

# THE IMPORTANCE OF IMPLEMENTATION OF CLIMATE CHANGE EDUCATION TO PREPARE CLIMATE-CONSCIOUS CITIZENS

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**Abstract:** The paper reveals the necessity of implementation of Climate Change Education at universities to raise environmental awareness of the citizens and employees in the short run. The survey conducted in Bangladesh and Ukraine showed the concern of the youth for environmental issues in their regions but also proved the lack of knowledge and underestimation of the current state of the environment. The obtained results highlighted the current situation from the students' viewpoints and attitudes towards governmental eco-policy, climate education and eco-friendly lifestyles.

**Keywords:** climate change education, climate education, climate literacy, eco-social competence, sustainability, climate change

**Introduction.** Climate change education is an indispensable element of the global response to climate change and one of the keys for fighting global warming, deforestation, the greenhouse effect, etc. It encourages people to recognize and address the impact of global warming, it helps to increase “climate literacy” amidst young people and stimulate changes in their attitudes in everyday life as well as helps them readjust to climate change-related bearings and take action today. This preparation should start at the community level, where students should learn about climate change and global warming to recognize their role and to portray in such circumstances.

The **purpose** of this article is to consider the importance of the introduction of climate change education at colleges and universities in order to prepare climate-conscious citizens that are able to face and maintain the effects of climate change to the most possible extent in the long run.

The problem is that today the level of climate change awareness is not very high within an average citizen both in Bangladesh and Ukraine that leads to the global underestimation of the coming consequences in the short run. According to *The Guardian*, many attempts to educate the public about climate change have relied on scare tactics that focus on superstorms, massive floods and ominous weather patterns to generate fear. But fear actually can inhibit the desire to learn more and take action – particularly in young people [5]. Therefore, it is important to

take urgent measures and foster climate education to be prepared to face the impact of climate change on our lives, knowledge about climate change is essential.

It is important to notice that Climate Change Education (CCE) is a part of UNESCO's Education for Sustainable Development (ESD) programme. In 2014 UNESCO inaugurated the Global Action Programme (GAP) UNESCO that aims to make climate change direction a more convenient and visible part of the international rejoinder to climate change.

Australia, Denmark, Vietnam, the Republic of Korea, China have already introduced a number of policies and initiatives supporting environmental education.

Since 2020 the Ministry of Education in Italy has implemented climate change education in all schools that will make Italy the first country that makes it an obligatory subject in all state schools. Moreover, climate change will be taught within all the courses on Geography, Citizen education, Maths, Physics, etc. in order to show its importance and effect on our everyday life and put Italy at the forefront of environmental education (Nave, 2019).

In Germany, the Federal Ministry for the Environment, Nature Conservation and Nuclear Safety offers a variety of educational resources in the areas of climate change and climate action as well. Although they are mainly designed for primary and secondary levels, they are suitable for all types of schools. It also funds educational projects under the National Climate Initiative (NKI) to raise awareness

of teachers and students about climate activities and to encourage them to participate in practical activities [4].

The Ministry of Digital Transformation of Ukraine and TAPAS Project opened state data concerning the environmental field and created new useful services to give more information on the state of the environment, the list of companies that contaminate rivers and to what extent, to reduce and rapport on illegal garbage dumps or even to choose the best place for living. It will make it possible to monitor the contamination of water, air; fight against illegal littering and garbage dumps, to prevent fires in the ecosystems of the country and to control and regulate enterprises.

Moreover, according to the Law of Ukraine "On the Main Principles (Strategy) of the National Environmental Policy of Ukraine for the Period until the Year 2030", the aim of the state environmental policy is to achieve good environmental status by introducing an ecosystem approach to all areas of socio-economic development of Ukraine in order to ensure the constitutional right of every citizen of Ukraine to a clean and safe environment, introduction of balanced nature management and preservation and restoration of natural ecosystems as well as to implement Ukraine's Sustainable Development Goals (SDGs), which were approved at the 2015 United Nations Summit on Sustainable Development [9].

