

Todorovic, Brankica

Article

Waste management and sustainable economic development in the modern economies

CES Working Papers

Provided in Cooperation with:

Centre for European Studies, Alexandru Ioan Cuza University

Suggested Citation: Todorovic, Brankica (2019) : Waste management and sustainable economic development in the modern economies, CES Working Papers, ISSN 2067-7693, Alexandru Ioan Cuza University of Iasi, Centre for European Studies, Iasi, Vol. 10, Iss. 4, pp. 453-467

This Version is available at:

<https://hdl.handle.net/10419/198556>

Standard-Nutzungsbedingungen:

Die Dokumente auf EconStor dürfen zu eigenen wissenschaftlichen Zwecken und zum Privatgebrauch gespeichert und kopiert werden.

Sie dürfen die Dokumente nicht für öffentliche oder kommerzielle Zwecke vervielfältigen, öffentlich ausstellen, öffentlich zugänglich machen, vertreiben oder anderweitig nutzen.

Sofern die Verfasser die Dokumente unter Open-Content-Lizenzen (insbesondere CC-Lizenzen) zur Verfügung gestellt haben sollten, gelten abweichend von diesen Nutzungsbedingungen die in der dort genannten Lizenz gewährten Nutzungsrechte.

Terms of use:

Documents in EconStor may be saved and copied for your personal and scholarly purposes.

You are not to copy documents for public or commercial purposes, to exhibit the documents publicly, to make them publicly available on the internet, or to distribute or otherwise use the documents in public.

If the documents have been made available under an Open Content Licence (especially Creative Commons Licences), you may exercise further usage rights as specified in the indicated licence.



<https://creativecommons.org/licenses/by/4.0/>

Waste management and sustainable economic development in the modern economies

Brankica TODOROVIC*

Abstract

The environment is a comprehensive category of the economic development which it should be managed at the level of several policies, including economic and trade policies. Therefore, this paper focuses on: economic and sustainable development according to the indicators Human Development Index (HDI) and Environmental Performance Index (EPI), measures of the economic policies that enable efficient waste management, as well as, the impact of the mass tourism, the growing number of population in cities and development of eco-tourism on the reduction pressures on the environmental.

Keywords: waste management, economic policy, eco-tourism

Introduction

An integral part of the economic policy of modern economies is the development of a green economy and the state's orientation to its development on the national and international level. It affects the increase environmental jobs mainly in the area of waste management, renewable energy and water, by developing new ecological enterprises and encouraging eco-innovation. However, there are challenges and constraints that economies faced in achieving sustainable development.

The opening of the market and the liberalization of foreign trade, make a high import dependence and non-equivalent exchange. Some countries consume twice as much resources as they have and import large quantities of raw materials, fuels, metals and food to meet the demands of production and consumption. Import products are associated with severe environmental impacts (more than half of the environmental impacts generated through domestic consumption are generated abroad). As a result, modern economies seek to reduce import dependence and focus on domestic production, primarily in the context of green growth. Globalization creates space for the development of mass production which encourages the development of countries like China and India. Growing competition, primarily in consumer goods, leaves space for economies that will, by low wage earnings and modern technological solutions, provide themselves with space for operations in the global world.

*Brankica TODOROVIC, PhD, is professor at School of Economics, Uzice, Serbia, e-mail: bdanica@neobee.net.



In response to these problems, the states seek to develop collective and social responsibility in relation to environmental protection and waste management. The development of corporate social responsibility includes three main areas: production (improving the efficiency and organization of production), social relations (health and safety) and environment (implementation of cleaner production, rational use of resources and reduction of waste).

In addition to the negative impact of trade liberalization on the environment, population growth and mass tourism are producers of large quantities of solid waste. The rising number of population leads to increased demand for water and energy, air and water pollution, waste water discharges, floods, waste generation and degradation of habitats, landscapes and coasts. Since 1995, tourism has grown by about 75% and projections show that the number of tourists will reach around 640 million by 2025. A large number of countries in the Mediterranean are facing with environmental problems in conditions of mass tourism growth. However, while the number of foreign tourist arrivals has a long-term growth trend, tourism revenue has a downward trend as a result of the growth of mass tourism. Mass tourism also has a significant impact on the environment which undermines long-term sustainable development. The most visible effects of environmental degradation are coastal roads leading to tourist destinations while some destinations become devastated due to waste dumping. The projects and programs implemented by the state for improving the state of the environment are related to climate change, waste management, energy efficiency improvement, reduction of the damage caused by tourism to its development, as well as, the growing number of inhabitants. In the field of tourism, certain countries seek to link tourism development, social responsibility and waste reduction through eco-tourism.

1. Review of literature

Scientific papers consider eco-tourism from more aspects among which there are also approaches related to the environment and sustainable development management. There are various definitions of eco-tourism (Buckley, 2009; Donohoe and Needham, 2006; Weaver and Lawton, 2007). Eco-tourism is responsible travel to natural areas that conserves the environment and improves the welfare of local people (The International Ecotourism Society).

