



CATHARSIS PROJECT: REALISTIC SOLUTIONS FOR CLIMATE CHANGE MITIGATION

INTRODUCTION

Climate change mitigation requires efforts from different perspectives and fields of expertise. The students' project "Catharsis" aims to propose innovative solutions to reduce quantifiable and avoidable climate change impacts and promote sustainability through social media and public events.

METHODS

The work of a student in Catharsis is organized in a one-year activity. Identifying climate change issues and searching for realistic solutions involve all dimensions of sustainability, i.e., environment, economy and society, and is carried out through group discussions, participating to seminars and reviewing scientific papers. Solutions proposed by students are reviewed by other students and their originality and feasibility are evaluated by supervisors. The results of the research are summarized in a scientific report and disseminated on social media with specifically designed posts.

- Recent news
- Local issues
- Hot topics
- Theme of the Year

climate related
ISSUES

- discussions
- suggestions
- reviews
- previous studies

solutions
IDEAS

feedback

**SUSTAINABILITY
& FEASIBILITY
CHECKS**

ENVIRONMENT

ECONOMY

SOCIETY

**DEVELOPMENT
THROUGH RESEARCH**

**THE
"BIG PICTURE"**



ESSAY

COPY

SLIDES

- colleagues
- professors
- supervisors

PEER REVIEW

feedback

**ONLINE
SHARING**

SOCIAL MEDIA

OWN WEBSITE

@catharsis.unipd

PROMOTION

- Public events
- Adoptions
- Experiments
- Networking
- Improvements

Giuliano Andrea^a
Benedetti Tommaso^a
Yang Danmeng^b
Meneghini Federico^c
Lovisetti Fabrizio^d
Carraro Gianluca^a

University of Padua

^a Departments of Industrial Engineering,

^b Mathematics, ^c Human Sciences,

^d Physics and Astronomy

catharsis.unipd@gmail.com

ABSTRACT:

Climate change mitigation is primarily seen as a challenge for decision makers. However, its success depends on a broader involvement of society, which can be obtained through multidisciplinary approaches and education. This is what leads the student project "Catharsis" at the University of Padova.

Catharsis ("purification" in Greek) aims at finding realistic solutions to cleanse the energy sector of carbon emissions and pave the way for more sustainable development trajectories. Students from various disciplines choose a topic (e.g., technology, environment, economy etc.), identify one of the issues related to climate change and propose a feasible solution to solve it studying the literature and experimenting new ideas.

Quantifying the impact of current technologies and practices and suggesting improvements or alternatives are the final objectives of the project. Students gain experience in scientific research, implement skills acquired during their university classes and work with others coming from different backgrounds and countries.

Catharsis contributes to making people aware of effective sustainable actions, fueling the transition from the bottom. The work is shared via social networks and by organizing public informative events to spread awareness and educate about sustainability among new generations.

Key words:

Climate Change, Awareness, Education, Mitigation, Energy Systems, Social Media

RESULTS (1)

The solutions developed by the students that have passed all the stages of the flowchart are disseminated through social networks. In the following, examples of climate change topics addressed during this year are listed and categorized according to the three dimensions of sustainability.

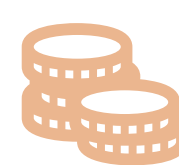
RESULTS (2)



ENVIRONMENT

ADAPTING STREETLIGHTS

Streetlight electricity consumption can be reduced up to 60% by adapting the light intensity to the weather, time and vehicles or pedestrians' presence with a network of sensors and dimmers.



ECONOMY

MEETING RENEWABLE ENERGY GENERATION

Users can shift their variable electricity consumptions to meet the renewable energy generation, enhancing the grid flexibility and reducing the need for batteries. Economic incentives can boost user participation to the Demand Response programs.

TOWARDS A SUSTAINABLE MARKET

Shift capital revenues from fossil fuel-based products and services to renewable energy technologies and sustainable projects through antitrust measures.



SOCIETY

SOCIAL ACCEPTABILITY OF RENEWABLE ENERGY

Barriers for renewable energy implementation can be overcome if communities and energy stakeholders collaborate. Projects must be tailored to users' needs and perspectives. Gain trust and support from society through energy education.

GREENER NET BEHAVIOURS

Educating an efficient use of internet to reduce the amount of data transmitted and processed through data-centers, saving both energy and carbon emissions. For instance, using a search engine instead of an A.I. chatbot can save energy up to 5 times per prompt.

CONCLUSIONS

The project is an opportunity to discuss and develop feasible ideas, methods and practices to mitigate the impact of climate change. Participating students learn how to carry out academic research, critically discuss, analyze results and propose their own point of view on a specific topic. The ultimate effects of the project are sustainability education and a bottom-up push for green transition.