



## ASPECTS REGARDING THE ENVIRONMENTAL POLICY IN ROMANIA

---

---

Lecturer PhD Gheorghe MOROȘAN<sup>1\*</sup>, Assistant PhD Laurenția-Elena SCURTU<sup>2</sup>

[1] Ștefan cel Mare University of Suceava, România,  
e-mail: morosang59@gmail.com

[2] Ștefan cel Mare University of Suceava, Romania,  
e-mail: scurtu.laurentia@gmail.com

### Abstract

*The aim of the present paper is to highlight the environmental policy of Romania over the last five years. It will be shown the level of environmental expenditures, public and private, and we will search evidences of a coherent environmental policy conducted by the Romanian state in the last period. The purpose of this paper is derived from the fact that Romania has, lately, more and more problems related to the environmental protection, problems revealed by the EU through various communiqués and warnings addressed to the Romanian Government regarding the management of environmental policy. Therefore the objectives of this paper are: presenting the main theoretical aspects regarding the environment, presenting the Romanian environmental commitments, the analysis and the interpretation of some relevant macroeconomic indicators for the environmental policy.*

**Key words:** *environment, environmental protection, sustainable development, environmental protection expenditures*

**JEL Classification:** H11, H59, Q58

### I. Theoretical aspects regarding the environment and the environmental protection

The environment is an essential factor of life and is the result of the interferences between natural elements (soil, air, water, climate, biosphere) with the elements created by the human activity. All these elements interact, influencing the conditions and the

---

\*Gheorghe MOROȘAN, e-mail: morosang@gmail.com



possibilities for the future development of society. Any human activity and, implicitly, the existence of the individual, is inconceivable outside the environment. That's why the environment, with every component, puts its mark on the human factor.

The Romanian Constitution, provides within the Article 35, The Right to a Healthy Environment: *"The State recognizes the right of every person to a healthy and ecologically balanced environment. The State provides the legal framework for the exercise of this right. Individuals and legal persons have the duty to protect and to improve the environment."*

The word *"environment"* expresses a comprehensive notion, through which we understand the living and lifeless world, practically everything that surrounds the man. Given the central position occupied by the man in his environment, about environment notion we can talk only referring to the man, seen from his natural interests point of view. At its basis, the term *"environment"* has its origin in the English noun *"environment"*, then was taken in French as *"environnement"* and was meant to designate the space around man.

In the legal literature and in the regulations existing in different states and in some documents of the international organizations, are used, at the same time, notions as *"biological environment"* or *"ambient environment"* or even *"human environment"* as alternatives for the *environment*. The notion is used with several meanings in different domains and has a general character, quite difficult to define.

The definition of *environment* given by the Online Dex is: *"All the conditions (relief, climate, soil, etc.) in which the organisms are living"* or *"The surrounding nature consisting of all external factors in which beings and things exists."*

The **Government Emergency Ordinance no. 195/2005** on environmental protection, article 1, paragraph 2, gives the following definition: *"The environment represents the ensemble of natural conditions and elements of the Earth: air, water, soil, subsoil, characteristic aspects of the landscape, all atmospheric layers, all organic and inorganic matter as well as living beings, the natural systems in interaction, containing the elements listed above, including some material and spiritual values, the quality of life, and the conditions which can influence the human well-being and health."*

The second **Principle** of the **1972 Stockholm Declaration** shows the environmental components: air, soil, flora and fauna and the natural ecosystems which must be preserved in the interests of the current and future generations.



The main recognized sources that affects the environment are: industry, transport, volcanic eruptions, dust storms, fires, household activities. Industry and transport is, currently, the world's main pollutant. During the combustion process, the gaseous, liquid and solid substances are released into the atmosphere. Urban agglomerations are largely affected by the transport which releases noxious substances; even the "domestic" activities are a source of pollution. Today, in many developing countries, including Romania, firewood is as vital as food, and regarding its price, in some places, has a higher rate of growth than food/aliments. The cause of day-to-day price increasement is the restraint of forest areas.

