



## CIRO COMPETITION BASIS

The purpose of this document is to update and improve the rules of the competition held under the scope of the ERASMUS + CIRO project (2018-2021) in order to serve as a road map for future editions of the CIRO competition.

### OBJECTIVES

CIRO project promotes that students in school education, who are in full decision on their professional future, get motivated to implement sustainable practices in their daily life. Furthermore, the skills acquired throughout the course will guide these students in pursuing a professional career related to environmental sciences, climate change and renewable energies.

For this matter, CIRO is a contest of innovative ideas where different groups of students from the participating schools will develop and disseminate their own projects with the aim of reducing climate change and enhancing air quality in their cities, considering hydrogen as the main source of energy.

CIRO's most remarkable feature is its combined methodology. The knowledge acquired by students during the first phase of the program as well as the improvement of their soft skills will be used afterwards, when they must face the project's final presentation in front of the evaluating team.

### PARTICIPANTS

This program, focused on the relevance of the environment and renewable energies, will hold scholars from **14 to 18 years old** from different highschools. Participants from each school will be divided into **groups from 4 to 6 students**. They will be defending a project, not just a product, where they are going to fulfill the objectives set clearly above.

### PHASES AND PROCEDURES

CIRO competition is divided into two phases:

- **PHASE I (to be held in each school):** after being trained on environmental issues by studying the different modules on climate change, participating students will be organised in different group to develop an innovative project based on reducing climate change and improving air quality in their cities, by using renewable energies, specially, hydrogen, which is the core of CIRO.

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## CIRO COMPETITION BASIS

The task for the CIRO-competition should be closely defined and changed every year. It could be modelled as a challenging problem, students have to solve. As an example, we could offer the fuel cell competition that takes place in Germany each year. The task for 2020 was the following:

"A large agricultural company wants to expand and build a greenhouse of the future on its premises. For the so-called light sprouts, a facility for optimal germination is to be built, taking renewable energy into account. The clever use and storage of the regeneratively produced energy from solar cells in hydrogen requires theoretical calculations of the necessary solar surfaces as well as the required electrolysis capacities and necessary storage size. However, since the farmers are not very familiar with fuel cell technology, they are now looking for experts to implement the automated, self-sufficient operation of the control system in initial pilot projects. Can your student team help here?"

Source:

[https://www.energieagentur.nrw/brennstoffzelle/fuelcellbox/welche\\_aufgabe\\_ist\\_zu\\_loesen?mm=Schlerwettbewerb#ts](https://www.energieagentur.nrw/brennstoffzelle/fuelcellbox/welche_aufgabe_ist_zu_loesen?mm=Schlerwettbewerb#ts)

In this way, students will be able to get to know a real problem and work on an innovative project that can be solved by offering possible solutions that could even be put into practice. In this regard, it would be interesting to search for the chance that real institutions can establish this challenge and could even accept a strategic plan of performance.

Teachers will guide their students within the written report (**maximum 15 pages length**) that will be the one that students will be presenting in the final competition. This written piece must in English and it has to include the following sections:

1. **Cover** (1 page)
2. **Index** (1 page)
3. **Abstract** (1 page: 15 lines approximately)
4. **Introduction:** in this section, students must explain the problem chosen as well as a brief description on how their innovative idea could help mitigate its negative impacts (2 pages approx.).
5. **Project development (4-6 pages approx.):**
  - **Environmental background:** including any relevant factors which could take a role on the problem, such as socioeconomic status, population characteristics, geography, geomorphology, meteorology, climatology etc.
  - **Detailed description of the project:** in this section students should include detailed information of their proposal to minimize the problem described in the introduction. They will need to describe aspects such

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## CIRO COMPETITION BASIS

as: features, approximated budget needed to get their project up and running, time needed to build or implement their project, area in which it will be effective (local, national, global...), etc.

- **Objectives of the project:** aspects intended to achieve and how these measures would help reduce the negative impacts of climate change and improve the air quality of the cities. In addition, the students should include the main challenges of their project.
- **Innovative aspects:** reasons why the project is considered innovative and with enough potential to address problems arising from low air quality in cities and the impact of climate change.

6. **Conclusions** (1 page max.)
7. **Bibliography/webgraphy** (1-2 pages)
8. **Annexes** (no limit of pages)

Additional murals, collages, illustrated stories, scale model/prototype, collection of photographs, video or any other creative work will be considered positively, and they will be presented as Annexes with no limit of pages, though specified in the index and with a link/reference within the development of the project.

PHASE I will finish with an internal competition in each school. The best team from each center will be classified for PHASE II. The groups will have a maximum of six students and a minimum of four. Teachers must provide a rubric of evaluation to choose the best two candidates to go to the competition.

These selected groups must submit their projects on a previously agreed deadline, approximately a month before the competition, for the evaluators to grade the projects according to a rubric agreed by the organisers. This evaluation will be considered for the competition as part of the final grade (20% of the final mark). The mark given to the written projects and a brief comment on them will be given to the different groups at the end of the CIRO competition.

- **PHASE II:** it will be divided into 3 consecutive steps, with a total duration of three days, in an online format (with all the components, also the evaluators, with their cameras on), a face to face format, or even a mixed format depending on the participants' disposal and their previous agreement.

**Step 1.** On the first day of the competition, students will receive training on interpersonal skills (entrepreneurship, leadership, innovation, and motivation).