The implementation of the principles of state environmental policy is carried out on the principles of openness, accountability, publicity of public authorities,

public participation in the formation of public policy as well as encouragement to conduct environmentally responsible business and environmentally conscious behavior of citizens. The first strategic goal of the state environmental policy is the formation of ecological values and principles of sustainable consumption and production in society. Among the tasks set are as follows: the introduction of education in the interests of sustainable development, environmental education and upbringing, educational activities in order to form environmental values in society and increase its environmental awareness as well as assessing the attitude and raising awareness of society about the importance, benefits and tools of sustainable consumption and production, the state and values of biodiversity and the measures that need to be taken to preserve, restore and use it sustainably.

Bangladesh is also confronting many interconnected ecological issues. Bangladesh has constantly been recorded as one of the world's most environmentally weak nations and will probably keep on remaining as such because climate change requires fast measures to be taken that due to the specific geographic position, high populace thickness, outrageous neediness, the reliance of numerous provincial livelihoods on environment sensorial areas makes it difficult to maintain and control (Chowdhury, 2014). It is, therefore, essential that Bangladesh commences its preparation from now on to adapt itself to the changing circumstances.

The level of vulnerability of Bangladesh is likely to increase as a result of severe land degradation, soil erosion, lack of appropriate technology and sea-level rise. The main impacts of climate change will be on the water resources and water-level changes, food security and agriculture, ecosystem and natural resource management and biodiversity, and human health. A subjective ranking of key climate change impacts and vulnerabilities for Bangladesh identifies water and coastal resources as being of the highest priority in terms of certainty, urgency, and severity of impact, as well as the importance of the resources being affected. Therefore, policies should be formulated to balance conflict of interest between livelihood requirements of the people and sound environmental resource management [2].

Climate education has also been highlighted in the works of both European and Asian scientists, scholars and researchers as well as the importance of climate education in schools and universities has been approved and emphasized. Thus, recent studies suggest that focusing on knowledge without attention to the moral, ethical, and emotional aspects intrinsic to climate change can result in individuals making choices that are the opposite of what a climate educator might intend (Isabel B. Franco, Tapia, Tracey, 2020).

Climate science, as well as climate education, in our opinion, is a complex interdisciplinary field of knowledge, to which many scientists from different fields

can contribute (physics, chemistry, mathematics, engineering, social sciences, economics) (Tonon, Lozar, 2019).

On the one hand, in Ukraine Ecology as a discipline is taught at about 109 universities. On the other hand, the level of climate consciousness of the citizens still remains low and the research conducted has revealed the lack of government regulation for sustainable development, the necessity to implement and/or integrate climate education in the curriculum and organize and foster various events among the youth.

Therefore, Climate Change Education and awareness-raising empower appraised decision-making, play an essential role in increasing adaptation and mitigation dimensions of societies, and empower young people to utilize sustainable lifestyles.

**Method.** To study the current state of University students' climate awareness and the importance of the implementation of climate education at higher educational establishments, a survey was conducted with the use of such scientific methods as a questionnaire, observations, discussions, studies, data analysis and conclusion forming. The research was conducted applying a quantitative approach by using certain sample of population and finding objective as their given answer. Also, a longitudinal method was used in this study. We used a questionnaire method taking response from the respondents from Ukraine and Bangladesh.