The works, also, considered environmental impacts ecotourism produces at individual sites (Buckley, 2004; Liddle, 1997), as well as, measuring the sustainability of tourism (Bramwell and Lane, 2008; Gössling *et al.*, 2008, 2009). Authors beside the term eco-tourism use community and responsible tourism (Spenceley, 2008), nature-based tourism (Newsome *et al.*, 2002), sustainable tourism (Stabler, 1997; Weaver, 2006) and other related terms. Research studies show that travellers

prefer companies that embed green or eco-friendly practices into their operations and expect that tourism businesses (WTTC, 2015).

The tours clients generate global environmental impacts through long-distance air travel (Simmons and Becken, 2004; Folke *et al.*, 2006). Positive impacts eco-tourism: examples of private or community conservation funded by ecotourism rely on attracting rich nature tourists from rich nations to bring their money to poor communities in poor nations. Eco-tourism companies offer tours of their clients from developed nations, especially in Europe and North America, regions of Africa, Asia and Latin America, the Arctic and Antarctica, Pacific island nations, or Australia (Buckley *et al.*, 2003). Tourism is growing most rapidly in developing countries: between 2010 and 2030, arrivals in emerging destinations are expected to increase at twice the rate (+4.4% a year) of those in advanced economies (+2.2% a year) which is also an opportunity for the development of ecotourism (UNWTO, 2015). Nature-based tourism accounts for about 20% of total international travel and continues to grow according to the UNWTO (UNEP, 2015).

Ecotourism is "a force within the industry that, in its very essence, aims to minimize tourism's negative impacts whilst maximizes tourism's positive impacts" (Black and Crabtree, 2007). A number of studies are analysing parks and recreation management, recreation ecology, considers techniques to measure and minimize the impacts of recreational visitors (Bushell and Eagles, 2007; Eagles and McCool, 2002; Pigram and Jenkins, 2006). The tourism sector today accounts for 5% of global CO₂ emissions and may be higher (up to 14%) if measured as radioactive forcing, i.e. the warming caused by CO₂ (by 2035 CO₂ emission generated by tourism will be more than three times higher than today) (UNEP, Climate Change).

The development of eco-tourism in terms of the growing pressures on the environment

The intensive socio-economic development after the Second World War, as well as, the dynamic process of employment, led to the rapid expansion of cities and the rise of the urban population. In cities the number of population is increasing which affects a number of problems related to environmental management. Besides that, the growing importance of tourism has led to major pressures on the environment and increasing of waste.

Bearing in mind the spread of cities, and the fact that most of the world's population lives in cities, many countries are taking measures to limit the spread of cities from the aspect of environmental protection. In Luxembourg, the state promotes sustainable modes of transport consisting of public and non-motorized transport modes. All this is aimed at promoting a new mode of transport such as electro-mobility and car use. "Cities of the Future" (in Norway) is an example of

an innovative approach, a collaboration between the government and the 13 largest cities to reduce emissions of greenhouse gas and make cities in the country better places to live. The program identified concrete projects and actions that could lead to structural changes both in infrastructure and in the organization of space. Parks will also help absorb the increasing rainfall expected in the future and at the same time create greener and pleasant cities.

In addition to the expansion of cities, the problem is also the growing pressure of tourism on certain areas. Pressures on the environment are further enhanced by the development of tourism while often concentrated in the Mediterranean coastal areas where since 1995 tourism has grown by almost 75%. Comparison the tourist attendance in the period 2010-2016 show the increase in the number of visits from year to year more than 32 million tourists in 2016 compared to 2010 (Table 1).

