvements from authorities (i.e. replacing them with our ecological one).

Expected impacts

With a future partnership with a gps app, we intend to show the safest routes for the citizens, mainly for our target audience (people with disabilities, women and the elderly). Besides that, our program will be able to show the authorities precarious sidewalks or even the areas without them so that we can press the government to change this scenario and increase our Ecological Sidewalk as well.

Current state of development and What is the project looking for?

About the physical part of our project, we already developed the sidewalk and it is being used in a part our previous school. About the software, we made a prototype of it with and, without the expected partnership with a GPS app, we created a project in CS Project Builder with questions in portuguese (since our first target audience are brazilians) about the accessibility of some sidewalks from Brazil, but it is still in the test phase because we didn't send it to get the approval of the plataform.

Contacts

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Measuring the impact of climate change on women's sexual and reproductive health and rights.



Objective of the project

The overall objective of the project is to influence policymakers to include sexual and reproductive health and rights issues in the disaster preparedness plan to reduce the negative impact of climate change on women's health.

Problem addressed

During extreme weather events, people take shelter in their local cyclone center. In the cyclone center, men and women need to stay in the same room and use the same toilets, which leads to sexual harassment, including rape. Sometimes women die during delivery at the cyclone center due to the lack of health service providers and emergency transport. The policymakers overlook these issues while preparing a disaster preparedness plan due to a lack of data and evidence. This project will generate evidence by gathering data related to climate change's impact on women's SRHR.

Solution proposed

The project will develop a customized app in the mind blogger for data collection, and volunteers will use the app for data collection. Volunteers will be the female members of the community who are experiencing women's health problems at the cyclone center. We will train volunteers who will take pictures through CS loggers. After collecting data, we will upload them to the citizen science project builder. We will create a project in citizen science project builder and invite citizens to help us identify the images by answering some questions regarding the images. We will analyze the data after getting responses from 600 citizens and generate a report. This report will represent the impact of climate change on women's SRHR. The project will organize dissemination with policymakers at the local and central levels and advocate to include SRHR in the disaster preparedness plan.

Expected impacts

Data related to climate change impact will be available and accessible to everyone. The policymakers will understand the negative consequence of extreme weather events on women SRHR and prioritize it while preparing the disaster preparedness plan. It will ultimately help overall improvement in women's SRHR during extreme weather events like cyclones and floods and reduce maternal mortality & morbidity of the country.

Current state of development and What is the project looking for?

We have developed a test app in the mind blogger applet. We have interviewed five volunteers and showed them the test app. We have invited two volunteers to use the app for capturing pictures, and among them, one did the activities successfully. We have exported the data from mind blogger but failed to upload it in the project builder due to some technical issues. We have communicated with Rosy (tool owner) and sent them the exported file. We have created a project in the citizen science project builder and developed sample questions for citizens and shared with them.

Contacts

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Assessing Women's Vulnerability During Drought Caused By Climate Change, Which Affect Natural Resources (water)



Objective of the project

DonateWater project aimed at providing potable water all year round for target rural communities in Nigeria faced with the challenge of accessing potable water.



Problem addressed

According to a survey by Federal office of statistics Nigeria 61% of rural dwellers do not have access to potable water. Over 70% of households in rural communities rely solely on self-water supply (free source) such as rivers, perennial streams, water ponds and unprotected wells which are not clean and are dried up during dry seasons. Women and children suffer the most effect due to socio-cultural settings and norms. These women are forced to rise up early every day, going in search of water, they sometimes walk several miles to locate a natural source of water. At the same time they are exposed to other risks of molestation, kidnappings, ethnic and territorial frictions. Most of the time they are forced to dig the rivers just to get some water not minding if it's clean or not. And these has exposed the people to water-borne diseases. Children go late to school or miss classes because they also assist their mothers in fetching water. There are existing water facilities in some of these rural communities that are broken and abandoned, and the people still had to go back to fetching water from local source.



Solution proposed

We are proposing a simple climate-responsive solution to combat the identified problem; Solar Powered Pumps. This solution is cost effective, easy to install and maintain, and it will make water available all year round especially during the dry seasons. We will also be able to convert some of the broken hand-pumps into solar powered pumps. The facilities will have sensors which will detect fault and alert stakeholders.



Expected impacts

The impact will be felt mostly on women and children because they will no longer travel far in search of water which will reduce their vulnerability to danger, children will not miss classes or will go to school early, agricultural activities will improve, the people will not be exposed to water-borne diseases.



Current state of development and What is the project looking for?

We are in the data collection phase of the project. We have set up our project on the Citizen Science project builder and about to publish. We have also begun social media campaign, creating awareness and seeking for volunteers to participate with our project on the CS project builder. We have also spoken with potential partners from India and a few have agreed to work with us.