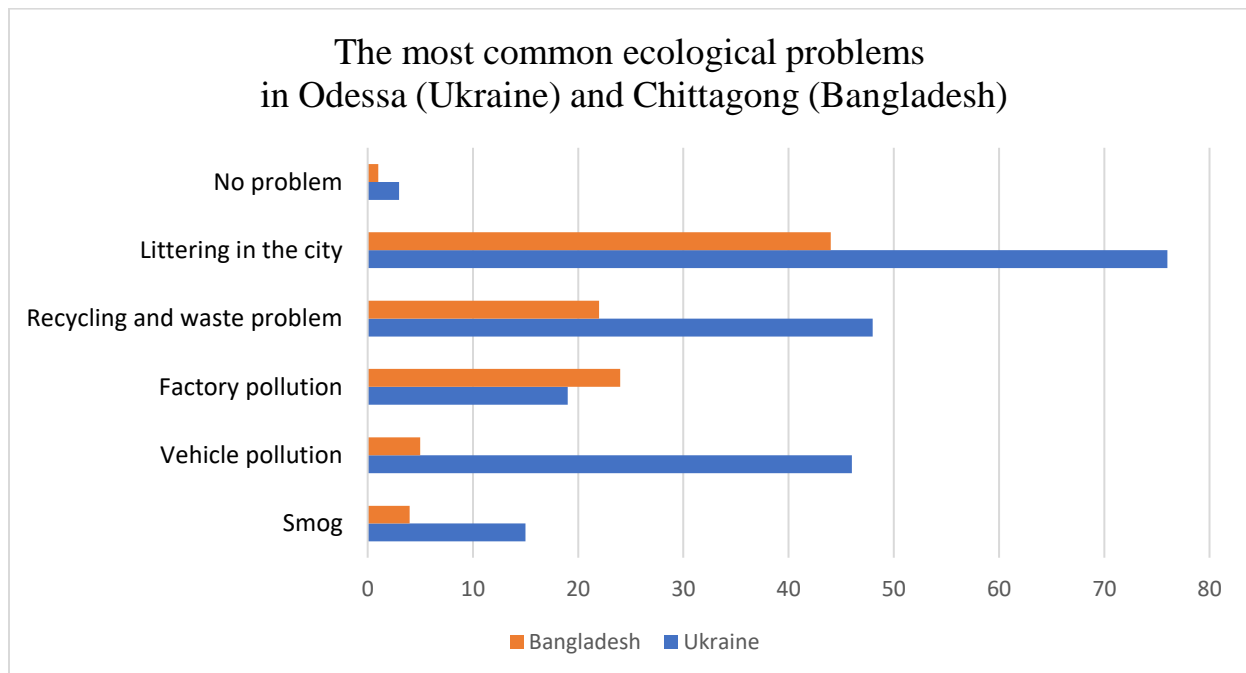
The target audience was 191 students both from Odessa National Economic University, Ukraine (the Faculty of International Economics; the Faculty of Finance and Banking; the Faculty of Economics and Entrepreneurship Management) in the total amount of 91 persons (13% of boys and 87% of girls) of the first, second and third year of study and 100 students (57% of boys and 43% of girls) of the first, second, third and fourth years of study from the University of Chittagong, Bangladesh (the Faculty of Social Science), who resided in the coastal area, especially in Chittagong and Cox's Bazar.

The questionnaire contained 14 close ended questions. The responses were collected both offline and online using Google Forms. Some questions had only one option to be chosen while the others offered several options to choose. Thus, giving the results in the percentage of students, some of the results were based on the whole question, where all the items of a question were taken as of 100% whereas some of the results of the questionnaire with multiple choice were based on every item counted separately as 100%.

**Results.** First of all, the aim of the survey was to find out the main current ecological problems of Bangladesh and Ukraine from the perspective of young people as well as their attitudes toward the local and national ecological situation, their eco-experience, etc.



The first question of the questionnaire concerned the cities of Odessa (Ukraine) and Chittagong (Bangladesh), where students lived or studied at that moment. Among the options to choose there were problems with litter in the streets and parks, smog, pollution from cars and factories as well as their options to add. As a result, the main local ecological problem in both countries according to the opinions of most students (76% of Ukrainian students and 44% of Bangladeshi students) was litter and dirtiness in the streets, parks and beaches. The second important problem mentioned on the regional level in Bangladesh was pollution from factories (24% of respondents) and the problem of waste sorting and recycling (22%). The following diagram shows the results in the countries respectively:



**Figure 1: The results of the students' attitudes towards the ecological situation in the regions in 2020**

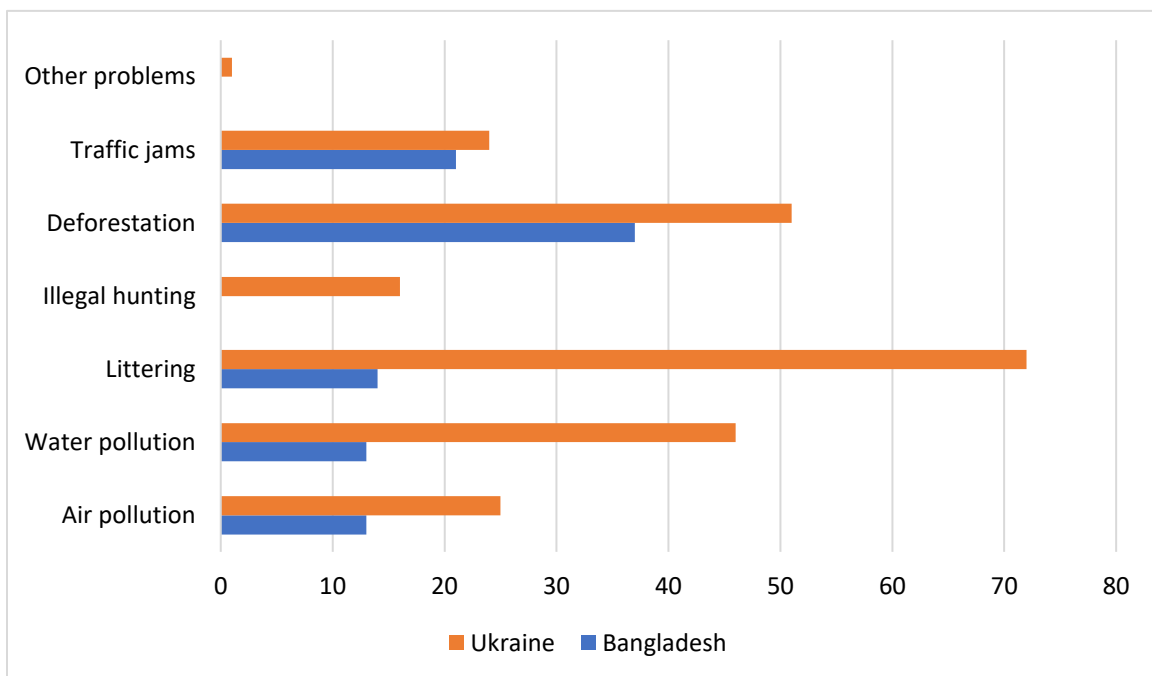
Whereas in Ukraine the opinions split between the boys and the girls. Male students put the problem of recycling as the second important issue, while female students strongly believed that there was a big problem of pollution from cars. The thing is that in Ukraine, according to the rating service TomTom, Odessa, for instance, got the 5<sup>th</sup> place in Europe and the 11<sup>th</sup> place in the world on the biggest traffic jams, almost reaching Moscow, Mumbai and Bogota.

Consequently, the problem of litter in the streets and beaches was the most crucial in both countries and was strongly connected with the problem of recycling, the lack of local and governmental control and regulations rather than with the density of population.

Another question of the survey showed the appreciation of the eco-policy in Bangladesh and Ukraine by the young people. None of the Bangladeshi students were satisfied with the ecological policy of the government as well as the Ukrainian students neither approved it (1%). Only 7% of Bangladeshi students responded it was good enough and 4% of Ukrainian students thought that way. Respectively, 19% and 25% of respondents found it satisfactory whereas about 70% of students both from Bangladesh and Ukraine said they didn't see anything done in this respect. Also, 5% of Bangladeshi students added that although some steps had been taken but were not implemented properly as they should have been done. As a result, most

young people in both countries were not satisfied with the governmental environmental policies.

The following question revealed the most acute ecological problem of the country from the students' points of view. Thus, in Bangladesh most students (37%) emphasized the problem of deforestation, 21% of respondents believed it was traffic jams; 14% gave the priority to litter pollution and 13% of students responded that both water and air pollution were the most important in the country. Finally, 2% of respondents marked all of the issues as acute. The results are illustrated below:



**Figure 2: The most acute ecological problems in Bangladesh and Ukraine (2020)**

The most important environmental problem in Ukraine according to the

survey was litter pollution (72% of respondents). The second most important problem mentioned was deforestation and water pollution. Traffic jams as an eco-problem were hardly mentioned because only some big cities face this problem. One of the additional problems mentioned by the student was illegal amber mining.

This brings us to the conclusion that environmental problems in any country are defined in some extent by their geographic, political and socio-economic situation.