The economic growth is largely based on the energy generated by the combustion of the fossil non-renewable fuels. The problem of waste generated by human activities has taken on alarming proportions; pollution, water and air degradation, the disappearance of the ozone layer, desertification, toxic and radioactive waste, causes the alteration of the environmental factors quality. Theses are the causes of some imbalances in the health and in the well-being of human collectivities.

Therefore, ensuring a proper environmental quality, protecting it, represents a major and a topical issue for all of us. In this respect, it is necessary to preserve the environment quality by diminishing the negative effects of human activity with implications on it.

The pollution and the drastic reduction of renewable raw material resources, in quantities and rhythms beyond their natural recovery, have produced serious imbalances in the planetary ecosystem.

The studies related to the environment quality, the reduction of the pollution sources have resulted in a set of actions and measures referring to:

- *the profound knowledge of the environment and of the interaction between the economic system and natural systems;*
- *rational and maximum economy use of the natural resources;*
- *preventing and combating the environment degradation caused by man, but also due to natural causes;*
- *harmonization of the immediate and perspective interests of the society as a whole or of the economic agents regarding the use of environmental factors.*



## II. The environmental policy, history and present

Environmental policy means an organization's declaration of its intentions and principles relating to global environmental performance, which provides the framework for action and set its general and specific environmental objectives.

A definition of environmental policy can be: "*Environmental policy is the system of environmental priorities and objectives, of the methods and instruments necessary to achieve them, being directed to ensure the sustainable use of natural resources and to prevent the degradation of the environment quality.*"

The environmental policies have experienced at least two phases in their evolution. The first phase has as objective to solve problems related to air, water, solid urban waste treatment and natural space preservation, emphasizing the *polluter-paying principle*, corrective actions being prioritized to preventive ones.

At the first **World Environment Conference** held in **Stockholm in 1972, 5 June** was proclaimed **World Environment Day**. Has been adopted the Environmental Action Plan, containing 109 recommendations on environmental protection addressed to states; as they were without legally binding, they would be implemented by adopting national regulations in accordance with these texts.

This plan has led to the adoption of further measures at international, regional or national level, such as the **Charter of the Seas** (Baltic Sea Protection, Black Sea Protection, Antarctic Protection). The main document of this conference is the Final Statement on the Environment, which starts from the premise that man is, at the same time, *the creator and the destroyer* of the environment which offers him the physical support of life and the possibility to develop from a social, intellectual, moral and spiritual point of view. At the same time, the declaration highlights the organic link between environmental protection and the economic and social progress of the peoples (nations), in the context of eliminating the underdevelopment negative effects.

The second phase of environmental policies, started in the late 1970s, brings a new philosophy conceived around the notion of sustainable development. Environmental policies are predominantly anticipatory, involving to a greater extent the civil society. At the same time, are highlighted trends of globalization and integration in the social-economic policy system. Thus, it has been tried to harmonize the horizons of the economic time with those of the biological, ecological time, going to a systemic approach of the economy and the environment.



The **World Summit on Sustainable Development, Johannesburg, in 2002**, proposed an implementation plan consisting of nine chapters to meet the objectives of creating a more stable international financial environment to find new sources of funding, both public and private for environmental protection. From an institutional point of view, it has been required to strengthen cooperation between UNO bodies, international financial institutions and environmental funds. States also need to encourage partnerships, to progress in formulating national sustainable development strategies and start their implementation.

In 1995, Romania has elaborated and approved the "**Environmental Protection Strategy**", and in 1999 the Government approved the "**National Strategy for Sustainable Development**". Starting with 2001, the Governance Program stipulates concrete measures and actions aimed at protecting and ensuring a clean and healthy environment for all the country's inhabitants, while respecting the main objectives and priorities of the "**National Action Program for Environmental Protection**".

