

**PROCEEDINGS OF THE
INTERNATIONAL CARBON NEUTRALITY TRAINEESHIP PROGRAM
Volume.01, Number.1, 2023, 50-54**

Educational Measures Contribute to the Carbon Neutrality goal of EU

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Abstract

To achieve the goal of the carbon neutrality, creating ultimately a clean, pollution-free world is the responsibility of every individual on the earth. In this era, people from different countries have realized that the significance of the carbon emissions, and organizations like EU have taken steps to tackle this problem. From the publication of the agreement to the introduction of the decree, the 27-member bloc has vowed to become carbon neutral by 2050. All fields like energy, architecture, transport are working on playing their part in the progress. However, the role of education is in many cases ignored. This paper analyzed the role of education in achieving a sustainable future and different educational measures for the students and the public, providing insightful implications for carbon neutrality related policy development and educational outreach for EU.

Keywords: Carbon neutrality; carbon neutrality education.

1. Introduction

The achievement of carbon neutrality has become increasingly significant worldwide. Achieving peak carbon and carbon neutrality is a multi-dimensional project involving all aspects of economic and social development. Without the new inventions and development of the technology, educators seem to play a tiny role in the pathway to achieve the carbon neutrality goal. In fact, education connects all the industries and provides strong efforts to the blueprint of EU.

Education itself is an important part of the rapid development of modern society and is responsible for important educational tasks and social change. Using education campaigns to raise public awareness of carbon neutrality and promote low-carbon behaviour is an urgent priority. Enhancing the construction of sustainable development teaching system in elementary education and higher education is just one part, raising the awareness of the general public is the key to making a huge difference to the world. Science and technology innovation and science popularisation are the 'two wings' of innovation and development. Thus, popularizing and promoting the concept of carbon neutrality have an important supporting role in achieving the goals of carbon peaking and carbon neutrality. In order to, the EU

should urge all its member states to accelerate the process of achieving carbon neutrality and promote sustainable development.

2. Improving the carbon neutrality education in the educational systems

It is true that developing carbon neutral education does not have the same direct effect on action to reduce emissions as other areas, but in the long run, by raising carbon neutral awareness among a wide range of students, it provides a strong human resource guarantee to accelerate the process of achieving carbon neutrality. The true essence of education is to guide students to put into practice what they know, and carbon neutral education also works in this way, as schools are not only a place to promote ideas and advanced concepts, but also a place to guide students to take action and put energy saving and carbon reduction into practice. Thus, it is necessary to develop education activities about carbon neutrality.

2.1. Teachers and instructional resources

As a person of imparting knowledge, the professionalism of a teacher directly affects the quality of education and teaching. We need to strengthen the construction of highly qualified teachers in the field of carbon neutrality and promote the teaching ability of front-line teachers. Educators Scientific research institutions can provide a number of scientific research instructors, such as climatologists, chemists, physicists, biologists, etc. Professionals from these different research areas are brought together for regular seminars, and teachers from various schools in each country are invited to participate. The expertise of the researchers provides the teachers with cutting-edge theory and technical support, while the teaching skills and communication skills of the teachers facilitate the promotion of the researchers' research results. The cutting-edge theory and knowledge are taught to students and the public in an easy-to-learn and easy-to-understand way.

Increasing the construction of teaching resources is also a necessary measure. Based on the analysis of the knowledge of carbon neutrality and the talents needed, co-produce textbooks, teaching materials, tests, teaching cases and experimental and practical training projects to form a high-quality shared teaching resource library.

2.2. School curriculum

In general terms, the syllabus of the courses and curriculums about the carbon neutrality could be added into the existing EU education policy. In 2005, the EU proposed and implemented "Carbon Schools Scheme". Before the implementation of the programme, the European Commission discussed the aims and objectives of the project. It concluded that imparting students with systematic scientific knowledge at secondary school would help them to develop a correct world outlook and view of development, and encourage them to be involved in the protection of the environment and sustainable development. One of the objectives of the Carbon Schools Programme is to provide secondary school students across Europe with a better understanding of global change and education for sustainable development. It also provides a platform and opportunities in order to increase students' interest in natural science research.

Education itself has a powerful function of publicity and education. To promote carbon-neutral education, from basic education to higher education, the concept of green should be highlighted in textbooks, content and syllabus, and relevant standards should be improved. In basic education to promote primary and secondary school students to form a correct consumption concept, to develop a green consumption pattern. Primary education is a critical period for children to develop behavioral habits. Teachers should strengthen their own awareness of carbon neutrality, actively integrate carbon neutral education into the education reform activities, and cultivate children's awareness of energy saving and carbon reduction. Take Sweden as an example. From a young age, kids have been inculcated into important environmental education. There is a wide range of environmental education programmes in schools, with students being taught how to save electricity and how to recycle and reuse the items. In Sweden, nine of the sixteen compulsory courses are linked to the requirements for education on the environment and sustainable development. Inspired from this, the EU should encourage all its member states to introduce courses on carbon emissions and sus-

tainable development to school curriculum.

In junior and senior high school, the education about carbon emissions should also be integrated into the teaching of various subjects. For example, in chemistry lessons, teachers can focus on issues related to carbon emissions and encourage students to actively use their knowledge to invent some small emission reduction models; in geography lessons, teachers can explain issues such as climate change and environmental degradation. Linking global change and climate science to education in school enhances secondary school students' understanding and research on environmental issues such as carbon footprint and to develop education for sustainable development for students. Moreover, through this kind of teaching activity, an effective measure given to teachers to promote students' interest and enthusiasm and to improve adolescents' attitudes toward carbon neutrality education and their willingness to participate in it.