As for the question on the students' voluntary participation experience in environment preservation projects, 66% of respondents from Bangladesh and 76% of students in Ukraine participated in different ecological projects and activities that were often held at schools, universities and on the local level. In addition, in Ukraine girls were more involved in eco-activities than boys (78% of girls compared to 58% of boys). The interesting fact was that the first-year students took part in various eco-activities more often than the students of the second and third years of study.

Also, today it is very popular on Social Media to promote or to take on different challenges for keeping our planet unpolluted by cleaning up the beaches, parks, streets, etc. These activities often go viral as well as widely advertised by influencers on YouTube or Instagram. It was also of our scientific interest to find out possible movements or trends the youth of Bangladesh and Ukraine would like to follow or to start themselves. For instance, in Bangladesh, 74% of respondents

said that they would like to promote tree planting, 11% would like to contribute to cleaning up parks/streets/beaches, 9% would like to focus on healthy lifestyle and 4% chose to promote different movements like waste management or reducing carbon footprints in the area. Only, 2% would take up animal protection. In Ukraine, most of the students (47%) would head some movement on cleaning up parks, beaches, etc. The second most preferable activity was animal protection (34%) as well as the promotion of healthy lifestyle like a bicycle ride or veganism (28%). Tree planting is less popular probably due to enough greenery in the city. Therefore, all students polled were interested in keeping their cities clean, green and eco-friendly.

Another issue to be considered is the problem of deforestation. For instance, forest cover in Ukraine makes up 15,9% of the whole territory though 20% is the required indicator according to the European regulations. Thus, more than two million of hectares needed to be created for new forests. Meanwhile, in Bangladesh 2.6 million hectares of backwoods is covered, it makes up 17.4% zone while the nation needs to have 20% of its topographical region of underwood and tree cover contrasting with past years woodland covered zone is hazardously decreasing its rate. Individuals are chopping down trees and create spontaneous urban communities.

As for the young people in Bangladesh, only 24% of respondents have never cut down trees, 36% rarely cut down trees, 40% sometimes cut down trees. It can be

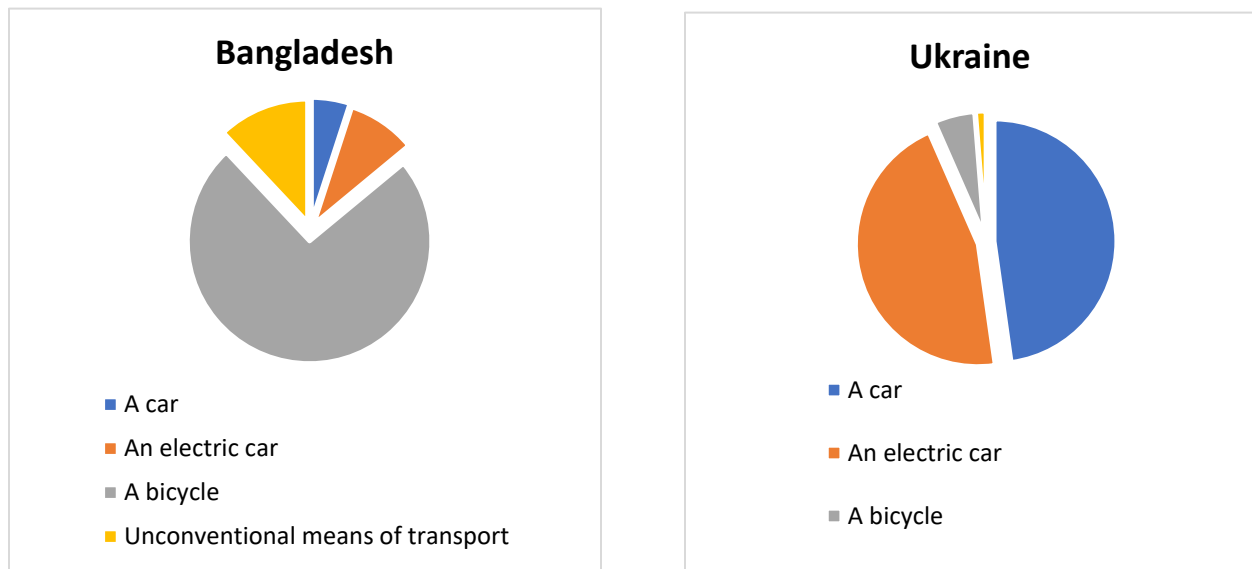
explained by the fact that people chop down trees either for their everyday needs for making furniture, house and so on or they are made to do so.

