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Research paper



Eco-Friendly Behavior of Local Population, Tourists and Companies as a Factor of Sustainable Tourism Development

Olena Sushchenko[1], Olena Prokopishyna[1], Nataliia Kozubova[1*]

[1] *Simon Kuznets National University of Economics*
**Corresponding author E-mail: kozubova_natali@ukr.net*

Abstract

The growth of waste generation is inextricably linked with the increase in the welfare of society, so, there is a strong relationship between the dynamics of gross domestic product and waste generation. In addition to the removal of land resources, the polygons pollute the atmosphere, groundwater and soil, negatively affect the flora and fauna, and worsen the population life quality living in nearby settlements. Many nations has understanding the materiality of the lost economic benefit from the waste stream irrational management, but efficiency of measures undertaken at national and regional levels to reduce the harmful impact on the environment are reduced due to the initial orientation for secondary processing of raw materials. On the basis of the quantitative methods application, this study proves the priority of formation of the local population, tourists and business ecologically responsible behavior for environmental protection. The paper also suggests the institutional bases and economic mechanisms promoting eco-friendly behavior, that will ensure the environmental engineering innovative development.

Keywords: *Environmental Engineering; Smart growth; Eco-friendly Behavior; Waste management technologies; Waste Treatment*

1. Introduction

Environmental protection today is not only the key to the implementation of sustainable development of society, but also the essential factor survival of mankind. Deforestation, destruction of the biosphere, exploitation of natural resources, harmful emissions, waste products and refuse of consumption disrupt the ecological and energy balance of the planet and lead to global climate change on the Earth, which every year becomes more tangible. The UN [1], published data that should draw the attention of the public and state bodies to the environmental protection problems solution.

While 3.5 billion people depend on oceans as a source of food yet oceans are used as waste and wastewater dumps. Annually 4.8 to 12.7 million tonnes of plastic waste enters the ocean every year from inadequate waste management: over 80 percents of the world's wastewater is released to the environment without processing, 57 million years of life lost or lived with disability annually due to poor water, sanitation, hygiene and agricultural practices, 58 percents of diarrheal disease due to lack of access to clean water and sanitation and a major source of child mortality. Many impacts of chemicals such as endocrine disruptors and developmental neurotoxicants and long-term exposure to pesticides on human health and wellbeing and biodiversity and ecosystems are still to be fully assessed. 50 biggest active dump sites affect the lives of 64 million people, including their health and loss of lives and property when collapses occur. Children poisoned by mercury and lead develop problems in their nervous and digestive systems, and kidney damage. 2 billion people are without access to solid waste management and 3 billion lack access to controlled waste disposal facilities. The global, international aviation industry presently accounts for 3% of carbon emissions worldwide and is rising fast. With all known approaches, including improving efficiency, emissions will be up 175% in the next 20 years particularly because of the ever increasing number of long haul flights [1].

2. Environmental Awareness in Ukraine and EU

The current practice of waste processing in Ukraine is characterized by increasing negative impact on the environment and human health, inefficient use of material and energy resources.

According to the State Statistics Service of Ukraine [2], about 500 million tons of wastes are generated annually in the country, including waste from mining (76%) and processing (about 18%) industry, agricultural waste (2%) and solid waste. Volumes of generation of solid household waste in Ukraine amounted to 48 million cubic meters or about 118 million tons. If we take into account the fact that only 78% of the population in Ukraine uses municipal waste collection services, the total amount of waste generation is actually much larger.

Despite the small share of municipal waste in the waste structure, the effective functioning of this sector is extremely important, since it directly affects the state of environment in the places where people live, it is the behaviour of the local population that affects the volume of solid waste. In addition, the recycled waste is an additional source of raw, materials and energy for the national economy.

The volume of waste production in Ukraine tends to grow, despite the decline in the population. The growth rate of waste production is 4-5% per year, which is three times higher than the population growth rate. According to the State Statistics Service of Ukraine [15], from 2000 to 2016 the annual volume of solid household waste increased by 70%. The dynamics of waste production is shown in Fig. 1 and Fig. 2.