Table 1. Attendance of the Mediterranean countries

Countries	2010	2011	2012	2013	2014	2015	2016
Albania	2.417.000	2.932.000	3.516.000	2.857.000	3.341.000	3.0784.000	4.070.000
Algeria	2.070.000	2.395.000	2.634.000	2.733.000	2.301.000	1.710.000	2.039.000
Bosnia-Herzegovina	365.000	392.000	439.000	529.000	536.000	678.000	777.000
Croatia	9.111.000	9.927.000	10.369.000	10.948.000	11.623.000	12.683.000	13.809.000
Cyprus	2.173.000	2.392.000	2.465.000	2.405.000	2.441.000	2.659.000	3.187.000
Egypt	14.051.000	9.497.000	11.196.000	9.174.000	9.628.000	9.139.000	5.258.000
France	77.648.000	81.550.000	83.013.000	83.634.000	83.767.000	84.452.000	82.570.000
Greece	15.007.000	16.427.000	15.518.000	17.920.000	22.033.000	23.599.000	24.799.000
Israel	2.803.000	2.820.000	2.886.000	8.260.000	8.813.000	2.799.000	2.900.000
Italy	43.626.000	46.119.000	46.360.000	47.704.000	48.576.000	50.732.000	52.372.000
Jordan	4.207.000	3.960.000	4.162.000	3.945.000	3.990.000	3.761.000	3.858.000
Lebanon	2.168.000	1.655.000	1.366.000	1.274.000	1.355.000	1.518.000	1.688.000
Macedonia	262.000	327.000	351.000	400.000	425.000	486.000	510.000
Malta	1.339.000	1.415.000	1.444.000	1.582.000	1.690.000	1.783.000	1.966.000
Montenegro	1.088.000	1.201.000	1.264.000	1.324.000	1.350.000	1.560.000	1.662.000
Morocco	9.288.000	9.342.000	9.375.000	10.046.000	10.283.000	10.177.000	10.332.000
Portugal	6.756.000	7.264.000	7.503.000	8.097.000	9.092.000	9.957.000	11.223.000
Slovenia	1.869.000	2.037.000	2.156.000	2.259.000	2.411.000	2.707.000	3.032.000
Spain	52.677.000	56.177.000	57.701.000	60.675.000	64.995.000	68.175.000	75.315.000
Syria	8.546.000	5.070.000	-	-	-	-	-
Tunisia	6.903.000	4.785.000	5.950.000	6.269.000	6.069.000	5.359.000	5.742.000
Turkey	31.364.000	34.654.000	35.698.000	37.795.000	39.811.000	39.487.000	30.289.000

Source: World Development Indicator, Tourism Attendance

The largest international tourism revenues in 2016 were recorded in France and Spain, followed by Italy, Germany and the United Kingdom. A large number of countries in the Mediterranean are facing with environmental problems in conditions of mass tourism growth. Thus, the tourism industry in Greece is experiencing increased growth, especially in Athens and Thessaloniki. Mass tourism also has a significant impact on the environment which adversely affects long-term development. The tourism industry is also a producer of large quantities of solid waste.

In conditions of rising pressure from residents and tourists on the sustainability of the area, it is important to encourage the development of eco-tourism in protected areas. The development of eco-

tourism preserves the ambiance of a particular area which can bring economic benefits because modern tourists are striving for tourism experience and authenticity. In addition, an appropriate legislative basis that precisely regulates areas under protection and the degree of protection prescribes detailed performance of certain activities in accordance with the degree of protection. Countries use different mechanisms and instruments that influence waste reduction and environmental protection.

In Estonia, eco-tourism is organized by the State Forest Management Center (RMK), which, in addition to managing the state forests offers opportunities by managing a national forest recreational infrastructure that includes 13 recreational core areas and a total of 2 000 km of nature trails. Austrian Green Meetings and Green Events were created with the aim of promoting energy efficiency, waste reduction and ecological arrival and departure of guests. In this way, regional values, social responsibility, and positive image are created among the population, guests and sponsors. In Luxembourg, the program “SuperDrecksKëscht Action” for problematic household and business waste management was based on the principles of prevention, reduction and waste (this program was awarded in 2010 by the European Commission as an example of "best practice").

2. Indicators of sustainable economic development in the modern economies

Sustainable economic development, its specific objectives and tasks, is a part of the Millennium Declaration 2000¹. Member States of the United Nations formulated in 2014 goals for sustainable development: eliminating human deprivations and disparities in human progress, a commitment to improving the living conditions of and opportunities for every individual in the world by 2030. The goals of sustainable development encompass three elements: they assert the primacy of poverty eradication within the framework of sustainable development, they are universal, covering all countries and individuals and they set time-bound targets with progress to be monitored and reported nationally, regionally and globally.

A comparative analysis of the total HDI-environmental sustainability and the EPI ranking

A comparative analysis of the sustainable development is based on the two indicators: the Human Development Index (HDI) and Environmental Performance Index (EPI). There was a difference between countries according to the human development (analysed 188 countries): 49

¹ United Nations Millennium, 2000. Declaration 55/2. Resolution adopted by the General Assembly.

countries have a very high human development (HDI>0.800 or HDI=0.800), 56 countries have a high human development (HDI=0.799-0.712), 37 countries have a medium human development (HDI=0.711-0.536) and 46 countries has a low human development (HDI<0.535) (Human development report, 2015). There are large disparities by the HDI value when compared first three countries (Norway=0.955, Australia=0.935 and Switzerland=0.937) with the last three countries (Nigeria=0.348, Central African Republic=0.350, Eritrea=0.391).

Comparison HDI with indicators of environmental sustainability shows that there are differences indicators (Ireland, Netherlands, Germany, Denmark and Switzerland have a very high human development but they having the lowest environmental indicators). Norway, the country with the highest HDI achieved the best results in the use of renewable energy sources with a small percentage of the population living on degraded areas. However, there is an additional effort of countries with very high HDI with the increasing use of fossil fuels, renewable energy sources, increase the rate of electrification, reduce emissions of carbon dioxide and doesn't endanger the natural resources, forests and water (Table 2).