Whereas in Ukraine, for the celebration of New Year and Christmas, almost 50% of boys never buy or cut a Christmas tree or even when buy then rarely. Approximately 33% of girls never buy trees for the celebrations, about 30% of girls always buy them for the holidays and the others buy them mostly rarely. This data can be explained by the fact that girls buy Christmas trees more often than boys because, from the psychological point of view, they are more affected by the festive environment and beautiful and shimmering objects that cause positive emotions.

To find out how our students were environmentally conscious themselves, we asked them which type of transport they would prefer to purchase – a car, an electric car, a bicycle or something unconventional like the Segway, a push cycle, a gyro scooter, etc. The results were surprisingly different not only between the two countries but also within Ukraine among male and female students, who had absolutely different vehicle preferences as it turned out. For example, in Bangladesh only 5% of students would buy a car and 9% of students would prefer to drive an electric car, 12% would like to have environmentally friendly vehicles, whereas 74% of young people would choose a bicycle.

Most of the Ukrainian students polled would prefer to have a car (45%) or an electric car (43%). It is important to mention that 63% of boys chose having an

electric car while 49% of girls would like to have an auto rather than an electric car (43%). Bikes were not very much popular among the Ukrainian young people for some reasons (only 5% of girls would like to buy a bicycle). One of them was that Odessa has a very high Traffic Index and there are very few roads for cyclists as well as due to unsafe driving conditions. In addition, the weather all year round is not in favor for riding a bicycle. As for unconventional types of transport, 7% of girls would like to have it, whereas the boys interviewed were not interested at all. Some of the students mentioned that they would like to have a motorbike, a plane or an electric scooter as well. In Ukraine, the situation differed as it is shown in the following pie chart:



**Figure 3: The preferences of vehicles among the youth in Bangladesh and Ukraine (2020)**

Other questions were asked to understand how eco-conscious were the young people in everyday life. Thus, they had to answer whether they used a plastic bag or any other bag for shopping as well as how they consumed electricity and water at home. The answers have shown that most of the students in both countries (49% of respondents) used a handbag or a bag for shopping. Plastic bags were used more often in Ukraine (39%) and were less common in Bangladesh (21%). Paper bags or any other eco-bags were used by 28% of Bangladeshi young people and 34% of Ukrainian students. The problem is that the biggest supermarket chains in Ukraine usually do not offer paper bags or charge higher price for eco-bags rather than plastic ones so that the customers from developing countries are to choose what is more affordable.

Another issue was energy saving. In both countries, energy saving was acute so 94% and 88% of respondents from Bangladesh and Ukraine respectively saved electricity after leaving their room or house and also most of them had energy efficient light bulbs at home.

The situation totally differed in the consumption of water. The results were strange because when in Bangladesh the young people (93%) saved water and used it economically when taking shower, brushing their teeth, washing the dishes, etc., having also a dishwasher at home; in Ukraine almost 54% of students didn't save water in everyday life. Despite the fact that Ukraine is the least water-rich country



in Europe and the Black and Azov Seas are being contaminated as well as the rivers and groundwater in many regions so they don't meet water provision requirements, the reason of such irrational consumption could be explained by the fact that they probably didn't value it. In addition, the cost of water in the utility bills was rather low if to compare with the tariffs on electricity and there was almost nothing done on the local or national level to promote conscious and sustainable consumption of water.

One of the key questions of the questionnaire was whether it was important or not to include environmentally-based disciplines such as Eco-economics at colleges and universities. 95% of Bangladeshi respondents believed that Eco-economics or a similar discipline should be included in the curriculum of the universities, only 5% of students disagreed. In Ukraine, the opinions split between male and female students. Thus, 50% of male students thought such a discipline should be taught at the university while the others didn't see any reason for it. 76% of the Ukrainian girls interviewed would like to have some environmental discipline at the university. In general, 72% of Ukrainian students supported the implementation of Eco-economics or any other eco-discipline at the university.