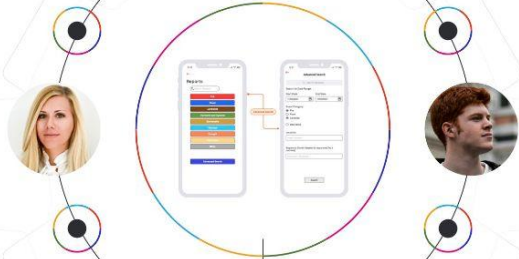
Contacts

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Our project idea is to keep a diary of the resolution measures applied after disastrous events caused by climate changes have occurred.



Objective of the project

This project focuses on a complete overview on emergencies type, classifying over their category. It aims at supporting people worldwide, considering the specific area and territory, helping people in analogous situations.

Problem addressed

Data related to the management of emergency areas after damaging events to the environment have occurred are often vast and confusing. Gender issues and climate issues are not properly considered. This is a problem because data is often confusionary and not ordered on the web. There is not an organized classification of emergencies and the solutions adopted to solve them. There is a need to improve the data collection, analysis and access on climate actions of indigenous women to provide solid evidence to advocate in their communities, governments and at the international level.

Solution proposed

Our project idea is to keep a diary of the resolution measures applied after disastrous events caused by climate changes have occurred. In the application, individuals, companies and climate organizations can register and report the event that has occurred, together with the decisive interventions aimed at facing the emergency. The application will generate a global mapping, characterizing areas with the corresponding events and the measures implemented for resolution, prevention and maintenance. The mapping would be useful to characterize the area. Furthermore, stats considering women's point of view will be developed. They will be surveyed to determine the most appropriate resolute measures they would adopt, the interventions to improve their condition and that of their family and social nucleus. When the application identifies a new emergency type and a specific issue, it exploits crowd sourcing through VisualCit and Project Builder tools for crowd sourcing. In particular, it picks up the images related to emergencies by filtering them (this is particularly effective considering floods), then it proposes the images through the crowd of registered people to the application to ask them for classification and identification.

Expected impacts

Everybody is impacted by disasters (e.g. fires, floods, hail, hurricanes, landslides, earthquakes and tsunamis). Women are the category that is often most negatively impacted. Their presence in coordination roles is lower than male presence (they represent less than 20% on boards of directors), so their needs in cases of climate disasters are often not properly considered. A female view of a climate problem would lead to more favorable measures for gender equality.

Current state of development and What is the project looking for?

Development of the prototype for the web and mobile application.
Data Base for storage has been defined.

Contacts

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Website : <https://github.com/AngelicaSofia/PolI4SDG>



Annex 7: Certificate issued for the completion of Evaluate phase



CERTIFICATE of PARTICIPATION

We are hereby pleased to confirm that

Participant Name

Successfully participated in the 2021
Open Seventeen Autumn Challenge on

Climate Resilience and Gender

20 October – 17 November 2021

François Grey

Director, Geneva Tsinghua Initiative
Coordinator, Crowd4SDG Project
University of Geneva



 The Crowd4SDG Project is co-funded by the European Commission - Horizon 2020 Programme Grant Agreement No 872944.



Annex 8: Surveys and forms

- 1) [Registration Form](#)
- 2) Evaluate weekly 1, 2, 3 and Accelerate

Which task(s) did you perform since the previous block?

- Brainstorming / ideation
- Planning tasks
- Developing protocols / methods
- Reading papers / documents
- Attending meetups with other teams
- Collaborating with other teams
- Interpreting results
- Preparing other documents/materials to share outside the team
- Preparing graphics / videos
- Writing / preparing a pitch
- Project administration
- Software development
- Hardware development
- Data analysis / modeling / visualization
- Meeting with people affected by the problem you are trying to solve
- Meeting with actors of the field of your solution
- Team Building activities
- Documentation of your project
- Use of CS project builder
- Use of CS logger
- Use of Decidim
- Use of Visual Cit
- Use of SDG in progress

0%

[Back](#) [Next](#)

Who did you work with since the previous block?

Select collaborators within your team or from other teams. You may need to scroll down to see all of them.

Participants



Who did you seek advice from during the previous block?

Select the persons by name from the list below. You may need to scroll down to see all of them.

Search the participants

Participants

How helpful did you find the session on [Name of the session]?

- Did not attend & did not watch the Zoom recording
- Very unhelpful
- Unhelpful
- Neither unhelpful nor helpful
- Helpful
- Very helpful



Back

Next

What went especially well, or what could have gone better and how? Any other comments welcome too.

Text input area for comments.



Back

Next

3) [Final form - Evaluate](#)

4) Accelerate initial Form and bloc 1

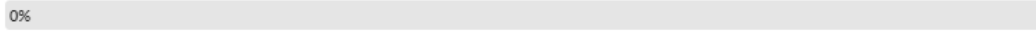


Teamwork / collaboration

I am able to efficiently collaborate in a team.

Please rate accordingly.