Table 2. Total HDI and Environmental sustainability for the first ten countries

HDI Rank	Country	HDI	Primary energy Supply - Electrification rate	Renewable sources	Electrification rate (total)	Electrification rate (rural)	Carbon dioxide emissions per capita (t) Average annual	Carbon dioxide emissions - Average annual growth (%)	Natural resource depletion (% of GNI)	Forest area (% of total land area)	Forest area (% change)	Fresh water withdrawals (% of total renewable water resources)	Population living on degraded land (%)	Natural Disaster Population affected (average annual per million people)
1	Norway	0.944	57.3	47.8	100	100	9.2	0.8	9.0	28.0	11.9	0.8	0.2	12
2	Australia	0.935	95.4	4.6	100	100	16.5	1.1	3.8	19.2	-4.6	3.9	9.0	1337
3	Switzerland	0.930	51.1	49.7	100	100	4.6	-1.1	0.0	31.6	8.6	...	0.5	73
4	Denmark	0.923	70.6	26.8	100	100	7.2	-1.8	1.5	12.9	23.0	10.8	8.5	0
5	Netherlands	0.922	91.4	6.7	100	100	10.1	-0.3	0.9	10.8	5.9	11.7	5.4	0
6	Germany	0.916	80.2	20.4	100	100	8.9	...	0.1	31.8	3.3	21.0	8.1	10
6	Ireland	0.916	84.7	6.4	100	100	7.9	0.6	0.1	11.0	62.7	...	0.5	14
8	United States	0.916	83.6	16.3	100	100	17.0	-0.7	1.0	33.3	3.0	15.5	1.1	5.074
9	Canada	0.915	73.7	27.9	100	100	14.1	-0.4	2.4	34.1	0.0	...	2.7	364
9	New Zealand	0.913	61.4	38.4	100	100	7.1	1.1	1.6	31.3	6.9	...	5.3	14,226

Source: Human development report, 2015, p. 250

In addition to the HDI, an indicator of environmental sustainability is the EPI ranks. EPI ranks analysed countries according to high-priority environmental issues in two areas: protection of human health and protection of ecosystems. In the ten best eco-ranking countries of the 180 analysed countries 9 countries is in the EU: Finland, Sweden, Denmark, Slovenia, Spain, Portugal, Estonia, Malta and France. All 28 EU countries are in the first 41 best ranked countries (Report Global metrics for the environment, 2016) (Table 3).

Table 3. EPI Rankings

Rank	Country	Score
1	Finland	90.68
2	Iceland	90.51
3	Sweden	90.43
4	Denmark	89.21
5	Slovenia	88.96
6	Spain	88.91
7	Portugal	88.63
8	Estonia	88.59
9	Malta	88.48
10	France	88.20
11	New Zealand	88.00
12	United Kingdom	87.38
13	Australia	87.22
14	Singapore	87.04
15	Croatia	86.98
17	Norway	86.90
18	Austria	86.64
19	Ireland	86.60
20	Luxembourg	86.58
21	Greece	85.81
22	Latvia	85.71
23	Lithuania	85.49
24	Slovakia	85.42
25	Canada	85.06
26	United States of America	84.72
27	Czech Republic	84.67
28	Hungary	84.60
29	Italy	84.48
30	Germany	84.26
31	Azerbaijan	83.78
32	Russia	83.52
33	Bulgaria	83.40
34	Romania	83.24
35	Belarus	82.30
36	Netherlands	82.03
37	Armenia	81.60
38	Poland	81.26
39	Japan	80.59
40	Cyprus	80.24
41	Belgium	80.15

Source: Report Global metrics for the environment, 2016, p. 18.

High score of EPI has Iceland because achieved the basis of environmental standards and objectives at the highest level. The policy of the state is based on ecological principles. The population makes maximum use of geothermal energy. For the preparation of heat and electricity is used hydrogen (as much as 82% of the electrical and thermal energy comes from the hydrogen and geothermal wells and only 18% is obtained by burning coal). In this country applies an active campaign has been ongoing against the use of studded tires (removing the studded tires would reduce PM pollution) and major steps have been taken to improve bike paths and promote public transport in the Reykjavík area to reduce environmental pressures (World Island Network, 2006; Island Resources Foundation, 2015).

3. Waste management in the modern economies

Waste management is an organized way of monitoring waste, energy and other consumption that occurs with the aim of transferring the tax burden on waste users as an incentive to further increase efficiency, green investments and innovations in the field of consumption. Troubleshooting environment includes collaboration with stakeholders and interested parties in order to achieve coherence and complementarity in environmental protection and the reform of taxation. Finding the answer to current and new problems related to waste management is not just a task for the state, but also and civil society, the market and citizens that contribute to a sustainable society.