The international agreements to which Romania has become part of, the regional and international environmental documents and regulations have made necessary, year after year, to update the Environmental Protection Strategy in Romania, to include their main stipulations and to correct the strategic objectives. Therefore, the Strategy for Environmental Protection, as other strategies, has a dynamic character. The general principles underpinning the development of the environmental protection strategy are:

- *conserving and improving people's health conditions;*
- *sustainable development;*
- *avoiding pollution by preventive measures;*
- *preserving biological diversity and ecological reconstruction of damaged systems;*
- *preserving the heritage of cultural and historical values;*
- *the principle "polluter pays";*
- *stimulation of the environmental recovery activity.*

Although environmental issues have older roots, just in 1970 the European Commission first declared in an official communication addressed to the Council, the necessity for developing a Community environmental program. Since then, within the CEE and later EU, more environmental action programs have been developed. They



express a genuine "philosophy" of the Community on the environmental protection and improvement by setting a calendar of specific actions for the years covered by each program. The introduction of this regulatory legal framework could not, however, prevent the environmental degradation. Thus, the principle of sustainable development has been integrated into the Community's missions and the field of environmental protection has been raised at the rank of absolute priority.

Within the conclusions of the **Brussels European Council of 20-21 March 2003** are underlined that important progress has been made in achieving the Lisbon Strategy objectives and that sustainable growth promoted through the implementation of the Global Strategy for Sustainable Development remains a priority for the EU.

Among the objectives mentioned by this Council is also the one of environmental protection in the interest of sustainable growth. The concrete measures to be taken into account in the coming years for achieving this goal include: improving environmental indicators, rethinking the transport of petroleum products, focusing on the development of new fuels and technologies for vehicles and setting up a system of sanctions, including penal offenses for maritime pollution violation, adopting a program entitled "*Intelligent Energy for Europe*", implementing and respecting protocols and conventions regarding the environment.

The European environmental policy has its legal basis in *Article 11* and *Articles 191-193* of the EU Functioning Treaty. The EU has the competence to act in all the areas of environmental policy, such as air and water pollution, waste management and climate change. The scope of its competence is limited by the principle of subsidiarity and the requirement of unanimity in the Council on issues such as fiscal matters, land-use planning, terrain use, quantitative management of water resources, choice of the energy sources and the structure of energy supply .

Currently, the EU countries are following the "**Europe 2020 Strategy**" that underlines a smart, sustainable and favorable to inclusion growth as a way to overcome the structural shortcomings in Europe's economy, to improve competitiveness and productivity, and to support a sustainable social market economy. In this respect, the Seventh Environment Action Program (EAP) has been drawn up which guided the European environment policy by 2020. For a better long-term orientation, it sets a vision beyond this, even by 2050.



It identifies three key objectives:

1. protecting, preserving and enhancing the EU's natural capital in order to turn the EU in a resource-efficient economy, a green and competitive economy with low-carbon emissions;
2. protecting EU citizens from environmental pressures;
3. reducing health and well-being risks.

In the field of environment, climate change and energy, the target was:

- *greenhouse gas emissions to be 20% lower than the levels recorded in 1990;*
- *20% of the energy must come from renewable sources,*
- *to increase energy efficiency by 20%.*

These targets are transposed into national objectives so that each EU country can check its own progress towards meeting each objective. There is no task sharing - these are common goals for all EU countries, and must be fulfilled by cumulative actions at the national and EU level. They are interdependent and compete with each other to achieve the assumed objectives:

- *educational improvements helps employment and reduce poverty;*
- *researching, development, innovation and more efficient use of energy makes us more competitive and creates jobs;*
- *investments in cleaner technologies combat climate change and are creating new business opportunities or jobs.*

EU states governments have set national objectives for helping to achieve EU's global goals and report on their achievement in their annual National Reform Programs.

In the last decades, EU has implemented a wide range of environmental legislation. As a result, air, water and soil pollution has been significantly reduced. Legislation on chemicals has been upgraded and the use of many toxic or dangerous substances has been restricted. Today, EU citizens enjoy the best water quality in the world and over 18% of the EU territory has been designated as a protected natural area.