- Strongly disagree
- Disagree
- Neither disagree or agree
- Agree
- Strongly agree



Back

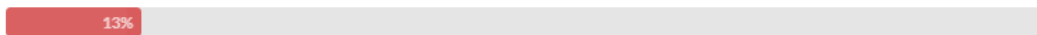
Next

Communication

I am able to communicate my ideas or projects clearly and concisely.

Please rate accordingly.

- Strongly disagree
- Disagree
- Neither disagree or agree
- Agree
- Strongly agree



Back

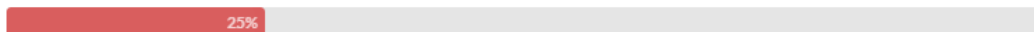
Next

Problem solving

I am able to find solutions to challenges my problem is facing through brainstorming, prototyping, and / or engaging with stakeholders.

Please rate accordingly.

- Strongly disagree
- Disagree
- Neither disagree or agree
- Agree
- Strongly agree



Back

Next



Leadership / self-confidence
I feel confident in being able to launch my project.
Please rate accordingly.

- Strongly disagree
- Disagree
- Neither disagree or agree
- Agree
- Strongly agree

38%

Back Next

How helpful did you find the session on [Name of the session]?

- Did not attend & did not watch the Zoom recording
- Very unhelpful
- Unhelpful
- Neither unhelpful nor helpful
- Helpful
- Very helpful

38%

Back Next

What went especially well, or what could have gone better and how? Any other comments welcome too.

88%

Back Next

5) [Accelerate Final Form](#)

Annex 9: Supplementary tables and figures

Supplementary table 1. Description of previous projects carried out by participants (n=10) before the GEAR 2.

Team name	Type of data	Project description	Contribution to SDGs	Project impact
T9: DonateWater	Data on plastic pollution in Dar es salaam, Tanzania.	Environmental education project, where i used to raise awareness about waste management, biodiversity conservation and behavior change for climate action	It awakens people to live in harmony with nature and take action immediately for climate change.	People change their mindset and behavior and use the opportunities found in nature for example recycling of the waste material into raw materials
T9: DonateWater		The female and more project. This community development project was focused at helping young teenage girls of secondary school age build healthy self esteem through series of activities. This program also focused on providing useful resources and tools for young girls seeking to take up careers in STEM fields in the future.	As a result of this programs, young females were provided with useful tools which improved the quality of education as well as support to help them overcome gender barriers.	The Female and more Handbook was a product that was birth in the course of this project. The long term impact of this project is that, young girls within communities were the project was implemented are more willing and confident to step into STEM fields without a feeling of self insufficiency and are ready to defy odds to achieve their STEM dreams
T9: DonateWater		Environmental check, by sensitizing the community to keep their environment clean and healthy. I also participated in AIESEC virtual workshop on SDG 4	It provides an idea on how to save the climate.	
T7: UpGet app - CitiCERN Project	Recycling	A mobile platform to incentivize people for contributing to science.	Enhancing citizen participation for building smarter cities.	
T5: WOMER		The project's aim was to reduce the damage that could be caused as a result of flooding by digging wells to receive the water where it is being	The project aim was on Climate action but did not scale through after evaluation.	



		electrolysed into its component gasses		
T5: WOMER	Mapping areas using OpenGis	Increase the social and economic inclusion of smallholder farmers and indigenous communities. Include 4 areas: i) Livelihoods, sustainable production and markets, ii) Nutritional and food security, iii) Social capital and women empowerment, iv) Life planning	Increase livelihoods through the creation of local markets and fair value chains, workshops of women empowerment and conservation practices of production	creation of economic opportunities in rural areas and indigenous territories Creation of 7 local markets, and the implementation of the policy advocacy strategy in family farming at local and national governments
T3: TEAM FOILED		An app that helps prevent the effect of oil spillages by warning the community and helping prevent the creation of oil stations. Also to help the situation of women in those places as they are the main victims of these disasters	Helping to improve the effects of climate changes (oil Spillage) on women.	It will benefit the agriculture in those places, therefore it will improve the economy
T2: Flood Rangers	Health	Educating locals and Students about the sustainable development goals and how to breach the gender gap between males and females.		
T14: Eco Winners			Waste Management	Eradicated over 20tons of plastic waste from the environment. Creating bricks with waste plastic in the environment
T14: Eco Winners		The project is focused on environmental advocacy and education across communities in Nigeria. Since inception, we have sensitized over 7000 youths on the dangers of climate change and the need to take urgent individual steps to tackle the climate crisis. This enterprise has stirred up a recycling culture in youths in Nigeria	The recycling nature of the project is contributing to the cleanliness and safety of the climate, thereby attaining sustainable living for living organisms both on land and below water.	The project offered environmental education services , tailored towards imbibing a recycling culture in youths.