Within each part of the economic policy can be implemented environmental and waste management measures: eco-tax (fiscal policy), eco-innovation credits (credit-monetary policy), reduction of import taxes for organic products or simpler import procedure (trade policy), encouragement of green growth and eco-innovation (environmental protection) and waste recycling and other mechanisms (waste management policy). Countries are trying to integrate waste policy into sector policies and other related policies in order to increase the sustainability of the economy. Liechtenstein has integrated its climate policy in individual sector policies. The focus is on energy, environment, transport, agriculture and forestry. In the Netherlands is defined "Energy Agreement for Sustainable Growth" in order to achieve a sustainable energy supply system 2050, a future sustainable development (re)investment in energy-efficient, the production technology and renewable energy.

Case studies examined by Buckley (2003) and Kruger (2005) indicate that tourism only contributes to conservation if there is a legal and practical conservation management framework already in place before the tourism industry begins to grow. Several protocols and agreements have been signed by the countries to reduce environmental pollution, especially those related to global warming and climate changes, such as the Kyoto Protocol, Stockholm Convention on Persistent Organic Pollutants, Montreal Protocol on substances that deplete the ozone layer, Basel Convention on the trans boundary movement of hazardous waste and their disposal, Rotterdam Convention on prior consent procedure for hazardous chemical and pesticides in international trade and the Cartagena Protocol on bio-safety (Ho and Kean, 2007).

The disadvantages of policies relate to poor policies to reduce the amount of community-generated waste or the lack of such policies, to insufficient incentive measures to prevent the disposal of garbage at landfills and inadequate infrastructure for the transmission and treatment of waste. At the landfills there is methane, greenhouse gas. The best treatment for waste is in Austria and Netherlands (followed by Denmark, Germany and Sweden). In Greece only one of the 71 dumpsites that are not obscured according with the EU Landfill Directive (then follow Bulgaria, Malta and Lithuania).

The EU Landfill Directive has been made to prevent the damaging impact of landfills on the environment. The Directive contains guidelines for the disposal of waste to landfills. Member States are also required to establish national targets for preventing the disposal of biodegradable waste to landfills. The application of EU waste legislation has brought about annual savings of 72 billion euros and increased annual turnover in waste, recycling management by 42 billion euros and the creation of 400,000 jobs by 2020 (The EU Landfill Directive, 1999; The Landfill Directive for the Environmental Permitting, 2010).

Countries which have good results achieve them thanks to a combination of legal, administrative and economic instruments. However, they face challenges such as the need for waste reduction and too large capacity for waste incineration which can jeopardize recycling and require the import of waste.

In the coming years, the production of organic and fertilizer from waste will be sought which will reduce the amount of waste, energy consumption and damage in the natural environment. In the EU only 5% of bio-waste is processed and when a larger quantity is recycled, up to 30% of the inorganic fertilizer can be replaced. The annual EU imports about five million tons of phosphate, and 30% of that amount could be replaced by extraction from waste sludge, biodegradable waste, meat and bone meal. It is estimated that due to the recycling of bio-waste into organic fertilizers, around 120,000 jobs could be opened (European Commission, 2016).

Emission of carbon dioxide is one of the major pollutions that arise from urban areas, human activities and are responsible for 70% of the overall carbon emission mainly, because of fossil fuel consumption and land use changes (Ho and Kean, 2007).

More countries are involved by encouraging the green economy and eco-innovation. There are three promising themes for the transition towards a greener economy: the bio-based economy, the sustainable built environment and the circular economy with more instruments ("Green Deals", as well as, remove laws and regulations obstructing entrepreneurs in making their production processes circular and "launching customer"). Agricultural areas in Austria are free of genetically modified organisms. In Malta sustainable agricultural practices promote take into account the wider objectives of rural development policy.

Modern economies are taking a number of measures to reduce waste and impact on sustainable economic development. The Dutch government in 2014 announced that it will modernize its environmental policy to include the public, businesses and other bodies in the field of environment and sustainable development. This policy focuses on public health, as well as, formulation approach which emphasize the advantage of the new eco-friendly products and the emergence of health problems related to environmental pollution.

LIFE Climate Foundation Liechtenstein is a national initiative that aims to strengthen public awareness by organizing events and workshops covering the topics of climate change and other

environmental issues. The Foundation operates within the framework of public-private partnerships with the participation of representatives from the economy, as well as, in the field of science and politics. Cooperation with the Institute of the financial services University of Liechtenstein provides an opportunity to examine environmental issues in relation to financial aspects.

In Norway, there is an increased awareness about the value of ecosystem services and their connection with sustainability. Appropriate knowledge of the state of ecosystems and their ability to deliver services (and how human activities affect this ability) is a necessary precondition for good governance nature.