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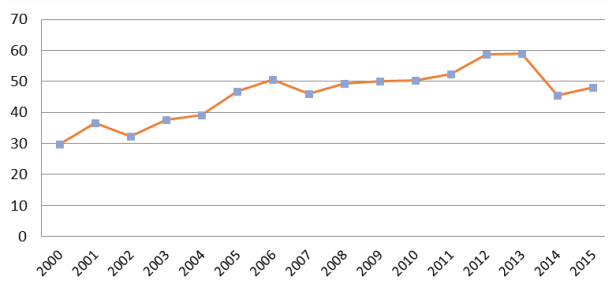


Fig.1: Total production of Municipal Waste in Ukraine.

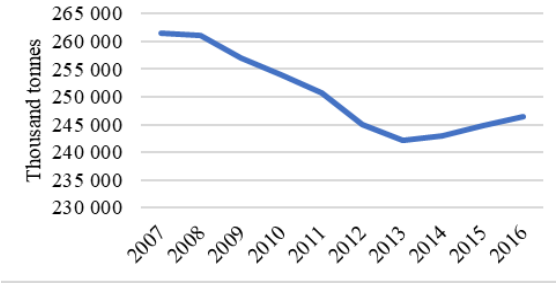


Fig.2: Total production of Municipal Waste in European Union.

If in 2000 there was an average of about 180 kg of solid waste per person per year, then by 2016 this figure increased to 271 kg.

The structure of consumption of the population has changed since 2000 towards more "wasteful" goods and services, in the consumer basket the share of non-food items has increased, the consumption of which is associated with the large volumes of waste packaging production. The solid waste structural composition is the determining factor in the waste processing system formation. It is the qualitative composition of the waste determines the requirements for the collection and disposal system, as well as the optimal configuration of measures for solid waste processing.

The significance of this indicator increases significantly when choosing methods for solid waste processing. Nevertheless, waste composition in Ukraine can be estimated as follows (fig. 3).

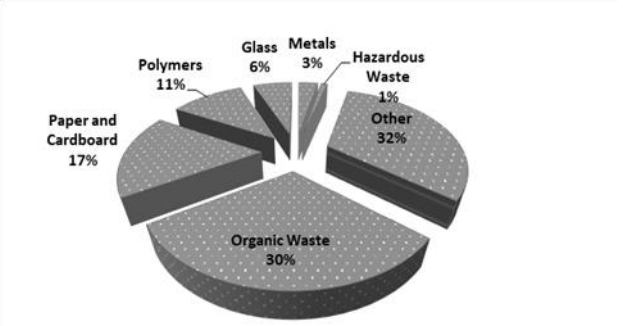


Fig.3: Waste composition in Ukraine.

The economic aspect of Municipal Solid Waste (MSW) processing in Ukraine until recently was not a decisive factor in determining the state waste management strategy. Meanwhile, the lost economic benefit from the non-rational waste management is very significant. So, UNDP [16] estimated the potential income from the recycling of paper in 180 million UAH, metals - 225 million UAH, plastic - 740 million UAH per year. In general, taking into account the generation of heat and electricity, the economic effect is estimated at 1.3 billion UAH (130 million euro).

In Ukraine, only 5.93% of the generated domestic waste was disposed of in 2015, including 2.73% - incinerated, 3.2% - directed to garbage processing plants and about 17 000 m^3 (0.003%) of household waste was composted. The rest (about 94%) were directed to landfills.

Independent experts estimate the territory occupied by landfills, in 12 thousand square kilometres, which exceeds the territory of Montenegro and Cyprus and well above the official estimate of 100 square kilometres. Landfills occupy 1.5 to 4% of the territory of Ukraine or 2-5.8% of agricultural land. The area of protected natural areas is 5% that is 3-5% of the land could be returned to agricultural production. The area of landfills wood soon reaches the square of nature conservation areas in the country.

In addition to the removal of land resources, the landfills pollute the atmosphere, surface soils, groundwater, and soil, negatively affect the flora and fauna, and worsen the population life quality living in nearby settlements. As a result of the toxic components wastes separate collection and disposal system absence, the environment pollution by hazardous substances is increasing.