		and since inception, we have recycled over tonnes of plastic waste in our immediate environment.		
T14: Eco Winners		ECO-BAG is a social enterprise that creates energy retention bags aimed at solving the problem of inconsistent power supply encountered by businesses and individuals in Nigeria. ECO-BAG 1 goes beyond energy conservation, the project seeks to empower disadvantaged groups that require financial support towards satisfying the basic human needs. ECO-BAG is borne out of a commitment to sustainability. Actively participating in our communities and integrating sustainable business practices to provide decent work and tackle environmental menaces	Partnership, Reduced inequalities as beneficiaries were women in rural areas in africa	
T13: Andapé Institute		I am a volunteer at a NGO that deals with the 17 goals by organizing educational activities and activism works.	We have done workshops, online and in-person activism and this organization is one of the coworkers of brazilian SDGs report (Relatorio Luz)	Bills, community projects.
T13: Andapé Institute	Climate change (research about sidewalks)	A sustainable sidewalk is more permeable to improve the quality of life of people.	A sidewalk is an important part of the cities infrastructure and it is going to be sustainable and permeable.	



<p>T12: Women 4 Sustainable World</p>		<p>In African French speaking countries and in Benin, general education offers obsolete training that is completely at odds with the job market. Also in 2050, the African population will increase from one billion inhabitants today to nearly 2.4 billion where half will be under 25 years old, which raises the urgent question of the capacity of its economy to create ingenious and sustainable solutions to meet the needs of its population while effectively responding to the challenge of climate change. “Youth For Safe Earth” was born to meet these challenges. “Youth For Safe Earth” trains secondary school learners in coding through Gamification to prototype video games which aims to provide virtual solutions to climate-related issues that their community faces. At the end of this training we design an ultra-ecological and educational video game that will impact their life in order to become a committed activist for the climate cause.</p>	<p>Through Youth For Safe Earth, we are building the next generation of people who care and protect the environment .</p>	<p>At the social level For a first edition, we plan to cover 5 large municipalities in 05 different departments of Benin. Knowing that a general education college has an average of 3,000 students, we will train 100 students per college after having submitted them to a test. 500 college students will be introduced to the use of the computer tool, computer programming and the handling of our platform in order to prototype virtual solutions for the climate problems of their community. In 2023 cover the extent of the territory by setting up in the 12 departments of Benin with 1,200 students trained per year. In 2026; cover the entire ECOWAS region with 24,000 children trained per year. At the environmental level The adoption of our ultra-eco-educational mobile video game will have a lifelong impact on the behavior of our customers to become defenders of the environmental cause through actions that are reflected in their daily lives.</p>
<p>T11: Rights of Climate</p>	<p>Open17 previous challenges</p>	<p>Climate action with Medicinal plants, Smart Mask project, Seamless water usage, need for climate education etc</p>		



<p>T11: Rights of Climate</p>	<p>Qualitative and quantitative data on climate change, social economic, environmental, water and sanitation, population census.</p>	<p>Water and Sanitation project.</p>	<p>Increased availability of water in the face of drought and floods.</p>	<p>Access to clean water. Water supply, and sanitation services</p>
<p>T1: SDesiGn (Old name: Rhythm of Bamboos)</p>		<p>After 20 days onsite implementation with local villagers this summer, we built a green community center with bamboo in Yangzhou rural village in China. We launched this project as a response to the climate change, gender inequality and education inequality situations in China.</p>	<p>experimenting a community prototype to increase gender equality in rural areas in underdeveloped countries</p>	<p>Build a sustainable community in rural areas. a green community center with bamboos</p>
<p>T1: SDesiGn (Old name: Rhythm of Bamboos)</p>	<p>AutSPACES</p>	<p>We built a community center with bamboo for women and children in one rural village in China.</p>	<p>The projects used green materials and solar energy for building construction and specifically for women and children.</p>	<p>The community center exists in the village permanently and people there can use it. We built this center in August.</p>

Supplementary Table 2. Motivation of participants during the Evaluate and Accelerate phase of the GEAR cycle 2

Motivation of participants to join the #Open17ClimateGender challenge	
Theme	Quote
Addressing a problem	<ul style="list-style-type: none"> • To bring up my idea that can save the climate and reduce gender-based violence resulting from the effects of climate change. • I participated in the challenge because I wanted to test my talents in a field in which I had no interest, but I soon realized that we are all accountable for addressing climate change. This occurred because I was raised to believe that issues such as climate change were the responsibility of the government, but that changed when I began reading more about it. I realized that I was not the only one who underestimated the severity of climate change, but that the majority of my community did as well, despite being affected by it practically every year. Women and children are the most vulnerable, which is why I took part. • To bring the women suffering on focus during any disaster, especially at shelter center during any natural disaster. Recently, I was working on a research project in the southern part of Bangladesh. Most women mentioned that their sexual and reproductive health issues are always overlooked during disaster preparedness. So, I decided to bring this issue on focus and crowdsource funds to address this issue during disaster preparedness following a human-centered approach. • I think it is a great project which would be able to help both women and our planet • I decided to participate the #Open17ClimateGender challenge because my idea deals with climate change and gender equality regarding to the challenge specified in #Open17ClimateGender challenge. • To evaluate the impact of Climate change on the female gender and how those impact could be managed • To share my knowledge about the climate change issues faced by my community, to find better ways of overcoming such issues and to get help from experts. • My country is really backward in this two arguments (Gender gap & Climate problems) so I want to do something to help the progress
Bringing their idea to life	<ul style="list-style-type: none"> • I want to be able to develop my little big idea to help save the world and humanity at large. • I wanted to share my project idea and to get coaching and support on how to bring it to life. • To present the work and ideas of my team • I have an idea that I wish it could be tested and be implemented in Malawi, Africa and the world at large. I saw this as an opportunity to share the idea for it to be recognized and put into use.



