



# ENC ANALYSIS



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## Mitigation of Climate Change by Environmental Education

MAY 2022

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## About the authors



**İpek Tekdemir** is a political analyst and advisor in the European Parliament. She has been appointed as “Invited Associate Professor” for the academic year 2020/2021. In her professional career, she is focusing on strategic communication, sustainability, capacity building, and business development. İpek has a demonstrated record of accomplishment in relationship building and crosses public diplomacy between the EU-Turkey-Central Asia and the Middle East. She volunteers regularly as a Professional Advisor for United Europe e.V., an organization that connects leading experts across countries and industries to develop

responsible solutions to build a strong, united and competitive Europe. She is a founder of the Sustainable Value Hub, which is an initiative for creating a network of partners that should be mutually beneficial. The Hub is conceived as a contact point for organizations, businesses large and small, academia, and civil society in order to connect.



**Maricela Dregan** has been a foreign language teacher for over 16 years, with a Bachelor's degree in English and French language and literature and a Master's degree in Applied Linguistics and English Language Teaching. She holds a diploma in Teaching English as a Foreign Language from Cambridge University and is a certified International Baccalaureate instructor and IGCSE examiner. She has worked as a University language instructor, academic manager and Erasmus project coordinator. Currently she is an authorized teacher trainer, educational consultant and a language instructor

at a private college in Ankara. Throughout her career, Maricela has published several articles focusing on teaching English to adults and bringing creativity in the English classroom. She is committed to implementing a new trend in education which is based on self-directed learning and where we experience a paradigm shift that builds on students' strength and gives them a format where their talents flourish.

## Summary

Universities globally are increasingly recognizing their responsibility to prepare students and society for the future and to actively contribute to the mitigation of and adaptation to climate change. In the future, it can only be achieved if universities adopt and promote carbon-neutral goals and practices. The higher education sector has the opportunity to combat climate change. The opportunity is to recreate institutions of higher education for the 21st century, equipping them to be safe and secure in the face of change, more actively engaged in solving real-world problems, and reorganized to better provide the education and research needed to create and maintain a sustainable society. In this regard, this article discusses the link between reducing CO2 emissions and higher education.

## Introduction

### Understanding the contribution to CO2 emissions

The European Union, with its 27 members, is the third biggest emitter contributing 7.52% to global emissions. Electricity and heat, transportation, and building are the top 3 contributors to the EU's emissions (European Commission, 2020). Therefore, creating curriculums that highlight these factors for building citizen awareness, and prioritizing the adaptation of related fields such as engineering in order to reduce emissions is an important factor.

With the 2009 Treaty of Lisbon (OJ C 306, 17.12.2007; entry into force on 1 Dec. 2009), combating climate change became a specific goal for the EU. The policy itself rests on four main principles:

- Precaution
- Prevention
- Rectifying pollution at the source
- “Polluter pays” principle implemented by the Environmental Liability Directive representing the fundamental values that form the EU's environmental protection strategy (Kurrer, 2021).

In 2019, the European Commission proposed a new set of policy objectives called the European Green Deal. Its targets are achieving significant greenhouse gas emission reductions by 2030 and full climate neutrality by 2050. The deal highlights the urgency of advancing towards regenerative growth models, pursuing zero-pollution, and reducing environmental and climate pressures (European Commission, 2019).

Previous work includes the European Commission's “Next steps for a sustainable European future” in 2016 (European Commission, 2016) in response to the “2030 Agenda for Sustainable Development” (United Nations, 2015) adopted at the September 2015 United Nations General Assembly indicating how the Sustainable Development Goals (SDGs) could be integrated into EU policy. The December 2019 Eurobarometer analysis shows a picture where the European Union succeeded to raise climate change awareness amongst most of its citizens (European Commission, Climate Action and the Environment, 2020).

In addition, although the majority of European citizens are consciously taking individual actions to make sustainable and environment-friendly choices in their daily lives, they are aware of the **urgent need for a structural reform** within which the **business-related and industrial transformations** can complement the measures personally taken by individuals. Providing sustainability and environmental education is a well-established method to equip each European

citizen with a comprehensive understanding of climate change awareness and encourage them to take necessary steps towards tackling it.

## European Climate Law

In line with the Paris Agreement objectives, the Council of the EU has adopted the European Climate Law (published in the Official Journal of the European Parliament and of the Council on 9 July 2021 and entered into force on 29 July 2021; Document 32021R1119), a legally binding obligation through which the EU seeks to accomplish climate neutrality by 2050. Another aspirational goal it entails is the reduction of greenhouse gas emissions by at least 55% by 2030 compared to 1990 levels. It could be suggested to introduce an obligation for schools to add sustainable-environmental courses in their curricula since the transformative force of pro-environmental training on citizens is shown by many studies.

