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ATTITUDES TO GREEN TECHNOLOGIES IN SWEDEN

Abstract. *The present article deals with the use of green technologies and the attitude of the Swedish population to the environment. It contains an overview of the major eco technologies used in the country. Its prior objective is to investigate the causality between Sweden's status as the greenest country in the world and population culture. The results of this investigation serve for reasoning the attitude of people to the environment in Sweden.*

Keywords: *green technology, environment, ecoculture, utilization, recycling, reusing, garbage, biofuel.*

Statement of the problem. In recent years, in terms of realization an environmentally friendly growth strategy, developed countries have been evolving green technologies. The most important stimulus for growth are the various steps of public policy. Nowadays, there are several definitions of the concept of «green» or environmentally friendly (environmental) technologies. The general approach provides achievement of main goal of reducing the negative impact on the environment, for example by reducing waste, improving energy efficiency and improving design to reduce the amount of consumed resources.

Purpose of the research. The purpose of the present work is to specify the role of Swedish mentality in the environmental policy of the country.

The key findings. Currently, «green» technologies cover all sectors of Swedish economy: energy, industry, transport, construction, agriculture etc. They are implemented in the entire chain activity of Swedish companies, including management and products manufacturing. Energy is a key area of green technology development. The main directions of its «greening» are improving energy efficiency and developing new energy sources, especially renewable.

Sweden earned a reputation as a pioneer in the field of ecology in the 1960s–1970s. Sweden became the first country to establish the Environmental Protection Agency in 1967. The first UN conference on environmental issues was held in Sweden in 1972. It resulted in the creation of the United Nations Environment Program (UNEP), the leading international environmental authority until today. Sweden was also one of the first countries that signed and confirmed the Kyoto Protocol. It was an international agreement about necessary steps in conditions of climate change.

According to the UN statistics, two-thirds of the world's population will live in cities by 2050. That is why the problem of overpopulation of cities and their growth causes concern among ecologists of all countries. Sweden can also be a good example here, since the rational use of natural resources played a decisive role in the planning of many Swedish cities.

Legislation plays an important part in Swedish environmental efforts and an Environmental Code entered into force in 1999. This legislative framework aims to promote sustainable development that will assure a healthy and sound environment for present and future generations. To achieve this, the code shall be applied so that:

- human health and the environment are protected against damage and detriment, whether caused by pollutants or other impacts;
- valuable natural and cultural environments are protected and preserved;
- biological diversity is preserved;
- the use of land, water and the physical environment in general is managed well in the long term in regards to ecological, social, cultural and economic values;
- reuse and recycling, as well as other management of materials, raw materials and energy, are encouraged so that natural cycles are established and maintained. [1]

The Swedish Environmental Code also requires that an environmental impact assessment be carried out before permission can be given for an environmentally hazardous activity. This assessment takes into account the impact on people, animals, soil, water, air, the landscape and the cultural environment. [2]

In the middle of 1990s, Stockholm town council decided to turn the former industrial zone Hammarby into an example of ecological urban planning. In the newly rebuilt residential area, there are smart grids, affordable and environmentally friendly public transport, bike lanes and parking lots, organization of waste collection and utilization. A similar transformation of the industrial zone into a residential area has occurred in Malmö. Today, the Västra Hamnen district is a zero-carbon region that uses a thermal energy storage system. Water is stored during the summer, and then pumped using wind energy to heat homes in the cold season. Then water is reused to cool buildings in the summer.

A recent quiz showed that almost a third of Swedes consider ecology and environmental pollution one of their most worrying issues. For comparison: only 7% of residents of the European Union are concerned about these problems according to the

same statistics. Overproduction and continuous growth in consumption are another problem that many countries are worried about as industrial production entails environmental pollution and energy overruns. At the household level, it is popular among Swedes not to buy unnecessary things and not to create excess demand for «non-environmentally friendly» goods. It is quite common, for example, to buy used furniture, clothes and technics to prevent overproduction. [3]

Almost all industrial enterprises in Sweden are constantly introducing innovative solutions to increase efficiency and at the same time reduce energy consumption. Swedish waste incineration factories have the most advanced technology, in result a number of harmful emissions are less 1%. Swedes also managed to reduce by about 50% the amount of harmful substances that enter to ash. As a result, Stockholm is considered one of the cleanest capitals in Europe, despite the fact that the city has a waste incineration factory. [4]

More than 99% of the garbage in Sweden is recycled and reused in one way or another. This phenomenon has already been called the «Swedish recycling revolution». No other country in the world has ever managed to come so close to the dream of waste-free production, clean water and air. How did the Swedes manage to achieve this?

If we take into account that on average each inhabitant of the planet produces several tons of household garbage per year, then it is easy to imagine what the Earth will turn into at least in a few years if no actions are taken. Sweden is one of the countries that have succeeded in utilization and recycling. Only 0.7% of household waste in Sweden is disposed of through landfills at special areas, while in the EU as a whole this figure is as much as 34%. [5]

Every Swedish family in the apartment and in each house has several containers with stickers. Waste is collected in these containers, which are then transported to a garbage collection station. The importance of sorting garbage is so entrenched in the minds of Swedes that many do it automatically. Paints, nail polish, old batteries, light bulbs and electrical appliances are dangerous garbage that can be disposed of in designated areas. Municipalities are responsible for organizing the collection of waste and its disposal, and they are responsible for ensuring that their residents are aware of the rules and possibilities of utilization.