<p>Developing existing projects</p>	<ul style="list-style-type: none"> • Participating in #Open17ClimateGender Challenge is for me an opportunity to make my solutions known to a large audience in order to be able to gain their support for technical contributions to better refine my project, or for financial support or agreements of partnerships to be able to establish my project for the benefit of the target population. (Women 4 Sustainable World) • Overtime, I have come to realize that combating the worst effects of climate change will require urgent action, informed by a clear understanding of where we are now and where we might go if nothing is done about the climate crisis. This motivated me to start my climate enterprise, which is focused on environmental advocacy and education across communities in Nigeria. Since inception, we have sensitized over 7000 youths on the dangers of climate change and the need to take urgent individual steps to tackle the climate crisis. My desire to see a clean and sustainable environment also motivated me to be a part of the Eco Winners Project. The knowledge, experience and exposure I stand to gain from #Open17ClimateGender challenge will enable me multiply the impact of my green enterprise in our target communities and scale up the other environmental literacy initiatives I am engaged in. (EcoWinners) • I think #Open17ClimateGender coaching program will be a great opportunity to connect with people from other countries and develop my project while learning about crowdsourcing and hearing about SDGS. (Andapé Institute) • I already have a community project in gender equality and climate change and the #Open17 Challenge perfectly provides what I need to further build on the project. (SDesiGn (Old name: Rhythm of Bamboos))
<p>Access to coaching</p>	<ul style="list-style-type: none"> • I wanted to share my project idea and to get coaching and support on how to bring it to life. • I participated in the #OpenClimate Gender challenge as a way of presenting my solutions to climate-gender issues and to also avail myself of the many opportunities that comes with participating in the challenge such gaining access to free coaching sessions. • To share my knowledge about the climate change issues faced by my community, to find better ways of overcoming such issues and to get help from experts.
<p>Financial support</p>	<ul style="list-style-type: none"> • I was looking for events related with Citizen Science and Climate, because my team need financial/coaching support.
<p>Technical support</p>	<ul style="list-style-type: none"> • I want to learn more about this kind events, I want to make an app with my coworkers "CitiCERN" about citizen science.



<p>Networking and visibility</p>	<ul style="list-style-type: none"> ● Because it offers the opportunity of collaborating with important institutions ● Because I think that it's a great opportunity to communicate with people from all the world and to give my contribute in order to try to reduce climate change ● Because I'm really interested in climate change, and a women rights activist so it was a perfect fit. Also my dream is to work in the EU so I was really passionate about this.
<p>Gain knowledge</p>	<ul style="list-style-type: none"> ● I find it interesting as it faces 2 of the main problems of our society. Furthermore, it will help me improve my English ● I decided to participate in the challenge so as to develop my knowledge in research and make an impact in my community with my pitch. ● I believe that an opportunity to learn and develop knowledge and skills, from such a reputable platform, is one to embrace with all readiness, hence my application to be a part of this program. ● Because I really enjoyed the idea of the challenge and I want to learn more about many subjects, so I think the coaching is going to be an awesome opportunity to do it. Besides that, as a woman, I believe that it is really important to think about how we are impacted and how to reduce the problems that we have daily. ● In order to boost up my confidence and learn more new things
<p>General interest for the topic</p>	<ul style="list-style-type: none"> ● Match my interests: climate change, women empowerment, local knowledge and technologies ● Because I found it a wonderful experience to get involved and find solutions for the future. I also think that the issue of climate change is crucial and it's necessary to solve this problem as soon as possible. ● I decided to participate to this project because it treated climate change ● because it was a wonderful occasion, in which I could not not participate an occasion in which to show off one's qualities, in order to create a better future ● Because I'm really interested in climate change, and a women rights activist so it was a perfect fit. Also my dream is to work in the EU so I was really passionate about this. ● I love addressing problems relating to SDGs because I know I am contributing to improving the world at large. I decided to join the challenge after i saw it on Goodwall and it was a wonderful way to build on productive ideas ● I decided to participate in the OPEN17CLIMATEGENDER challenge because I have an interest in climate and technology and proffering sustainable solutions to global problems. I am committed to creating impact using the positive power of technology and climate change is a major area for me to make that change ● I decided to participate in this challenge, because I'm very keen on climate issues and gender equality topics. I believe that such a