The development of the web system up to date and accurate information on the state of the environment also contributes to its preservation. Developed web system has a greater number of countries. State of the Environment Norway is a website that aims to provide online information about the latest state of and developments in Norway's environment.

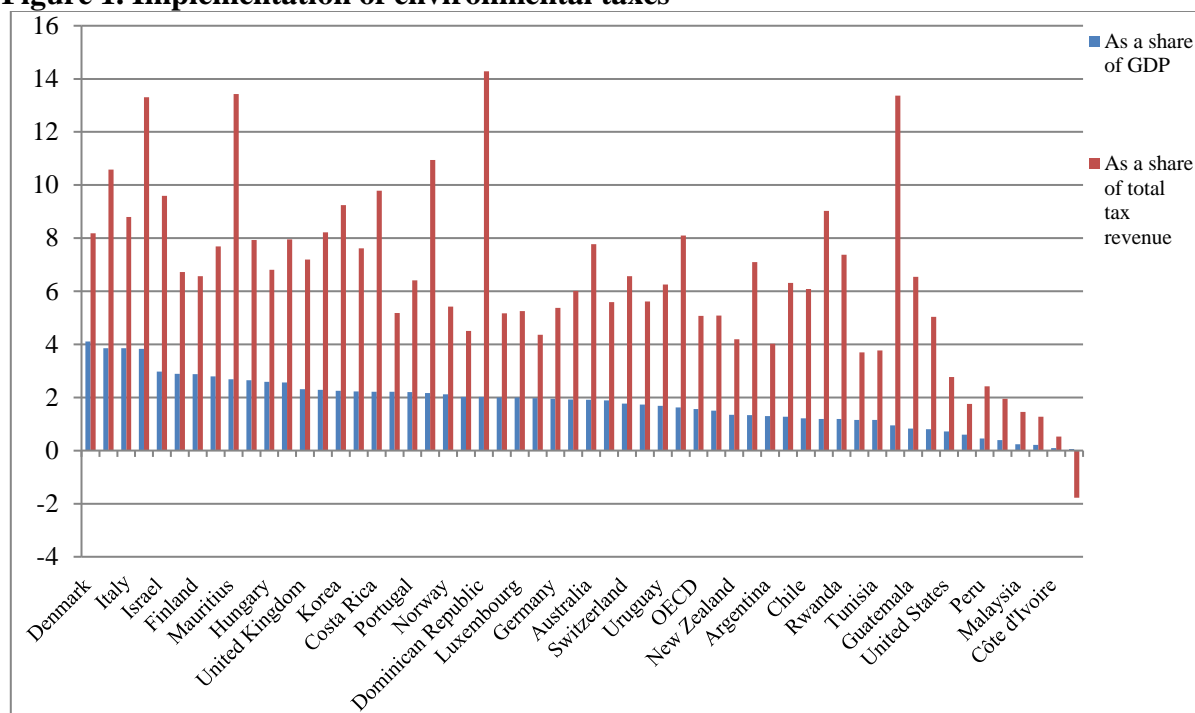
The introduction and implementation of environmental taxes show the relationship between government and citizens about the problems and the need to protect the environment. Therefore, environmental taxes have a different share in GDP and in total taxes with the largest share in GDP in Denmark, Slovenia and Italy; while the largest share of total taxes in the Dominican Republic, Mauritius and India. Countries tend to share in GDP is at the level of 3%, and in total taxes of 10% which would effectively impact on the environment.

Average as a share of total tax revenue in the 56 countries analysed is 6.42% while the average as a share of GDP environmental taxation 1.82. According to these indicators, 27 countries have a higher share of green taxes in total taxes than the average while 30 countries have a higher share in GDP than the average participation (Table 4, Figure 1).

Table 4. Environmental taxation 2014 (top 10 countries in %)

Country	Share of GDP	Share of total tax revenue
Denmark	4.11	8.18
Slovenia	3.86	10.58
Italy	3.85	8.8
Turkey	3.83	13.31
Israel	2.97	9.59
Austria	2.89	6.72
Finland	2.88	6.57
Greece	2.79	7.69
Mauritius	2.68	13.43
Czech Republic	2.65	7.93

Source: OECD statistics

Figure 1. Implementation of environmental taxes

Source: OECD statistics

In addition to the introduction of ecological taxes, official statistics in the area of waste management has an important place. Environmental Statistics Denmark includes two major segments: statistics on income of the environment and the public sector which provides information on environmental protection by the public sector, i.e. activities aimed at preventing and combating pollution and transition to sustainable technologies. Statistical data on the costs of environmental protection in the manufacturing industry showed the direct costs and investments for environmental protection. The operating costs include internal costs, including the purchase of goods and services for environmental protection.

Tax payers eco-tax in Denmark are households, industries and other financial users. Households and industries are paying about the same amount of tax (5% higher amount of tax industries). The highest tax is charged from Mining and quarrying within industries and by 2015 will be charged a higher tax of households (Table 5).