### III. The economic growth and the environmental protection

The environmental protection becomes a distinct sector in the economy of human society, the concerns in this field are addressing every aspect of human activity.

Current economic growth, fueled by scientific and technical progress, is destructive for the environment and brings increased risks to mankind. The relationship between economic growth and life quality develops the idea that it is important to know what kind of growth should be promoted. A strong economic growth leads to increased environmental pressure, having negative effects through waste, polluting emissions or public space transformation. On the other hand, economic growth has positive effects even on the environment, allowing financial means allocation for implementing environmental policies, speeding up technical progress, fostering the living standards, the comfort and the education.

A policy issue that has been debated within the environmental literature is the extent to which the environmental policy has been one that influences growth and economic competitiveness. The emphasis is not on the volume of environmental protection expenditures allocated by the state but on the legislation regarding environmental control that could influence competitiveness through expenditures supported by the private sector for achieving environmental standards.

There are also hypotheses suggesting that economies which are at an early stage of the economic transition tend to deteriorate the environment (the "*Kuznets environment curve*"). After a certain point of development, the environment quality will increase. Part of this change is due to structural changes in the economy (for example, *from heavy industry to light industry* or *from dirty fuel to green energy*). The literature has extensively investigated the relationship between the income *per capita* and the degree of pollution. It has been found that there is not a general relationship between environmental protection expenditures and the income volume. On the other hand, there is a modest literature of the political economy which *asks why* environmental concerns are obviously stronger in some countries than in the others. Thus, we can ask ourselves which are the links between environmental expenditures and factors such as the level of education and culture.

Often, however, environmental protection measures cause contradictory effects - for example, if regulations in the field do not provide reasonable adoption deadlines for businesses, the law is not respected. Once the procedures are clearly defined, firms are progressively adapting their productive apparatus, and the environment investments can





become a factor of economic growth. In order to ensure a balance, various actors are involved: public power, firms, non-governmental organizations, political parties, the civil society.

In order to protect the environment, the affected areas have to be identified, the degree of deterioration assessed and the imbalances causes established. Regarding the protecting ways, it is necessary to solve three categories of problems:

1. creating an adequate and effective legislative and institutional system to guarantee compliance with the laws in force;
2. assessing the costs of environmental protection actions and identifying sources for financing them;
3. developing long-term programs, correlated nationally and internationally, for an overall vision.

Regarding the costs assessment and the establishment of how they are incurred, it can be argued that the environment protection is costly and that the polluting factors can not be, always, identified. Because of this situation, the costs of environment protection are shared between firms – regarded as potentially polluting - and the state. Funds allocated to the environmental protection vary from one country to another, depending on their development level.

In order to develop environmental protection programs, should be identified all environmental factors and areas where pollution problems may occur. Such a program involves, as well, assessing the necessary costs and establishing responsibilities for the projects implementation.

Environmental protection is a major issue of the last decade, debated globally, which has given rise to numerous disputes between developed and developing countries. This has led to the establishment of international organizations whose main objective is to adopt solutions for pollution reduction and to increase environment quality as a whole.

The behavior of individual pollutes the environment to a greater or to a lesser extent, either in the form of day-to-day activity or tourism consumption, that is why we do not have to look for environmental responsible factors only at the state level but also at the level of: the population involvement, business environment, local authorities, NGOs and the EU.



#### IV. An analysis of public environmental expenditures in Romania and EU

The increase in government expenditures of the states is closely linked to the increasingly complex functions they have. At a analysis, even a summary one, it can be seen that most of the public spending goes to pensions, social security, education and health.

Therefore in this section, we focus on a neglected element of public spending/expenditures, that of *environmental protection*. Environmental protection seems to be a classic case of public good: expenses generates benefits that a large number of people have simultaneous (public consumption) and there are few perspectives for exclusion, so it fulfills all the conditions for being in the state's attention.

An investigated problem is the public-private mix of environmental protection. Environmental policy has always been characterized by substantial private spending, simply because of the regulations nature (the principle *polluter pays*). As well, the tendencies towards privatization of utilities, such as water and energy, should lead to their reconsideration as private expenses.