	<p>challenge can underline the great impact of technology in people's life, since climate changes and gender rights are a central part in which today society must invest.</p> <ul style="list-style-type: none"> • It seemed interesting • I wanted to give it a try. I wanted to embrace my fears and then let it go. I wanted to know if I can be of help to people through this. I wanted to know if my ideas stood a chance and I am glad that it did. And well , the cash prize of course. I did not get it tho but I am glad to have this opportunity. • Because I'm a climate activist and love to work out something for the planet. It may be small but want to contribute something. • Sustainable Development Goals are also the goal of my project.
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What skills or knowledge, or experience did you expect to get from the CBIW?

Theme	Quote (Team name)
Computer science	<ul style="list-style-type: none"> • Computer science skills (T10: Water Warriors)
Data science	<ul style="list-style-type: none"> • Data management, CS tools knowledge, pitching, prototyping. (T13: Andapé Institute) • I expected to get skills related to pitching and to managing data and prototype - I got it. (T13: Andapé Institute)
Citizen science tools	<ul style="list-style-type: none"> • Data management, CS tools knowledge, pitching, prototyping. (T13: Andapé Institute) • I expected that I would get better in pitching, that our project would improve a lot and that I would learn how to use the tools correctly (T13: Andapé Institute) • developing project involving multiple stakeholders, the way to present project in front of people, prototyping and technical knowledge about citizen science tools (T8: Climate Gender Justice)
Pitching	<ul style="list-style-type: none"> • Data management, CS tools knowledge, pitching, prototyping. (T13: Andapé Institute) • I expected that I would get better in pitching, that our project would improve a lot and that I would learn how to use the tools correctly (T13: Andapé Institute) • I expected to get skills related to pitching and to managing data and prototype - I got it. (T13: Andapé Institute)
Prototyping	<ul style="list-style-type: none"> • I have learn that the simplest way to build something is to prototype (T5: WOMER) • developing project involving multiple stakeholders, the way to present project in front of people, prototyping and technical knowledge about citizen science tools (T8: Climate Gender Justice) • I expected to get skills related to pitching and to managing data and prototype - I got it. (T13: Andapé Institute)

Project management	<ul style="list-style-type: none"> • agile methodologies (T5: WOMER) • developing project involving multiple stakeholders, the way to present project in front of people, prototyping and technical knowledge about citizen science tools (T8: Climate Gender Justice)
Other	<ul style="list-style-type: none"> • I think I learned and gained much knowledge which is more than what I expected. (T8: Climate Gender Justice)

Supplementary Table 3. Learnings of participants during the Evaluate phase and the Accelerate phase

What did you personally achieve or learn through #Open17ClimateGender?	
Theme	Quote
Crowdsourcing and SDGs	<ul style="list-style-type: none"> • I learnt more about crowdsourcing and SDGs, I also learnt to build rapidly, meet deadlines and work with a team • Find the way to apply data science methods and find tools designed by data scientist that are addressing social needs • To apply Citizen science in a project, Acknowledge crowdfunding tools, Learn from other insightful project, Pitching in very common but perfect one. • Learnt about the importance of crowdsourcing and how to pitch.
Gender-related issues	<ul style="list-style-type: none"> • I've learned a lot! mainly gender equality awareness and about how can we use technology and science for the needs of vulnerable sectors due climate change.
Innovation	<ul style="list-style-type: none"> • I had great feedback in terms of innovations and possibility to develop new ideas • Way of thinking about how to deepen my project
Pitching	<ul style="list-style-type: none"> • I have learnt new tools to enable me bring my project to live. As a results of this program, I have been able to learn better ways of pitching. I have learnt better ways to work as a team • Learnt about the importance of crowdsourcing and how to pitch. • Confidence • Pitching, Citizen Science tools, team building and interacting with other people across the global
Team work	<ul style="list-style-type: none"> • Learnt to collaborate in a project carryout research I learnt about new technologies such as Crowdsourcing tools, crowdfunding etc • Pitching, Citizen Science tools, team building and interacting with other people across the global
Tools and technologies for citizen science	<ul style="list-style-type: none"> • Throughout this program, I learned the crowdsourcing tools, the new technologies adopted to solve the problems of SDGs such as satellite image processing to prevent disasters and its use in agriculture, also the employment of IoT devices. It must be said that this program with the help of coaches and mentors to circumscribe my initial ideas and have a clear project.