## Education and its effect on green behavior

According to the article by the Potsdam Institute for Climate Impact Research (2020), the stabilization and decarbonization of the climate are critically connected with fast-spreading and responsive processes of technological and social change in the next few years. With expert insight, the same study proposes **six social tipping interventions** that need to be performed:

- removing fossil-fuel subsidies and incentivizing decentralized energy generation
- building carbon-neutral cities
- divesting from assets linked to fossil fuels
- revealing the moral implications of fossil fuels
- strengthening climate education and engagement
- disclosing greenhouse gas emissions information.

The suggestions made under the climate education intervention put forward a structure in which the key actors are scientists, teachers and educational ministers. According to the framework, their primary responsibility is to teach about the presence of climate change and relevant concepts in public education.

An educational campaign carried out in five Italian cities for 2 years, involving teachers, pupils, and citizens, **resulted in an emission reduction in a range of 7 to 30%** in the 247 families included in the research. That said, education to bolster understanding of the causes and effects of climate change, however important, will not be sufficient to transform society alone. **Sustainability can not be imposed, it has to be learned**, so that it is endogenously realized and enacted deliberately by the actors who constitute the SES.

Another study conducted by Garcia-Alvarez, Novo-Corti, and Varela-Candamio in 2017 confirms that environmental education is a strong tool to generate green behavior. The study argues that in order for each citizen to rethink their relationship with the biosphere and their inescapable responsibilities to achieve sustainable development, the potential impact that can be created by taking certain actions should be fully realized by the actors (in that case, citizens). Those actions involve **recycling, green purchasing, environmental social interaction, energy-saving behavior, and awareness of global warming**. As the study further suggests, such realization can be ensured by providing citizens with either formal or informal environmental education. Thus, in the findings section, it reveals a correlation between having attended environmental courses and displaying pro-environmental behavior: citizens who have attended at least one course related to environmental sustainability **are significantly more inclined to display the aforementioned actions** than those who have not attended.

## European Education Area Education for Climate Coalition

The EU recognizes the importance of making environmental education a systemic feature of educational policies and practices across the EU. During the last quarter of 2020, the EU has launched an initiative called **Education for Climate Coalition** (European Commission, 2020), a **bottom-up approach** that **aims to mobilize pupils and renovate school education** to reach climate neutrality.

According to the official website of the European Commission presenting the aims of the Education for Climate Coalition, the initiative endeavors to centralize specific efforts in **five priority** areas:

- green skills development
- teacher education
- changes to citizen behavior
- the interaction between education and scientific research
- awareness of issues



Concurrent with CO2 reduction targets, the coronavirus pandemic has disclosed a number of challenges related to the digital skills and capacities required for the training and education systems across the world. To deal with such questions, the



EU has launched a policy initiative called Digital Education Action Plan (European Commission, 2018). This policy seeks to achieve sustainable and effective adaptation of education systems of member states to the current age. From this point of view, the EU's intention to adapt education to new digital realms and mechanisms also brings along a considerable reduction to academic mobility and energy consumption caused by educational activities. The permanent effects of the coronavirus pandemic on our systems can be efficiently turned into advantageous designs to handle climate change.

## Environmental Education: What does it offer? What should the goals be? How can it be outlined?

Environmental education focuses on the following elements:

- environmental awareness and sensitivity to environmental issues
- knowledge and comprehension of environmental needs
- environment-conscious attitudes that enhance or preserve environmental quality
- ability to recognize and assist in the resolution of environmental issues
- active participation in tasks that result in environmental challenges being resolved.

In a nutshell, the aims and objectives of environmental education could be rephrased as keywords such as awareness, knowledge, attitude, skills, and active participation.

Now that we have gone over the components of environmental education, let us look at the principles that such an education guides itself by. The key element when considering the implementation of environmental education and sustainability in school curriculums is consistency. Consistency in the sense that environmental education should be obligatory and continuous, striving to become a lifelong learning objective.

In addition to the principle of consistency, environmental education needs to completely cover all aspects of the environment. Recognizing all aspects of the environment is essential to being able to make more informed decisions about its protection. The principle of wholeness emphasizes the inclusion of both natural and artificial, economic and historical aspects of the environment.