Expenditure on environmental protection represents the economic measure of the response given by society to address the problems caused by the environment conditions at a certain stage. These include expenditure incurred for carrying out environmental supervision and protection activities and those related to preventing or repairing the environment damages.

The categories of environmental service producers are:

- the productive sector (firms) of which:
  - **specialized producers** - those companies that are concerned with the environmental protection activity;
  - **non-specialized producers** - those companies that are mainly engaged in activities other than those aimed to environmental protection, but which have also secondary activities related to the environmental protection.
  
- the sector of central and local public administration.



Although public spending on environmental protection is important, it represents a small share in GDP in Romania. However, it is estimated that their volume will not decrease particularly due to the EU active policy, which also provides to the member countries significant sums of its structural funds.

The table below shows the evolution of these expenditures over the period 2012-2016. In the budgetary structure, they are divided into environmental and climate protection, wastewater management, waste management, soil protection and remediation, groundwater and surface water, noise and vibration reduction, biodiversity and landscape protection, protection against radiation, research and development and other environmental protection activities.

In the period 2012-2016, although environmental expenditures at national level registered a decreasing trend, both in terms of volume and share in GDP, the sector *waste management* remained the main beneficiary, recording the highest expenditure. They represent between 43% in 2015 and 62% in 2012 in the total environmental protection expenditure. The *water protection* chapter has also considerable weightings.

**Table no. 1** - The evolution of environmental protection expenditures in Romania (md RON)

ENVIRONMENTAL DOMAINS	2012	2013	2014	2015	2016
Air protection	1.19	1.51	1.36	2.57	1.14
Water protection	3.25	2.62	3.13	3.47	2.44
Waste management	10.08	8.46	7.13	6.79	5.03
Soil and groundwater protection	0.32	0.32	0.28	0.48	0.25
Natural resources protection and biodiversity preservation	0.19	0.14	0.16	0.19	0.21
Other environmental domains	2.51	2.55	0.51	2.09	2.10
<b>TOTAL</b>	<b>17.54</b>	<b>15.60</b>	<b>12.57</b>	<b>15.59</b>	<b>11.17</b>
<b>(%) in GDP</b>	<b>3.0</b>	<b>2.5</b>	<b>1.9</b>	<b>2.2</b>	<b>1.2</b>

Source: Author elaboration based on NIS press releases no. 253/2013, 256/2014, 265/2015, 273/2016, 268/2017



As shown in Table no. 2 at the national level, the highest expenditures for environmental protection were registered by the specialized producers, with 31.14% to 48.9% of the total expenditures, followed by the non-specialized producers and the Public Administration.

**Table no. 2** - The evolution of environmental protection expenditures in Romania by sectors of activity and expenditure categories

<b>ACTIVITY SECTORS</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>
<b>Non-specialized producers</b>	<b>7.054.426</b>	<b>7.857.183</b>	<b>6.078.229</b>	<b>9.262.709</b>	<b>4.844.684</b>
Silviculture, forestry and related services	52.881	36.218	34.193	46.675	269.955
Extractive industry	676.606	617.948	596.107	553.873	474.329
Manufacturing industry	3.354.904	3.423.926	1.539.285	2.940.678	1.269.102
Production and supply of electric and thermal energy, gas and hot water	1.315.438	1.793.687	1.662.484	2.612.875	1.202.476
Capture, treatment and distribution of water	1.481.594	1.735.255	2.005.086	2.767.395	1.257.777
Constructions	83.127	99.44	88.008	117.977	146.059
Transports	89.876	168.709	153.066	223.236	224.986
<b>Specialized producers</b>	<b>10.208.965</b>	<b>8.731.373</b>	<b>7.145.977</b>	<b>6.229.382</b>	<b>5.138.758</b>
<b>Public Administration</b>	<b>3.571.218</b>	<b>2.905.379</b>	<b>3.132.485</b>	<b>4.507.534</b>	<b>5.520.700</b>
<b>TOTAL</b>	<b>20.834.609</b>	<b>19.511.935</b>	<b>16.356.691</b>	<b>19.999.625</b>	<b>15.504.142</b>

Source: Author elaboration based on NIS press releases no. 253/2013, 256/2014, 265/2015, 273/2016, 268/201

Romania allocates approximately the same expenditures calculated as a share in GDP as most of the EU countries, as shown in the Table no. 3.