	<ul style="list-style-type: none"> • I have learnt new tools to enable me bring my project to live. As a results of this program, I have been able to learn better ways of pitching. I have learnt better ways to work as a team • crowdsourcing tools for data collection • Ways to collect data • Learnt to collaborate in a project carryout research I learnt about new technologies such as Crowdsourcing tools, crowdfunding etc
What did you personally achieve or learn through CBIW?	
Theme	Quote
Project management	<ul style="list-style-type: none"> • Time commitment; english skills (speaking); prototyping; pitching. • I learnt a lot about my own project, we thought that we had everything under control, but during the sessions we had to make a lot of changes and I learnt how to pitch better • I can now better manage my time. • I personally achieved the opportunity to have a mentorship by CERN.
Prototyping	<ul style="list-style-type: none"> • Prototyping • Learn the way to convert an idea to a visible product
Pitching	<ul style="list-style-type: none"> • I have learnt how to better the content of my pitch, how to present my pitch. I have also learnt how reach out to stakeholders regarding my project through interviews and to implement my project. • Confidence to pitch • I think I improve pitching • My pitching presentation has greatly improved too. "
Team work	<ul style="list-style-type: none"> • I have built great ways to work in and with a team through this workshop. • Learnt to better collaborate in a team.
Tools and technologies for citizen science	<ul style="list-style-type: none"> • I learnt to use Crowdsourcing tools, especially the citizen science project builder to collect data...also learnt how to model the questions rightly. • I gain much more understanding on SDGs and i got to learn more about my projects and other teams projects as well. I gained informative knowledge on how to pitch and presents and my ideas. I had an opportunity to be introduced to the crowd sourcing tools as they were all new to me. It was also a great experience with a team member from a complete different continent and being able to tackle a similar that is both affecting our communities. IT was an incredible journey and i learned a lot.

Table 10. Intention of use of the knowledge and skills learned during the Evaluate phase

How do you intend to use what you have learned or experienced in #Open17ClimateGender in the future?



Theme	Quote
Design of project	<ul style="list-style-type: none"> • The best way for me to share the knowledge acquired is to move from the prototyping phase to the realization of my project to practice profitable agriculture despite the advent of climate change. • I intend to push my project to live, doing more research using Citizen Science • in the design of project to include tools and methods of crowdsourcing data! • Develop more ideas related to technology. • Use crowdsourcing tools for data collection • To continue our project • I will develop my project and ensure it is scalable and being used in the industry • To improve the SDG approach of our project. • I intend to use all the tools shared to improve and build my project • I would like to develop more my project, in PhD studies • Platform that helps teamwork and clear schedule
Personal use	<ul style="list-style-type: none"> • With confidence, I will be able to discuss the problem and possible solution to address climate gender-related issues.
Dissemination of knowledge	<ul style="list-style-type: none"> • Share knowledge with my friends and on other platforms I came across in my lifetime. Help solve some problems at community and national levels using other ideas and skills learnt. • Will share this to my network that I have in Tanzania and spread the knowledge, this is non stop agenda.

Supplementary Table 4. Feedback of participants on the Evaluate phase

If you could add one thing to the #Open17ClimateGender, what would it be?	
Theme	Quote
Inter-team collaboration	<ul style="list-style-type: none"> • Increase the interaction across teams to share ideas and learn from each other. • More opportunities to hear pitches from other groups
Communication tools	<ul style="list-style-type: none"> • Extend chat channels to whatsapp where we could directly reach team members • use an alternative communication method in which we are monitored (a part for slack), since it is not so known and comfortable for new users
Online session flexibility	<ul style="list-style-type: none"> • Breakout room discussion • Maybe a way so people in other time zones meet with the coaches at other moments, so that we it doesn't count as we were absent while we were at school
Internal support	<ul style="list-style-type: none"> • Mentor • I would love to meet the amazing organisers • To agilize the collaboration between teams, coaches and mentors.



External support	<ul style="list-style-type: none"> • Interviews to people affected by the problem • Get more big organizations to could support some of these projects. • the financial component or instead funding resources
If you could remove one thing to th #Open17ClimateGender, what would it be?	
Persona workshop	<ul style="list-style-type: none"> • Personas
Goodwall	<ul style="list-style-type: none"> • Video on goodwill, I was not aware of goodwill existence before the challenge
Enforcing tools	<ul style="list-style-type: none"> • Push us to use a tool that wasn't work properly (Innprogress) and don't give other option
If you could change one thing to th #Open17ClimateGender, what would it be?	
Online session flexibility	<ul style="list-style-type: none"> • the time, the session was crossing with my stage. I received support from my tutor but in other cases students in stage can't make it.
Persona workshop	<ul style="list-style-type: none"> • Personas
Inclusion of people outside Goodwall	<ul style="list-style-type: none"> • Consider those who fail to present to share the video of their ideas
Workshop methodology	<ul style="list-style-type: none"> • Change teaching methodology to a more simple language. • Reduce the time of pitching • The time for pitching. It was not enough.

