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**ENVIRONMENTAL EDUCATION AS A DETERMINANT  
OF THE SUSTAINABLE WASTE MANAGEMENT**

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*The aim of the article is to show the link between eco-education and sustainable municipal waste management. Ecological education in Poland, especially informal, is a relatively new issue. Its intensive development is caused by Polish accession to the European Union, rising ecological awareness of citizens and the development of new, active non-governmental organizations.*

The concept of anthropogenic homeostasis describes relations between man and nature. It points out that in the second half of the XX century human civilization began the stage of “total exploitation of the environment”. Global interference within the biosphere and the disappearance of the last enclaves of the natural environment are characteristic for this stage [1]. Population growth and the rapid technological and industrial progress caused disappearance of areas free from the influence of human activity on Earth. Socio-economic aspects as well as political systems largely determine human intervention in the natural environment. Economists like Adam Smith, David Ricardo and Tomas Malthus based their considerations on the strong interactions of social, ethical and environmental issues. Adam Smith wrote in 1776 in his book "An Inquiry into the Nature and Causes of the Wealth of Nations" that what brings benefits to the majority cannot be a problem for others. He emphasized the importance of natural resources as a common good that should be protected [2].

Economics, sociology, natural and technical sciences form the theoretical basis for environmental protection and sustainable development. Various economic disciplines approach the sustainable development, natural capital, sustainability and valuation of the environmental and ecological services in a different ways. Despite this, the mutual support of various disciplines of economics and benchmarking produces synergistic effects [3]. Unfortunately, even with the full cooperation of specialists from many fields and high availability of data about the deteriorating state of the environment, the degradation process is hard to be stopped. To intermit this process, it is necessary to raise the environmental awareness of residents of industrialized areas. Raising environmental awareness is an important mechanism in environmental management. It allows to implement effectively the concept of sustainable development by sensitizing the society on environmental issues. This effect is obtainable only with an extraordinary focus on environmental education. The task of eco-education is not only to provide knowledge, but also to shape the attitudes of environment-friendly society. Therefore, raising environmental awareness is extremely important both among the younger generation, as well as adults. Eco-education is especially important among political and social decision makers. The National Environmental Education Strategy proposes to treat environmental education as an integral part of the whole educational

process. This education is an inherent component of information policy as well as economic strategy and health care of the population. In the XXI century environmental education becomes an important component of civic education. It shapes rational society that accepts the principles of sustainable development, becomes ecological security conscious and involved in decision-making processes [4, 5].

Unfortunately, the development of human faith in the anthropocentric concept of the world effects in man activities becoming more and more calamitous for the environment. Not only local, but increasingly emerging threats of transboundary or even global range environmental crises are the consequence. One of the more important problems is the large amount of produced municipal waste. In the second half of the XX century the problems related to waste disposal became a serious civilization challenge. The rapid technological and industrial progress and also the population growth caused a significant increase in demand for consumer goods. Technological advances substantially contributed to the shortening of the life cycle of some product groups, especially fast moving consumer goods. Economic development led to increased production of waste. In addition, the migration of people to urban areas and the development of multifamily housing industry resulted in fast growth of urban agglomerations and in high density of population. In accordance to the European Union and national regulations it is obligatory for local authorities to coordinate and carry out sustainable waste management. Therefore, waste management is one of the key challenges for local authorities. Lack of proper approach to municipal waste management in large cities may cause serious and long-lasting negative consequences. An example could be observed in Naples in the summer of 2008. The European media reported tons of municipal waste lying in the streets of the Naples. It could lead to an ecological catastrophe. This situation was a result of political negligence and inadequate framework for waste management [6, 7].

In accordance to the principle of sustainable development the society should take care of the minimal impact of waste on the environment. Reduction of the space needed for the disposal, treatment and storage of wastes forces their proper management. Rational management of exhaustible resources requires waste treatment as a valuable commodity. Sustainable waste management requires a comprehensive waste treatment taking into account the economic, environmental and social conditions. It is important to consider that waste possesses measurable values – material and energetic. Waste may be reused, recycled, or energy may be recovered from it [8].

The European Union regulations and national regulations for sustainable waste management indicate that the stabilization of waste production is by itself not sufficient for environmental protection. Therefore, in the Decision No. 1600/2002/EC of The European Parliament and of The Council of 22 July 2002 laying down the Sixth Community Environment Action Programme, it was assumed that reduction of the amount of generated solid waste was desirable. The aim was to break the link between economic growth and resource use as well as to achieve significant reduction in the amount of waste generated. Waste production prevention, better resource efficiency and more sustainable production and consumption should help to reduce volume of waste [9]. Also the break of the link between economic growth and the generation of waste is one of the main objectives of the Directive 2008/98/EC of The European Parliament and of The Council of 19 November 2008 on waste and repealing certain Directives [10].

“The National Waste Management Plan 2014” describes the waste prevention as directly contributing to:

- reduction of the impact of waste on the environment,
- efficient use of natural resources, mainly through the re-use of products, saving energy, reducing consumption of materials,
- reduction of the amount of waste deposited in landfills [11].

The document "National Environmental Policy for 2009 – 2012 with a view to 2016" has defined the major national targets for waste management, which are compatible with European Union policy. The main direction of changes in waste management is the reduction of the amount of waste deposited in the landfill and increase of amount of recycled waste.