In terms of higher education, colleges and universities are encouraged to set up general courses on carbon neutrality and integrate the concept and practice of carbon neutrality into the talent training system. The high quality development of higher education serves the needs of cultivating carbon neutral talents. We should aim to develop a large number of talents who possess a solid foundation in basic science and have a strong innovation ability. The transition of carbon emissions is driven by the technological revolution and based on science and technology in order to achieve sustainable development. It requires universities to put emphasis on the basic science education, focusing more on the technologies and disciplines related to the renewable energy sources and the subjects such as the chemistry, biology need to be strengthened as well.

At the same time, universities should put a high value of the integrated innovation, which is necessary to reform the original teaching system and to teach new staff on existing disciplines. As there are few carbon neutral disciplines at present in most of universities, we can start with improving the existing disciplines. Universities need to improve on the existing foundation by adjusting or upgrading some similar disciplines to build disciplines suitable for the education of carbon neutrality.

3. Different ways to strengthen public education

3.1. Science reading materials

Educators can edit and promote a number of high quality reading materials in which educators can spread the knowledge and concept of carbon neutrality. In this book, main issues about carbon peaking and carbon neutrality should be explained in an easy-to-understand way in order to produce knowledgeable and accessible popular science books for the public. Also, through highlighting the significance of achieving carbon neutrality and the impact on scientific development, economic development, social development and personal life, it helps raise awareness and understanding of carbon peaking and carbon neutrality throughout society. Selecting issues of common concern and calls on everyone to participate and contribute to the achievement of carbon neutrality.

3.2. Social activities

Governments could conduct extensive science outreach and adopt a variety of approaches such as activities, lectures and thematic exhibitions, in which educators are essential. The public can be made aware of the relationship between the environment and our lives, as well as the relationship between the environment and the earth, and fully understand the various carbon emission phenomena that occur in real life, such as traffic, energy combustion, waste emission, etc., to raise people's awareness of energy saving and carbon reduction, with a view to encouraging more people to adopt good habits. It is also convenient for the public to enjoy science popularisation services conveniently through both online and offline lectures. Educators also serve as intermediaries between experts and the public. The government should organise regular academic events. The ideas and policy advice discussed by experts at the academic conference then could be translated into simpler and more understandable ideas through professors. Thus, we create a strong synergy for the whole society to achieve the goal of carbon peaking and carbon neutrality.

Setting up a Carbon Neutrality Week which aims to raise awareness of environmental problems, promote investment in water and promote water conservation and the rational use of water in kitchens and toilets. In addition,

European countries are also very much involved in environmental protection, especially with NGOs. NGOs use their strengths to provide the public with the latest environmental information, disseminate advanced ideas on environmental protection and interact with the public through various social activities to raise their environmental awareness. In Germany, for example, the government and civil society organisations have joined forces to provide environmental education, and the state government has incorporated the “No Packaging” performing arts group to promote environmental protection through cultural performances.

3.3. Social media and television programme

Educators and experts can post some short videos on social media such as Twitter, Youtube, increasing the influence in an entertaining, informative way. For instance, they can simply tell the public about the harmful effects of vehicle emissions on urban air quality and encourage them to switch to the public transport. In this way, an increasing number of people would place more importance on the carbon emissions, commuting to work by taking the subway, riding the electric vehicles or riding the shared bikes, which certainly be of much help in reducing the carbon footprint, mitigating or curbing global warming. Or, governments could produce national TV programs for professors to impart the knowledge of carbon neutrality to the public generation. They could also invite celebrities and use celebrities’ popularity to attract the audience’s attention. The public figures can successfully generate and amplify public awareness regarding the environmental problem, which results in wider moral concern from the audience and massive responses from both home and abroad. Especially for some fans of the celebrities, they tend to value celebrities very highly and thus can be easily influenced by celebrity power in charity. During the TV programme, celebrities can work with the educators to show some simple lifestyle habits. Their actions would encourage many fans to change their views and to do the same.

4. Conclusion

It can not be denied that energy transition and technological innovation are top priorities in the path to carbon neutrality for EU. But education still plays a significant role in the way to the achievement the goal and improve the sustainable development in the long term. Through education, a large number of professional talents enter into the circle of carbon neutrality. What’s more, people of different ages, not only the students, but the working adults and the older generation realize the importance of environmental protection. With the concern of the whole society, it would be far easier to form a concerted effort to reduce carbon emissions, making a huge difference to the world. However, due to the many deep-level basic scientific problems involved in carbon peak and carbon neutrality, and the cross-integration of various influence mechanisms such as resources, energy and environment, there are problems such as insufficient personnel preparation and inadequate understanding of the problems in the implementation of carbon neutrality strategy in all industries, and it is urgent to strengthen education and training.

Schools should be models for achieving the goals to shape the future we want. Educational ideas should be changed from a focus on the individual to a focus on the group, and from a focus on learning itself to a focus on human ecology. Top-level education policy design which should be ensured by and the introduction of relevant laws and regulations is the first step. In the teaching of schools at different education stages, a complete teaching system, teaching plans and practices for climate change should be designed. Eventually, a good moral and social atmosphere should be encouraged in the whole society to strengthen the awareness of the whole society to achieve the goal of carbon neutrality and promote sustainable development. Only by strengthening school-oriented teaching and public-oriented practices in the field of education can we achieve a steady and orderly response to carbon neutral development.

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