Another important aspect to consider is that environmental education must be interdisciplinary meaning that it requires a framework for exploring the connections between species, planets and nature as a whole. We need to address the interdependence of all people on the planet and truly understand the value

and importance of the environment. Furthermore, in order to fully comprehend the importance of nature and its natural balance, environmental education needs to focus on the complexity of the problem. The purpose is to make people aware of the complex nature of environmental issues and thus develop critical thinking to tackle these problems. In this regard, teachers need to pay attention to how difficult it is to get the environmental deterioration back to normal.

Moving on to another principle, environmental education should include a historical perspective. Understanding the impact of modern society on the environment is our basis. By adding a historical perspective to environmental education, we can compare the past and the present and accurately infer the catastrophic impact of current social changes on the environment.

Environmental education must be practical and problem solving. The principle of practicality indicates that environmental education should include a practical problem-solving approach, including first-hand experience and hands-on activities.

Last but not least, environmental education aims to convey both regional and international cooperation. Environmental education should focus on the importance of regional and international cooperation in addressing environmental issues in the context that it is clear that without cooperation, the true goals of environmental protection and welfare cannot be achieved.

The challenges on environmental protection are connected to raising the awareness of target groups such as voters, students, educators and officials. As studies stress the fact that more educated individuals value expert knowledge as a reliable information source in contrast to older and less schooled individuals (Soares et al., 2021), encouraging trust in scientific knowledge even from the elementary level of education becomes a vital part of environmental education.

The fundamental factors that help build environmental awareness are identified as

- problem awareness and mitigation strategies
- confidence in expert knowledge
- confidence in media messaging

Another outlook towards environmental education could be based on the research based on environmental education and awareness itself. Without relevant research on environmental awareness and strong educational strategies, the question of raising the level of contribution and engagement in reaching the policy goals would be irrelevant. Therefore, scholarships which encourage the study of environmental education curricula, voter behaviour in relation to environmental issues and the factors which raise environmental awareness could contribute to the goal of having green societies throughout the EU and the globe.

Moreover, within countries where climate change is perceived as a matter of genuine concern, it is indicated that the acknowledgment for a growing demand of professionals with training in the environmental area is higher (Leal Filho et al., 2021). This could suggest that making the fight with environmental degradation and climate challenge a political priority eventually causes higher interest in environmental education since there would be an eventual higher devotion of universities to provide competitive curriculums on environmental knowledge and of individuals to get educated for future professional engagements.

### **Evidence that indicates the success of environmental education**

- there exists a correlation between environmental education and air quality showing that education reduces CO<sub>2</sub> emission by 0.49% (Mehmood, 2021, p.605)
- education awareness creates room for innovative technologies for cleaner production and these technologies provide a cleaner environment with employment opportunities (Mehmood, 2021, p.605)
- the long-term impact of an intensive one-year university course on individual carbon emissions results in the reduction of individual carbon emissions of the student by 2.86 tons of CO<sub>2</sub> per year, at least five years after having taken the course (Cordero et al., 2020)
- as it becomes clearer that environmental awareness being a stronger factor for political influence instead of environmental lobbying, education also becomes a vital factor that results in political influence (Yu, 2005)

On a surface and general level, the benefits of environmental education and sustainability are countless. Nevertheless, some of these long-term benefits include promoting a healthy and balanced lifestyle, instilling respect for nature, teaching children about environmental challenges and being responsible and kind to nature.

In this context, the role of teachers and educators is not only to enable learners to gain knowledge on understanding global environmental issues, but also to promote the value of community participation in preventing and solving environmental problems. Having this in mind, teachers become the promoters of sustainability by encouraging students to embrace an environmentally friendly and sustainable lifestyle.

## **Conclusion**

To summarize the importance of environmental education we should look again at the purpose and goals that it aims for, which is to provide the opportunity for everyone to acquire the knowledge, values, attitudes, commitments and skills

needed to protect and improve the environment by creating new patterns of behavior for individuals and society as a whole towards the environment.

Higher Education institutions have a crucial role to play in preparing young minds for the challenges of climate change. It will be seen over the years to come how they will live up to this responsibility as it is again the responsibility of the education sector to connect people and nature, to prepare students for a sustainable future, to empower environmentalists of all ages, to build communities and transforms their lives.