Table 5. Environmental taxes (DKK million)

	2011	2012	2013	2014	2015
Total	95 399	96 514	98 829	98 829	86 051
Households	41 268	42 384	45 418	45 418	45 081
Other financial use	7 976	6 694	7 787	7 787	9 171
Total industries	46 154	47 436	45 624	45 624	31 799
A Agriculture, forestry and fishing	1 635	1 818	1 924	1 924	1 928
B Mining and quarrying	21 270	21 428	19 022	19 022	5 063
C Manufacturing	4 057	4 805	5 311	5 311	5 360
D Electricity, gas, steam and air conditioning supply	184	278	338	338	370
E Water supply, sewerage and waste management	474	617	1 241	1 241	1 115

F Construction	2 524	2 235	2 090	2 090	2 096
G Wholesale and retail trade	3 492	3 678	3 787	3 787	3 665
H Transportation	3 306	3 377	3 960	3 960	3 727
I Accommodation and food service activities	500	632	600	600	601
J Information and communication	430	509	487	487	565
K Financial and insurance	694	622	528	528	515
LA Real estate activities and renting of non-residential buildings	301	339	184	184	191
LB Dwellings	257	268	337	337	342
M Knowledge-based services	973	893	701	701	732
N Travel agents, cleaning, and other operational services	856	842	873	873	827
O Public administration and compulsory social security	840	859	786	786	799
P Education	1 510	1 439	1 184	1 184	1 408
Q Human health and social work	2 085	2 025	1 644	1 644	1 868
R Arts, entertainment and recreation activities	537	551	438	438	453
SA Other service activities	228	221	188	188	174
SB Activities of households as employers of domestic personnel	0	0	0	0	0

Source: Statistics Denmark, Green Economy

Conclusions

The paper emphasizes the importance of preserving the environment because the modern economies are facing with new problems that are related with the increase of industrial pollution, a growing number of population and tourists who creating additional pressure on cities. Therefore, economies endeavour to develop effective environmental management systems in which ecological taxpayers pay for environmental pollution. A large number of projects and measures are taken by the state in order to develop in accordance with the spatial and natural abilities. Also, it is necessary seek and encourage the green economy, green growth and eco-tourism.

Highly developed economies take into account environmental sustainability, however, a large number of economies consume more than their own production possibilities or opportunities ecological development. Certain economic policy measures should be encouraged to manage environmental protection. Countries in which environmental taxes have a higher share of GDP are able to more heavily fund environmental-related programs and projects.

Acknowledgements: The results of this research were presented at the 2nd SCIENVIR International Conference - “Scientific Convergence and Interdisciplinary in EU Environmental Research”, 7th – 9th of June 2018, Iasi - Romania (<http://scienvir.uaic.ro/>).

References

Bramwell, B., Lane, B. (2008), Editorial: Priorities in sustainable tourism research, *Journal of Sustainable Tourism* 16, pp. 1-4.

- Black, R. and Crabtree, A. (2007), *Quality Control and Certification in Ecotourism*, Wallingford: CAB International.
- Buckley, R. C., Pickering, C. M. and Weaver, D. (2003), *Nature-Based Tourism, Environment and Land Management*, CAB International, Wallingford, UK.
- Buckley, R. C. (ed.) (2004), *Environmental Impacts of Ecotourism*, Wallingford: CAB International.
- Buckley, R. C. (2009), *Ecotourism: Principles and Practices*, Wallingford: CAB International.
- Donohoe, H. M. and Needham, R. D. (2006), Ecotourism: The evolving contemporary definition. *Journal of Ecotourism*, 5, pp. 192-210.
- Bushell, R. and Eagles, P. (eds.) (2007), *Tourism and Protected Areas: Benefits Beyond Boundaries: The Vth IUCN World Parks Congress*, Wallingford: CAB International.
- Eagles, P. F. J. and McCool (2002), *Sustainable Tourism in Protected Areas. Guidelines for Planning and Management*, IUCN WCPA Best Practice Series No 8. Gland, Switzerland: IUCN.
- Environmental Permitting Guidance, (2010), *The Landfill Directive for the Environmental Permitting (England and Wales) Regulations 2010*, Department for Environment, Food and Rural Affairs, London.
- European Council (2010), *Conclusions*, Brussels (retrieved from http://ec.europa.eu/eu2020/pdf/council_conclusion_17_june_en.pdf).
- European Commission (2010), *Europe 2020, Strategy for smart, sustainable and inclusive growth*, Brussels, 3.3.2010 COM 2020 final (retrieved from <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2010:2020:FIN:EN:PDF>).
- European Commission, (2016), *Circular Economy Package*, Brussels, 17.3.2016 SWD(2016) 64 final.
- European Council (2000), *Presidency Conclusions*, Lisbon (retrieved from http://www.consilium.europa.eu/fr/uedocs/cms_data/docs/pressdata/en/ec/00100-r1.en0.htm)
- European Commission (2014), *Taking stock of the Europe 2020 strategy for smart, sustainable and inclusive growth*, COM(2014) 130 final/2, Brussels (retrieved from http://ec.europa.eu/europe2020/pdf/europe2020stocktaking_en.pdf).
- European Environment Agency (2015), *Indicators* (retrieved from <http://www.eea.europa.eu/soer-2015/countries/mediterranean>).
- Folke, J., Ostrup J. F. and Gossling, S. (2006), Ecotourist choices of transport modes, in: Gossling, S. and Hultman, J. (eds.) *Ecotourism in Scandinavia: Lessons in Theory and Practice*, CAB International, Wallingford, UK, pp. 157-165.
- Gössling, S., Hall, C. M., Lane, B. and Weaver, D. (2008), The Helsingborg statement on sustainable tourism, *Journal of Sustainable Tourism*, 16, pp. 122-124.
- Gössling, S., Hall, C.M and Weaver, D. (2009), *Sustainable Tourism Futures*, London: Routledge.