Supplementary Table 5. Feedback of participants on the Accelerate phase

Theme	Quote
If you could add one thing to CBIW, what would it be?	
Face to Face interactions and duration	<ul style="list-style-type: none"> • I would add a physical session at one point of the workshop • A meeting in IdeasSquare :) • I wish it was in-person. • increase the duration of the program
Internal support	<ul style="list-style-type: none"> • Connecting the teams to relevant stakeholders • Some of the participants may not adequate resources to subscribe for data, I suggest if they could help such participants it will be great • more visibility of the participating projects on the social media platforms or on the official websites.
External support	<ul style="list-style-type: none"> • I would add the possibility of receiving people to watch our pitch.
If you could remove one thing from CBIW, what would it be?	
Nothing	<ul style="list-style-type: none"> • Nothing

	<ul style="list-style-type: none"> • Nothing exactly • everything was useful • Nothing
Long sessions	<ul style="list-style-type: none"> • Long hour of the sessions per day on zoom • 1 hour and maybe add other day to compasate. It cross my intership and clases.
Connectivity	<ul style="list-style-type: none"> • I would remove the bad internet conection.
If you could change one thing to CBIW, what would it be?	
Nothing	<ul style="list-style-type: none"> • Nothing • Nothing • Nothing
Long sessions	<ul style="list-style-type: none"> • I will reduce the workshop time/weekly duration • Reduce amount of time spent during the sessions • make the zoom session a bit shorter
Timezone management	<ul style="list-style-type: none"> • The hour conflict due to timezone. • I would change the distribution of the mentorship, due to the time zone I'm in.
Integration with curriculum	<ul style="list-style-type: none"> • The program is not connected with the task at the University. This week I am burn out. It could be good that the University will value this effort, but not! I would change that part.

Supplementary Table 6. Roadblocks identified by participants during the Evaluate phase

What are the roadblocks you identify for the implementation of your project? How can we help? Evaluate Final Form	
Theme	Quote
Team capabilities	<ul style="list-style-type: none"> • We would like to develop skills about realizing the global mapping of emergencies. We need to develop natural processing skills and data mining techniques for practical implementation. • We need more advice about implementing our project, also we are committed to work together. Thank you. • Awareness mostly on crowdsourcing campaign, so will create massive awareness about it and have people to contribute in the project. • We are not familiar with crowdsourcing and citizen science and neither is brazilians. We aim the help of Crowd4SDG to program our technological program and put data in practical use. • Our solution approach is highly technical; our main obstacle is the establishment of a warning system in local languages, the necessary equipment for predictive analysis with certain reliability at the level on our platform, and the incorporation of the study of the ground through the images satellite collected. What we fundamentally need is technical support on the three aforementioned levels. • Wifi adaptation in our target community



Community building	<ul style="list-style-type: none"> • Getting the volunteers
Stakeholder engagement	<ul style="list-style-type: none"> • The involvement of governments • Some of the roadblocks for the implementation of our project would be getting the right audience to share the right data with us, which will ease us in implementing our project. Some of our target audience do not have access to internet.
Resources	<ul style="list-style-type: none"> • Finances, expertise in some areas, and your recommendation to government officials on go forward on this idea. • The project needs efficient man power researchers and partnership. You can help us by providing us some guides, mentorships and resources that will benefit our project. • "The major roadblock is lack of finance to implement the project. • Not having financial resources yet. As students at the University of Paris, we need to do an internship this year, and they allow only internships with payment. For that, I will need to be in the internship while I am doing the project. • We have experts that can help us implement this project if the fund is available."

Supplementary Table 7. Roadblocks identified by participants during the Evaluate phase.

What are the roadblocks you identify for the implementation of your project? How can we help? - Accelerate Final Form	
Theme	Quote
Team capabilities	<ul style="list-style-type: none"> • I want to learn how I can use project builder to analyze data • We have some problem with coding, so we think this could be a more explored area on refine phase.
Community building	<ul style="list-style-type: none"> • Women not having access to internet and devices to collect data. But this could be different geographically though
Stakeholder engagement	<ul style="list-style-type: none"> • Reaching out to stakeholders in water organizations has been a major challenge for my team and I, we would love if we get connected to stakeholders that are already working here. Stakeholders from organizations like WaterAid • To reach out to more stakeholders who already in line with our project • It's not been easy connecting with those working in the water organization, and that has been our greatest challenge. It would be really great if you could help us with that. • To get the policy makers recognise you as an individual and contribute to the project is going to be a challenge to gain their support. Encouraging the citizens take part in the project without monetary incentives is going to be a challenge at first. • The most important thing is to use this datas sharing them with agencies who can use them, I would like that the Cern could help us in meeting somebody who can use our data • Accelerate the prototype and connections with high level organizations to reach more communities



Resources	<ul style="list-style-type: none">• We still don't really know how to program but we want to contact university students that know how to do it to help us with the software• We would like the Crowd4SDG assistance in networking and software development with citizen science data collection and analysis.
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