These documents, as well as a number of other provisions, require local authorities to carry out the management of waste in accordance with the principles of sustainable development and to respect for the natural environment. However, changes in waste management will not be achieved without the participation of the society. Therefore, it is necessary to undertake broad activities of environmental education in the field of waste management including teaching about segregation of waste at source (in the households). The task of eco-education is to increase ecological awareness, transfer knowledge to the society and inform people how important for clean environment is to take activities in the field of sustainable waste management.

As to official international documents, the need for education about relation between man and the environment was for the first time announced in the Declaration of the UN Conference "Man and Environment"

in Stockholm in 1972 [12]. The task was entrusted to UNESCO. After many international efforts during the 70's and 80's, global concern for educational sustainability was expressed at The United Nations Conference on Environment and Development – The Earth Summit in Rio de Janeiro in 1992. The UNCED documents gave high priority to the role of education in pursuing the kind of development that would respect the natural environment. In particular, Chapter 36 of Agenda 21 emphasized that education is a prerequisite to the implementation of sustainable development and improvement in people's ability to address the issues of environmental protection [13].

Ecological education, also called environmental education or education for sustainable development is the concept of education promoting respect for the natural environment and life in accordance with the principles of sustainable development. The idea of eco-education promotes a balance between social and economic development, culture, tradition and the protection of natural resources of the Earth. Education emphasizes the need of esteem for human dignity, respect for diversity, protection of the natural environment and its limited resources. Interdisciplinary implementation of education for sustainable development will develop eco-consciousness and wake up the interest of society in interrelated economic, social, political and environmental issues. This should enable everyone to acquire knowledge and skills necessary for the improvement of the environment. The important tasks of eco-education are: to create new patterns of behavior, shaping the attitudes, values and beliefs of individuals, groups and whole societies, taking into account the concern for environmental quality [4].

Environmental education also aims to strengthen the skills of "learning" of consumer needs dematerialization. It should lead to an increase in respect for natural resources, rationalization of production and use of the new system of values. An important task of education is to teach the society about sustainable socio-economic development. These changes are needed by the current inhabitants of the globe, so that they can live with dignity meeting their needs, as well as for the future generations, to have opportunity to benefit from the resources of the Earth [14].

National Strategy for Environmental Education "Through Education for Sustainable Development" emphasizes that for the aims and objectives of ecological education to be fulfilled, it is necessary to:

- recognize the environmental education as one of the basic conditions for the implementation of the National Environmental Policy,
- provide common access to information about the state of the natural environment and to environmental education,
- introduce elements of environmental education into all aspects of social life, while respecting and using cultural, ethical and religious values,
- recognize the environmental education as a basic condition for changing consumer model of society [4].

Before The Earth Summit in Rio de Janeiro, Poland has established the "National Environmental Policy" (1991), detailing the environmental education as a tool of state environmental policy. The important role of informal education in shaping society was described in the chapter "Environmental Education". According to the document, in the following years, environmental education program directed to the general society was developed. In the field of informal eco-education, the main emphasis was put on:

- support for initiatives to develop the environmental awareness by organizing conferences, seminars, trainings, courses, contests, competitions, games and artistic events undertaking environmental topics,
- cooperation with organizations involved in eco-education and cooperating in this field with their foreign counterparts,
- supporting initiatives of non-governmental ecological organizations and cooperate with them in terms of determining the methods and courses of action to raise eco-awareness, as well as readiness of the society for the protection of the environment,
- initiation, in cooperation with various ministries, public administrations and training centers, vocational training of specialist in the field of environmental protection in the country and abroad,
- participation in the realization and dissemination of documentaries films, programs, shows and other educational materials about ecology in cooperation with the television centers, movie studios, artistic agencies, editorials and publishing,
- establishment of the National Environmental Education Center to improve and disseminate environmental education; the task of the Center is to inform, initiate, coordinate and lead other activities to raise environmental awareness and promote pro-environmental attitudes of society [15].

Starting from primary schools up to the selected fields of higher education - teaching programs include elements of eco-education. However, the level of environmental awareness of the Polish society is still low compared with residents of such countries as Germany, France or the Scandinavian countries. Society should be more sensitized to environmental issues. People should know what individual actions they can take to make a positive impact on the environment evolution. Daily habits must include such behaviors as segregation of waste in households, separating recyclables or not throwing waste on illegal dumps. It is necessary to transfer knowledge on the above topics also in non-school education system. This problem has been recognized and addressed in many documents of the EU and at the national level. Many funds co-financing the eco-educational projects were created by the institutions whose task is to supervise and care for the proper use of the environment. Also, many funds supporting social activities take into account issues of environmental education in funded projects.

Environmental education centers, nature and national parks, regional and local authorities, local departments of environmental protection, the media and workplaces carry out informal education on sustainable development. However, environmental non-governmental organizations perform especially important role in shaping ecological attitudes of society through informal education. NGOs are the most active organizations in the field of environmental education. Similar as it is in other EU countries, NGOs perform a large number of eco-educational local and cross-regional projects.

Ecological maturation of Polish society causes people show interest in environmental issues to more widely and frequently. The development of ecological attitude is shaped by both: the formal educational system and, also the informal one, provided by nongovernmental organizations. After Poland joined the European Union, eco-education developed considerably. However, additional legal support and expenditures in eco-education are still required for adequate stimulation of social change. Without the transfer of knowledge and changes in social habits it is not possible to conduct sustainable waste management, which requires the involvement of the whole society. Proper education should help people to understand that acceptance of environmental protection guidance and lifestyle conforming to sustainable development rules are the only ways to save our habitat.

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