- Ho, C. S. and Kean, F. W. (2007), Planning for low carbon cities-the case of Iskandar development region, Malaysia. *Toward establishing sustainable planning and governance II*, Seoul, Korea: Sustainable Urban Development Institute.
- Krüger, O. (2005), The role of ecotourism in conservation: panacea or Pandora's box?, *Biodiversity & Conservation*, 14(3), pp. 579-600.
- Liddle, M. J. (1997), *Recreation Ecology: The Ecological Impact of Outdoor Recreation*, Dordrecht: Kluwer Academic Publishers.
- Newsome, D., Moore, S. and Dowling, R. (2002), *Natural Areas Tourism: Ecology, Impacts and Management*, Clevedon: Channel View.
- OECD statistics, (retrieved from <http://www.oecd.org/env/tools-evaluation/environmental-taxation.htm>).
- Pigram, J. J. and Jenkins, J. M. (2006), *Outdoor Recreation Management*, London: Routledge.
- Report Global metrics for the environment, Environmental Performance Index, Yale University. (2016), (retrieved from www.epi.yale.edu).
- Report Global metrics for the environment (2016), (retrieved from <http://statisticstimes.com/economy/european-countries-by-gdp-per-capita.php>).
- SER, Energy Agreement for Sustainable Growth, Social and Economic Council of the Netherlands, (2013), The Hague.
- Simmons, D. G. and Becken, S. (2004), The cost of getting there: impacts of travel to ecotourism destinations, *Environmental impacts of ecotourism*, pp. 15-23.
- Spenceley, A. (2008), *Responsible Tourism: Critical Issues for Conservation and Development*, London: Earthscan.
- Stabler, M. J. (ed.) (1997), *Tourism and Sustainability: Principles to Practice*, Wallingford: CAB International.
- Statistics Denmark, Green Economy, (retrieved from <http://www.dst.dk/en/Statistik/emner/geografi-miljoe-og-energi/groent-nationalregnskab/groen-oekonomi>).
- The EU Landfill Directive (1999), Council Directive 1999/31/EC on the landfill of waste.
- UNEP, Climate Change, (retrieved from <http://www.unep.org/resourceefficiency/Business/SectoralActivities/Tourism/Activities/WorkThematicAreas/ClimateChange/tabid/78787/Default.aspx>).
- UNEP, Conservation International, Rainforest Alliance (2015), *A Practical Guide to Good Practice for Tropical Forest-Based Tours* (retrieved from http://www.rainforest-alliance.org/sites/default/files/publication/pdf/good_practice.pdf).

- United Nations (2015), *Human development report*, Work for Human Development, United Nations Development Program, New York, USA.
- United Nations (2000), *Millennium Declaration 55/2*, Resolution adopted by the General Assembly (retrieved from <http://www.un.org/millennium/declaration/ares552e.htm>).
- UNWTO (2015), *UNWTO Tourism Highlights: 2015 Edition* (retrieved from <http://www.e-unwto.org/doi/pdf/10.18111/9789284416899>).
- Weaver, D. (2006), *Sustainable Tourism: Theory and Practice*, Oxford: Elsevier.
- Weaver, D. B., Lawton, L. J. (2007), Twenty years on: The state of contemporary ecotourism research, *Tourism Management*, 28, pp. 1168-1179.
- World Development Indicators, (retrieved from <http://databank.worldbank.org/data/reports.aspx?source=2&series=ST.INT.ARVL&country>).
- WTTC (2015), *Travel & Tourism 2015: Connecting Global Climate Action* (retrieved from <https://www.wttc.org/media/files/reports/policy%20research/tt%202015%20%20connecting%20global%20climate%20action%20a4%2028pp%20web.pdf>).