Separate garbage collection in Sweden only took over at the end of the last century — later than in many other European countries - but in the short term they have achieved great success. Swedes are responsible for sorting and for a couple of decades they are accustomed to decomposing garbage into factions: containers for paper, glass, metal, plastic, food scraps and non-recyclable waste are usually found near the houses.

Even a young child will never mind throwing the wrapper in an unassigned container. Firstly, because the wrong sorting is threatened with considerable fines, and secondly, because the Swedes from a young age are taught to dispose of garbage properly.

Due to such careful primary sorting of garbage, its recycling to the state is several times cheaper. Considering that private homeowners are still paying for the landfill, it turns out that it is even profitable to recycle waste in Sweden. By the way, about garbage collection: different factions are taken out on different days of the week. Every morning, Swedes who living in private houses roll out to the edge of the roadway a container with

the type of waste they have to take away today. It is also easier for the country to control sorting.

Underground duct is type of transporting of garbage that use in some cities in Sweden. It was first tried in this country in 1961. With this method of garbage collection above the ground, only the top of the garbage can is seen with a hole for waste, and its main storage part is located underground. Several times a day, these accumulated wastes are absorbed into a large diameter sewer tunnel through which they are carried to a central receiving station by a strong air stream. Here, the garbage is pressed into containers and sent either to the recycling station or to the incinerator.

Another way Sweden is trying to show other countries the path to turning the planet into an ecological paradise is to use innovative environmental solutions. The Swedish government has already invested over 400 million kronas in research and development in the field of ecology and environmental protection. Among the most well known developments are biofuels, smart grids and carbon capture and storage. [6]

Concern for clean air forced the Swedes to look for ways to replace combustible fuel and gasoline. As alternative sources of fuel, which are widely used in Sweden, are biofuels derived from food and organic waste, electricity and ethanol. Many Swedish companies, as well as almost all government agencies, are replacing the car park, disposing of cars using combustible fuels and changing to environmentally friendly electric vehicles. Almost all city and intercity buses switched to biofuel and ethanol. These are just some of the steps by which Sweden seeks to remove flammable gases from circulation and to help cleanse the air from harmful emissions. Tasks to reduce greenhouse gas emissions by 40% by 2020 compared with 1990 and completely rid the fleet of fossil fuels by 2030 are among the priorities for Sweden's environmental policy.

Conclusion. It can be concluded that Sweden has succeeded in achieving environmental protection thanks to a responsible population and clear public policies. Sweden has also succeeded in developing green cities. I believe that Ukraine should take the experience of Sweden as an example, and develop environmental policies and green technologies.

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GLOBAL OPINION ON CLIMATE CHANGES

Abstract. *The present article deals with the main topic of the last decade and shows the changes in people's attitude towards the problem. It contains the survey of people's opinion of the problem from all over the world and comparison by regions.*

Keywords: *climate change, global opinion, environment, global warming.*

Statement of the problem. Global warming may be the chief and most complicated environmental problem to potentially affect our planet. The climate has been warming fast since the Industrial Revolution, because human activities are altering the composition of our atmosphere. Nowadays a problem of changing climatic conditions, in particular, global warming, is an acute issue. Some people believe that there is no reason to worry and we cannot stop this process, others have much against. So where is the truth? The problems of the environment have been a subject of hot debates for the last decade. There is an opinion that if we keep on rejecting responsibilities to take care of nature and ecology the human race is doomed to failure. However, there are those with more optimistic views.

Analysis of recent research and publications. The impacts of climate change and extreme weather also hit many newspaper front pages over the past 12 months, from devastating fires in both the Amazon and Australia to Greenland's melting ice sheet. According to Altmetric, the two highest-scoring climate papers in 2019 are commentaries. These are «World scientists' warning of a climate emergency» in the journal *BioScience* written by William J. Ripple, Christopher Wolf, Thomas M. Newsome, Phoebe Barnard, William R. Moomaw, with a score of 10,950, and «Climate tipping points — too risky to bet against» in *Nature* written by Timothy M. Lenton, Johan Rockström, Owen Gaffney, Stefan Rahmstorf, Katherine Richardson, Will Steffen & Hans Joachim Schellnhuber, which scored 8,552. Also an article «A look at how people around the world view climate change» written by Moira Fagan and Christine Huang, which gives us a statistical overview of people's opinion on the topic.

Purpose of the research. The purpose of the present work is to show the public attitude on the problem, which concerns all of humanity and how major countries react on it.

The key findings. In the last 50 years, human activities such as excavating the earth, use of fossil fuels and greenhouse emissions have drastically altered the earth's climate in negative ways. During this period, the burning of fossil fuels has released large quantities of carbon dioxide and greenhouse emissions, which in turn have trapped heat in the earth's lower atmosphere thereby affecting our global climate. Humanity began to sound the alarm about climate changes.