Also, among the problems, it is necessary to highlight the statistical information process imperfection and the imperfection of the legislative base. As of December 2016, the national legislative base for waste management has not been harmonized with the EU Waste Directives, including those Ukraine should transpose in accordance with the Association Agreement. The basic principles of the EU on waste management (for example, the waste hierarchy) have not yet been implemented. The terminology used in the Ukrainian legislation and regulatory framework is not concordant with the definitions used in the EU waste documents (table 1).

Table 1: Definition of Municipal Waste in various EU documents

Definition of Municipal waste	Source
Municipal waste means household waste and similar waste, where i) 'household waste' means waste generated by households; and ii) 'similar waste' means waste in nature and composition comparable to household waste, excluding production waste and waste from agriculture and forestry.	Waste Framework Directive (2008/98/EC)
Municipal waste means waste from households, as well as other waste, which because of its nature or composition, is similar to waste from household.	Waste Landfill Directive (1999/31/EC) (Article 2b).
Municipal wastes (household waste and similar commercial, industrial and institutional wastes) including separately collected fractions. Other waste codes could also be considered municipal waste to the extent that they comply with the definitions for household or similar waste (e.g. packaging waste).	European Waste List (Annex to Commission Decision 2000/532/EC), Chapter 20

Gaps in legislation, its implementation, and realization, as well as delays in implementing the relevant EU standards, are the cause of the problematic situation with household waste and regulatory uncertainty, which in turn undermines the investor confidence.

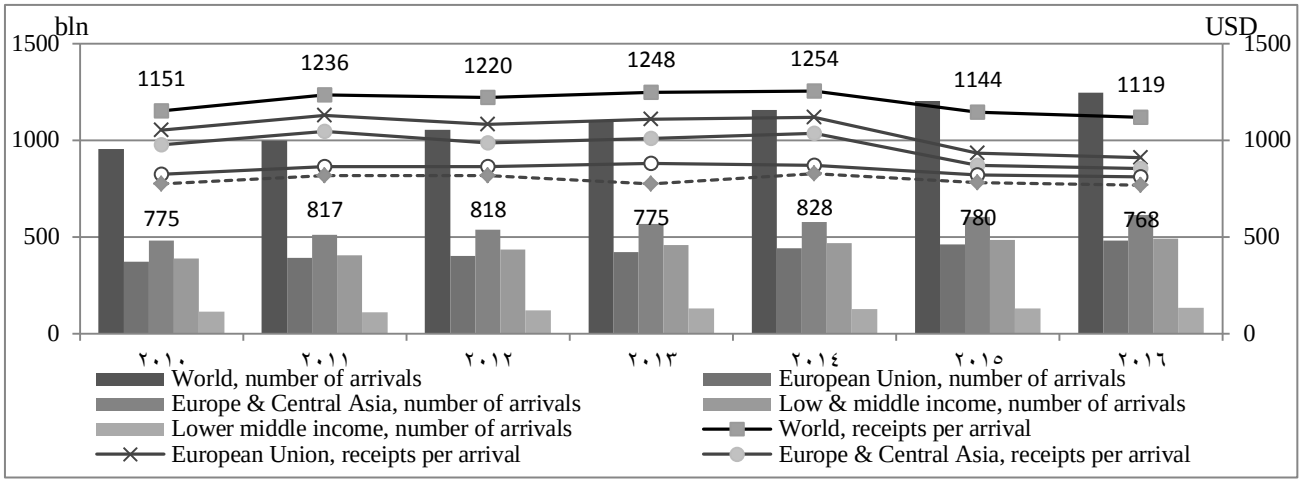


Fig. 4: International tourism by selected countries (Compiled by the authors based on [12]).