Finally, to find out the most effective ways to bring-up climate-conscious citizens, students were offered such ways as raising eco-problems in public as well as organizing different events, involving people in different eco-activities and even

introduce strict fines for littering or damaging the environment. The responses from both countries were rather different. For instance, 45% of students from Bangladesh believed that, first and foremost, it was needed to raise eco-problems in public whereas the least number of the Ukrainian students (20%) chose this option as well; then it was important to introduce eco-education at schools and universities (28% of respondents) and to involve people in various eco-related activities. Only, 2% of Bangladeshi students thought it would be better to introduce eco-fines. The Ukrainian youth's opinions differed sharply – 71% of students responded that eco-fines would be the best solution to the problem. The preferences were also given to the involvement of citizens in different environmental activities as well as the promotion of eco-education at schools, colleges and universities. Nevertheless, whatever the ways of promoting eco-awareness were more or less popular among the youth, urgent measures need to be taken at the local and national levels to foster climate education in order to raise climate-conscious citizens for the sustainable development of the population.

**Discussion.** The problems of littering, deforestation, air and water pollution and traffic jams both in Bangladesh and Ukraine need time to be managed and solved, introduced at educational establishments properly and citizens to be involved. However, they continue to worsen without waiting until even urgent measures are taken. For instance, 20% of soil is contaminated in Ukraine and 150k

hectares are damaged due to mining and other industries; almost two third of the population lives on the territories where the condition of air doesn't meet the requirements leading to different diseases; the number of cars is constantly increasing and causing much distress and threat for the population as well.

In Bangladesh, almost every single respondent of this research paper is undergraduate which means they are educated. But unfortunately, few people have average or below-average knowledge of climate change. When educated people know so little about climate change, then we can easily predict the scenario of more illiterate people in the country. People of Chittagong got used to throwing garbage everywhere without keeping to any rules and regulations. Polybag as the most harmful thing is being thrown anywhere. If people need to cut down trees for daily needs, they should have the practice to plant two more trees after cutting down one. It is scientifically foretold that the impact of climate change will be booming day by day. In terms of Bangladesh, it is one of the most climate-impacted areas in the world. It is not possible to stop climate change but tackling this problem at all levels would help decrease the increasing devastating ecological situation in the short-run.

**Conclusions.** The importance of implementation of climate change education to prepare climate-conscious citizens has shown to be acute according to the survey conducted. The obtained results approved that there is a need to raise environmental awareness of the population on the local and national levels via the introduction of

such disciplines as Eco-economics and other eco-oriented ones as well as to organize different events and activities and do more social advertising and promotion. The questionnaire revealed that both countries had serious ecological problems to be tackled today, both countries lacked government control and regulation concerning environmental issues. The survey has also shown that young people in both countries were concerned about environmental challenges though they sometimes lacked knowledge and direction towards more eco-friendly lifestyle. The survey reminded that environmental issues should be solved on all the levels and by all the people despite their age, positions, social status, etc. because there is no Planet B.

To develop and foster eco-awareness of the population, in our opinion, the following measures should be taken:

- the implementation of strict rules and regulations should be made on the local and national levels;
- the involvement of businesses in eco-friendly actions and activities should be promoted;
- a strong social advertising campaign along with other activities should be supported and held regularly;
- climate education should be reconsidered and integrated in the existing curricula at schools and universities; eco-based or eco-oriented projects, theses and other individual tasks at colleges and universities should be assigned and supervised;

- it is important to promote cooperation with IT and develop educational Apps or services like CityScale, EcoCity, CliMate that allow users to call up the latest information on global surface and atmospheric temperatures and trends, Arctic ice cover, weather, atmospheric CO<sub>2</sub> concentrations, and solar activity, along with IPCC climate forecasts and tutorials on climate change, space weather, greenhouse warming, and other subjects.

To sum up, the analysis of the official sources and scientific literature showed that the problem of raising students' awareness on environmental issues is crucial and needs to be researched and solved. The given survey doesn't cover all the aspects of the problem concerned. Further research needs to be carried out in this field in order to create or develop effective online and offline interdisciplinary courses as Environmental Management, Environmental Taxation, Pollution Prevention Policies, Sustainable Product Design, Marketing of Eco-friendly Products, Green Corporate Culture, etc. for university students worldwide.

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