## References

- Cordero, E., Centeno, D., & Todd, A. (2020). The role of climate change education on individual lifetime carbon emissions. *PLOS ONE*, 15(2), e0206266. <https://doi.org/10.1371/journal.pone.0206266>
- European Commission. (2016). *Next steps for a sustainable European future*. Strasbourg: European Commission. Retrieved from <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52016DC0739>.
- European Commission. (2019). *Eurobarometer analysis*. The December 2019 Eurobarometer [https://ec.europa.eu/commission/presscorner/detail/en/ip\\_21\\_3156](https://ec.europa.eu/commission/presscorner/detail/en/ip_21_3156)
- European Commission. (2018). *Digital Education Action Plan*. Brussels: European Commission. Retrieved from <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=COM:2018:22:FIN>
- European Commission. (2019). *A European Green Deal*. Brussels: European Commission. Retrieved from [https://ec.europa.eu/info/strategy/priorities-2019-2024/european-green-deal\\_en](https://ec.europa.eu/info/strategy/priorities-2019-2024/european-green-deal_en)
- European Commission. (2020). Education for the Climate Coalition. The European participatory community for students, teachers and education stakeholders to act collectively on innovative education solutions for environmental sustainability. [https://education-for-climate.ec.europa.eu/\\_en](https://education-for-climate.ec.europa.eu/_en)
- European Commission. (2020). *Energy, transport and environment statistics* (pp. 2-188). Luxembourg: Publications Office of the European Union. Retrieved from <https://ec.europa.eu/eurostat/documents/3217494/11478276/KS-DK-20-001-EN-N.pdf/06ddaf8d-1745-76b5-838e-013524781340?t=1605526083000>.
- European Commission. (2021). *European Climate Law*. Brussels: European Commission. Retrieved from [https://ec.europa.eu/clima/eu-action/european-green-deal/european-climate-law\\_en](https://ec.europa.eu/clima/eu-action/european-green-deal/european-climate-law_en)
- Kurrer, C. (2021). *Environment policy: general principles and basic framework | Fact Sheets on the European Union* | European Parliament: [Europarl.europa.eu](https://www.europarl.europa.eu/factsheets/en/sheet/71/environment-policy-general-principles-and-basic-framework). Retrieved from <https://www.europarl.europa.eu/factsheets/en/sheet/71/environment-policy-general-principles-and-basic-framework>.
- Mehmood, U. (2021). Contribution of renewable energy towards environmental quality: The role of education to achieve sustainable development goals in G11 countries. *Renewable Energy*, 178, 600-607. <https://doi.org/10.1016/j.renene.2021.06.118>
- Oliver, M., & Adkins, M. (2020). "Hot-headed" students? Scientific literacy, perceptions and awareness of climate change in 15-year olds across 54 countries. *Energy Research & Social Science*, 70, 101641. <https://doi.org/10.1016/j.erss.2020.101641>

Otto, I., Donges, J., Cremades, R., Bhowmik, A., Hewitt, R., & Lucht, W. et al. (2020). Social tipping dynamics for stabilizing Earth's climate by 2050. *Proceedings Of The National Academy Of Sciences*, 117(5), 2354-2365. <https://doi.org/10.1073/pnas.1900577117>

Potsdam Institute for Climate Impact Research. (2020) <http://www.pik-potsdam.de/>

Soares, J., Miguel, I., Venâncio, C., Lopes, I., & Oliveira, M. (2021). On the path to minimize plastic pollution: The perceived importance of education and knowledge dissemination strategies. *Marine Pollution Bulletin*, 171, 112890. <https://doi.org/10.1016/j.marpolbul.2021.112890>

Yu, F.Y., Liu, Y.H. & Chan, T.W. (2005). A Web-Based Learning System for Question-Posing and Peer Assessment. *Innovations in Education and Teaching International*, 42(4), 337-348. Retrieved from <https://www.learntechlib.org/p/97837/>

United Nations. (2016). *2030 Agenda for Sustainable Development*. Document 52016DC073. United Nations. Retrieved from <https://sustainabledevelopment.un.org/content/documents/21252030%20Agenda%20for%20Sustainable%20Development%20web.pdf>

Leal Filho W, Sima M, Sharifi A, Luetz JM, Salvia AL, Mifsud M, Olooto FM, Djekic I, Anholon R, Rampasso I, Kwabena Donkor F, Dinis MAP, Klavins M, Finnveden G, Chari MM, Molthan-Hill P, Mifsud A, Sen SK, Lokupitiya E. *Environ Sci Eur*. 2021;33(1):109. doi:. 2021 Sep 25. Retrieved from <https://pubmed.ncbi.nlm.nih.gov/34603904/>

Leal Filho, W. et al. (2021). COVID-19: the impact of a global crisis on sustainable development teaching. *Springer Nature B.V.*, p.16. Retrieved from <https://pubmed.ncbi.nlm.nih.gov/33424430/>

L Varela-Candamio, N Calvo, I Novo-Corti - *Journal of cleaner production*, 2018 Retrieved from <https://www.sciencedirect.com/science/article/pii/S0959652618304219>