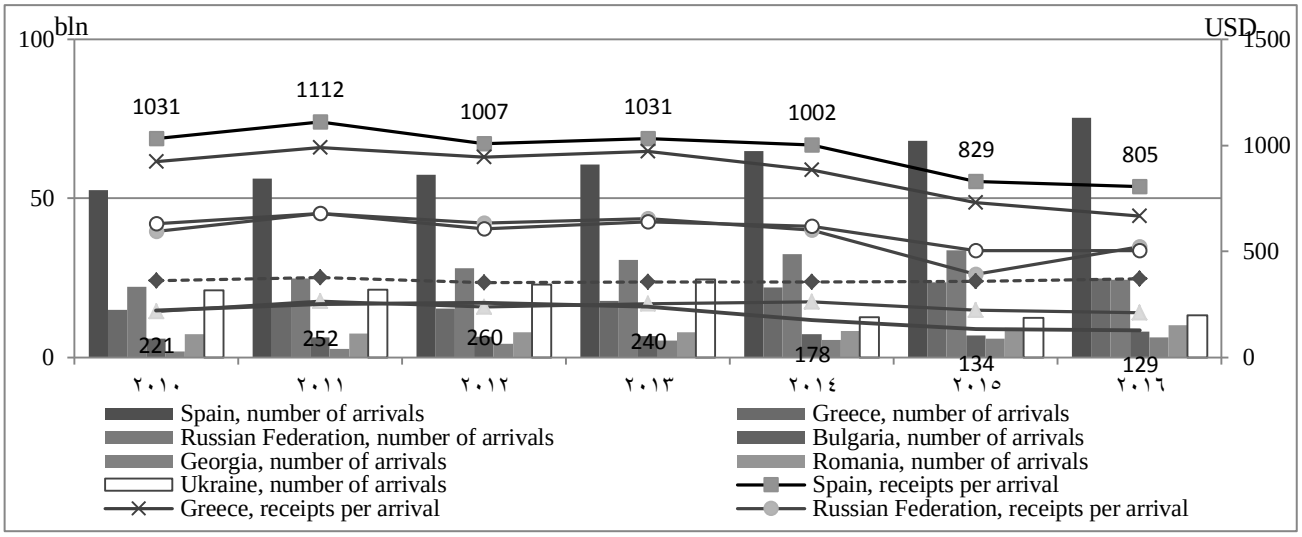


Fig. 5: International tourism by groups of countries (Compiled by the authors based on [12]).

Preventing the environmental pollution by household waste is a serious problem, and the current practice of such prevention in Ukraine is limited. There is a need for radical change in the principles of behaviour on the part of all participants, and for this, in turn, we need to focus on raising awareness. Therefore, a deep awareness and understanding of the long-term advantages of the household waste prevention for the environment and the economy should be formed.

3. Tourism for Sustainable Environmental Development

Back in 1987, the UN General Assembly [2] formed the concept of sustainable development of mankind, which implies the rational use of natural resources to save the Earth for future generations. Since then, it has not lost its relevance - the concept of sustainable development is actively discussed by world leaders today.

Eco-friendly behaviour is one of the practical applications of the mankind sustainable development concept, this is a principle of consumer behaviour that can reduce, minimize or not cause any damage to the ecosystem or the environment.

As one of the world's largest economic sectors, Travel & Tourism creates jobs, drives exports, and generates prosperity across the world. The sector is shown to account for 10.4% of global GDP and 313 million jobs, or 9.9% of total employment, in 2017 [3].

In the rating of 148 countries on receipts per International tourist arrival, Ukraine occupies the 140th place, having overtaken only such countries, as Algeria, Belarus, Zimbabwe, Mozambique, Malawi, Lesotho, Swaziland, and Burundi. While Luxembourg (4348 USD per arrival), Australia (4172 USD per arrival), United States (3236 USD per arrival), Israel (2215 USD per arrival), Switzerland (2087 USD per arrival), Sweden (1862 USD per arrival), United Kingdom (1551 USD per arrival) and Germany (1466 USD per arrival) are in the top of the rating in 2016. Ukraine gained only 129 USD per international tourist arrival, which is 5.94 times less than average receipts per arrival in the group of lower middle income countries, in which Ukraine is included accordingly to World Bank classification (fig 4.).

Such a price advantage was provided, first of all, by the exchange rate of the dollar to the national monetary unit, UAH, but it did not become a competitive advantage for the foreign tourists attracting. Amount of foreign tourist arrivals decreased in 2013 – 2015, when receipts per arrival decreased also, and in 2016 it slightly increased (by 7,32%) when receipts per arrival continued to decrease (by 3,3%).