The soft skills activities are meant to make the students interact with each other, therefore, it is very important that there are mixed groups to work on the different panels. The activities within the soft skills must be organised in order to promote students' improvement on essential skills to develop their projects, not just focused on selling products. After each soft skill, pupils must present the results speaking what

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## CIRO COMPETITION BASIS

they have decided, not just reading what they wrote on the forms as a summary. Inside each group, there must be a moderator who should be one of the students and all the students should be encouraged to participate actively, remembering that this active role they take will be evaluated as part of the competition.

**Step 2.** On the second day of the final competition, participants will present orally their candidate projects. There must be clear rules about what they are allowed to do, the format that they must follow, the timing and the extra materials they can use. If it is online, not reading must be controlled honestly by teachers, as this would be seriously penalised by evaluators, because that would mean they are not really presenting.

The presentation will be attended by the rest of the participants and teachers, as well as a committee of specialists from companies and research centers participating in the CIRO project. The students listening should be given a listening task (provided by evaluators) and the possibility to ask questions about the project that is presented if they have any doubts on the following day. After the presentation, evaluators and students of the other groups will write questions that will be given to each group for the defense of their projects on the following day (the organisers must set a maximum number of questions for each group).

**Step 3.** On the last day, scholars will have the chance to work on a commercialization plan for their project using an empathy map template. Evaluators will help them to develop these commercialization plans by offering strategies and helping them improve their plans.

After that, we will work on a designed evaluation sheet for the conclusions and knowledge obtained with the CIRO project. Each group can collaborate explaining, for example, why their projects are strategic, innovative, and the reason it should be implemented in their cities.

Finally, we will start the defense of the project (Questions-Answers). As it has been explained above, each group will count on a maximum of questions provided by evaluators and other groups on the previous day. In this way, there must be concrete questions for each project. Every member of the group can collaborate to answer each question of this part of the activity.

To finish the competition, evaluators will grade the projects. The evaluation should be transparent beforehand. There must be a clear list of criteria, which all the participants must know before the final result. That would make the expectations clearer and would improve the understanding of the students for the place they receive in the competition.

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## CIRO COMPETITION BASIS

### EVALUATORS

- **Phase I:** the evaluators of this phase will be teachers from each school specialized in areas such as to nature sciences, physics, chemistry, and technology. They will decide which are the best projects of their schools with a rubric already prepared and known by all the participants.
- **Phase II:** in this second phase, the companies and organizations involved in CIRO project will participate as evaluators, as well as external experts selected by CIRO partners. They will evaluate different areas: presentation of the project, participation during the activities, development of the commercial plan and the final defense of their projects (Questions-Answers).

The evaluators in Phase II will choose the awarded project based on the following criteria, and also considering the points that the written projects got in the evaluation by experts:

**1. Written projects** will be evaluated over **20%**, taking into account the mark given to the projects by the experts who had the chance to value the projects a month before the competition using the common rubric offered by the evaluators. This mark will be known on the day of the competition, which is going to help to maintain the suspense about the winner. Ideally, the expert should have written a brief comment concerning the written projects for the groups to get some type of feedback about their execution.

**2. Oral presentation** will be evaluated over **50%** of the total grade. The evaluation criteria will be defined by the oral exposition of the 5 members of the group, the quality and clarity of the information presented (not read or learnt by heart), and presentation of their work (in visual slides with any type of extra support that must be clearly self-made and original) and, lastly, the time management executed (15-20 mins approx.). There must be a rubric shared by the evaluators with the groups at the end of the recount of points.

**3. The commercialization plan** of their own projects will be evaluated over **10%** of the total grade, considering the students' involvement, the final empathy map and the questions answered, and the exposition of their work. There must also be a rubric that can be shown at the end of the competition.

**4. Final defense (Questions-Answers).** Evaluators and listeners will ask some questions, given on the previous day, to the students about their projects that they should answer in a common room (10 mins per group). It will be evaluated over **20%** of the total grade, taking into account: the effort dedicated to answer the questions, teamwork and participation of the group and the clarity in the use of English.

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## DATES AND LOCATION

PHASE	LOCATION	DATES
I	Home school	<b>SECOND TERM (School timing)</b>
II	Online meeting or face to face competition in one of the schools	<b>THIRD TERM (School timing)</b>

## AWARDS

The prizes defined for the competition will have to do with environmental improvement of our planet and they must be decided before the competition by all the organisers. The prizes will try to cover as many participants as possible.

There will be a first prize, second prize, and third prize and, if possible, a prize for all the schools participating. It is important that all the participants receive some type of award (certificate of participation, for instance) for having participated in the Ciro competition so that they can include it in the CV to start preparing their future careers.

## INTELLECTUAL, INDUSTRIAL AND IMAGE PROPERTY RIGHTS

The participating schools give -free of charge- to the CIRO project all the necessary rights for the submitted works to be published on the CIRO channels worldwide, and, for a period of five years.

It is understood that the participating schools have all the necessary authorizations from the participating minor's parents.

The participating school will be responsible for copyright rights on the images, sounds and texts included in the works exempting the CIRO project from any liability.

The organization may take photographs of the awards ceremony and publish them for free through its communication channels worldwide, and, for a period of five years. The organization will take care to safeguard the image of minors, avoiding close-ups and their personal identification.

## DATA PROTECTION

Under the General Data Protection Regulation (GDPR) (EU) 2016/679, ARIEMA is committed to ensuring the security and protection of the personal information that we process, and to provide a compliant and consistent approach to data protection. Additionally, participants should complete and sign the document "Authorisation for the use of images".

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