The fig. 5 demonstrates interesting finding that receipts per arrival in a group of low-income countries are slightly higher (by 5.9%) than those in a group of low&middle-income countries. This deviation may be caused by the geographical location of the countries, as a group of low-income countries includes Sub-Saharan Africa, Latin America & Caribbean, and etc. countries, which located far from main international tourism donors and require more expensive passenger transport items.

Despite favourable geographical location Ukraine attracts less international tourists than neighbour countries. Al these necessi-

tate deep research aimed at latent factors revealing, that may moderate inbound tourism flow.
The success of the waste sector reformation depends on the implementation of a program-targeted approach with a clear setting of targets at the national and local levels, monitoring of their achievement, legislative support for the new economic and institutional mechanisms implementation and the appointment of a single authorized state body responsible for the sector reform implementing.
In the conditions of limited budget financing and the need for a significant concentration of financial resources for the implementation of regional waste management programs, the application of the principle of the expanded responsibility of the producer and the flexible use of public-private partnership for various types of projects are effective.
The use of a coordinated agent model adapted to specific conditions of the region is possible without significant changes in legislation: it is only necessary to develop normative guidelines at the national level to unify this process in the regions.
To ensure accuracy and controllability of the decisions made, transparency of the process for all actors in the waste management sector, it is necessary to form a single database on the basis of mandatory state statistical reporting (in unified physical units) compatible with international environmental reporting systems.
The success of reforms depends on the support of various stratum of society, the ecological transformation of the population thinking and behaviour. The importance of this factor determines the importance of fostering respect for resources and the environment.
Transformation of the waste management system requires not only technological and organizational changes. It is necessary to adjust the attitude of the consumer to this sector and form a fundamentally new model of behaviour, therefore an important aspect of the transformation is information campaigns.
Insufficient awareness of participants in the waste management system serves as a barrier to effective implementation of projects in this area. With successful technical implementation of the measures proposed above and the adoption of progressive legislative initiatives, the projects will become innovative, but the technologies used will be used in the country for the first time, that is, they will require additional knowledge from all actors of the current waste management system: market operators, law advisory and executive authorities at the national and regional levels, as well as direct beneficiaries and main beneficiaries such as households and entrepreneurs.
It should be noted that economic actors seeking to increase the efficiency of knowledge, because of the final decision on the content, scope, and forms of education adopted for maximum efficiency criterion (in its broadest sense) training. This should also be taken into account and social consequences and impact studies [17].
There are five main informational and organizational factors that provide the success of waste processing programs:
1) increasing general awareness of the impact of waste on the environment and human health;
2) formation of lean relation to the use of resources, clarification of the desirability of sorting and recycling of waste;
3) informing about the types of solid waste that are suitable for processing, the advantages, peculiarities, and drawbacks of particular waste management methods, the consequences of their use in some sites or regions;
4) informing about the features of the current and newly introduced legislation, programs and initiatives, the possibilities of obtaining financial support, the order of compliance with requirements;
5) development of models for the proper eco-friendly behaviour of consumers in the reformed sector.
To inform the population and tourists local and national governmental bodies should use social advertising in the mass media and outdoor advertising; visual information on technologies and methods of waste management on the example of projects in other countries and regions; training courses and seminars (including for tour operators, agents, hotels and educational institutions).

4. Conclusion

Tourism is a phenomenon of the modern development of society, on the one hand, it provokes the growth of municipal waste in the countries of entry, on the other, there will be no sustainable growth in the country with a high level of environmental pollution. However, large-scale and industrialized international tourism has already and continues to have a very unfavourable, often destructive effect on the natural ecosystems of many tourism regions. Especially it concerns beach and hunting tourism. For example, the continuous construction of coasts by hotels, boarding houses for a living, as well as the concentration of a huge number of tourists in the narrow coastal zone, led to significant pollution not only of the coast but also coastal waters. This led to negative changes in agriculture and to the social situation worsening.
Nowadays, as opposed to large-scale tourism, ecologically responsible tourism (ecotourism) is a local idea of creating a balance between the economic benefits derived from recreation in nature and the ecological safety of recreational areas is becoming increasingly popular as part of the global idea - preserving the nature of the planet as the basis of life on it.
The Nature Conservancy promotes the definition of ecotourism as environmentally responsible travel to natural areas, in order to enjoy and appreciate nature (and accompanying cultural heritage, both past and present) that promote conservation, have a low visitor impact and provide for beneficially active socio-economic involvement of local peoples as it was proposed by the World Conservation Union.
From the environmental point of view, the scale of tourism or the motivation of travellers is not so significant, as the impact of their travel. The level of the trip organization is primarily determined. Tourism and the environment are closely interrelated. Natural and artificial environments provide tourism attractions, and tourism development can have both (positive and negative) impacts on the environment. The development of sustainable tourism depends on the protection of natural resources for tourism. Partners for the sustainable tourism development are commercial tourism enterprises, environmentalists, community groups, and leaders, as well as the local population.
But any measures to protect the environment will not yield an effective result without changing the consumer orientation of human and the formation of a high ecological and moral culture. In that regard, the question of the humanization necessity of the social attitude to nature acquires the status of the most important in the sphere of solving the problem of interaction between society and nature for preventing an ecological catastrophe.

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References

[1] Tian, D., Pan, M., & Wood, E. F. (2018). Assessment of a High-resolution Climate Model for Surface Water and Energy Flux Simulations over Global Land: An Inter-comparison with Reanalyses. *Journal of Hydrometeorology*, (2018).
[2] Lui, E.M. and Ge, M. (2005) Analysis and Design for Stability in the U.S. – An Overview. *Steel and Composite Structures* 5(2-3) 103-126.
[3] Xue J., Liu G., Brown M.T., Casazza M. (2018) Trash or treasure? Prospects for full aluminum chain in China based on the recycling options. *Journal of Cleaner Production* 193, 217–227

[4] Handy S., Cao X., Mokhtarian P. (2005) Correlation or causality between the built environment and travel behavior? Evidence from Northern California. *Transport and Environment* 10 (6), 427–444
[5] Cao X., Mokhtarian Pl., Handy Sl. (2009) No particular place to go: an empirical analysis of travel for the sake of travel. *Environment and Behavior* 41 (2), 233–257
[6] Zhang K., Schnoor Jl., Zeng Ey. (2012) E-waste recycling: where does it go from here? *Environmental Science & Technology* 46 (20), 10861–10867
[7] Hamed H. Abdullah, Mohammed Y. Fattah , Abdulkareem H. Abed (2018), Determination of liquefaction potential for two selected sites in Kerbala city- middle of Iraq. *International Journal of Engineering &Technology* 7 (1), 25–32.
[8] Dolnicar, S., Crouch, G. I., & Long, P. (2008). Environment-friendly tourists: what do we really know about them?. *Journal of Sustainable Tourism*, 16(2), 197-210.
[9] Ge, M. and Lui, E.M., (2005) Structural Damage Identification using System Dynamic Properties. *Computers and Structures* 83, 2185-2196
[10] Yasapala, N. V. (1993). *Environment friendly tourism*.
[11] Wilson, D. C., Rodic, L., Modak, P., Soos, R., Carpintero, A., Velis, K., ... & Simonett, O. (2015). *Global waste management outlook*. UNEP.
[12] World Development Indicators, The World Bank
[13] Modak, P., Wilson, D. C., & Velis, C. (2015). *Waste Management*: Global Status.
[14] Pour, N., Webley, P. A., & Cook, P. J. (2018). Opportunities for application of BECCS in the Australian power sector. *Applied Energy*, 224, 615-635.
[15] State Statistics Service of Ukraine. Available under the link: http://ukrstat.gov.ua/
[16] UNDP (2016) Municipal Solid Waste Management in Crisis and Post-Crisis Setting. Available under the link: http://www.undp.org/content/undp/en/home/librarypage/poverty-reduction/municipal-solid-waste-management-in-crisis-and-post-crisis-setti.html
[17] Nenkov, N., Sushchenko, O.& Dyachenko Y. (2017) Role of chief information officer within the system of human resource development in the service organizations (tourism). *Economic Annals-XXI,* Vol. 165, Issue 5-6, pp. 97-103.
[18] Trunina I. (2015) Development of entrepreneurship entity competitive strategy using competence-based approach. *Actual Problems of Economics*, 3(177), 191-198.