**Table no. 3** - The evolution of environmental protection expenditures in some EU countries (% in GDP)

COUNTRIES/PERIOD	2012	2013	2014	2015
European Union (28 countries)	0.8	0.8	0.8	0.8
Euro area (19 countries)	0.9	0.9	0.9	0.8
Belgium	1.2	1.2	1.0	0.9
Bulgaria	0.7	0.9	0.7	0.8
Czech Republic	1.3	1.0	1.0	1.1
Denmark	0.4	0.5	0.5	0.4
Germany	0.6	0.6	0.6	0.6
Greece	1.1	1.7	1.5	1.5
Spain	0.9	0.8	0.9	0.9
France	1.0	1.0	1.0	1.0
Italy	0.9	1.0	0.9	1.0
Hungary	0.7	0.9	1.2	1.2
Malta	1.4	1.4	1.5	2.0
Netherlands	1.6	1.5	1.5	1.4
Austria	0.5	0.5	0.5	0.4
Poland	0.6	0.6	0.6	0.6
Romania	0.8	0.8	0.8	1.0
Sweden	0.3	0.3	0.3	0.3
United Kingdom	0.8	0.8	0.8	0.8

Source: Author elaboration based on NIS, Environmental protection expenditure accounts

**Table no. 4** - Europe 2020 national indicators: the recent data and targets

INDICATOR	Target	Realised 2015
Greenhouse gas emissions in the non-ETS sectors	5,8	19,0
Share of renewable energy in the gross final energy consumption (%)	24,8	24,0
The primary energy consumption (million tons of petroleum equivalent)	31,3	43,0

Source: Author elaboration based on NIS, Smarter, greener, more inclusive? Indicators to support the Europe 2020 strategy, 2017



As shown in the table above, by 2015, Romania has reduced its greenhouse gas emissions by 5.8% compared to 1990 levels in the non-ETS sectors (Emissions Trading System), remaining in the targets for 2020, the one referring to limit the growth to 19%. In 2015, Romania has exceeded its commitment to reach a 24% share of renewable energy in the gross final energy consumption and has remained well below its national objective regarding the primary energy consumption.

## **V. Conclusions**

The paper aimed to analyze the volume of public expenditures with environmental protection in Romania and EU and to determine the policy of the Romanian state in this field. therefore we have analyzed some issues on which we can conclude the following:

Generally, the quality of data regarding the environmental expenditure is extremely poor and this allows a limited political analysis. The statistical environment indicator is more elusive, causal and correlative. We affirm this because a large part of the data comes from the statistical research resulting from the forms filled in by the specialized and non-specialized economic agents and which have a high degree of uncertainty. The data dissemination itself is quite rare, the only reliable data being available from studying the state budget execution.

Convergence to the EU and the sustainable development of the Romanian economy impose, on medium and long-term, similarities regarding the level, dynamics and structure related to the European average to this category of indicators, as well, with long-term impact and increasing importance on macroeconomic decision-making.

Romania is part of the "Europe 2020 Strategy" that aims a smart, sustainable and favorable to inclusion growth as a way to overcome the structural shortcomings in Europe's economy, to improve competitiveness and productivity, and support a sustainable social market economy. In this respect, are being pursued the successful realization of the Seventh Environment Action Program (EAP) and the three key objectives monitoring.

As shown in Table no. 4, Romania has reduced its greenhouse gas emissions in non-ETS sectors, and the other objectives have not been achieved yet.

In the period 2012-2016, environmental expenditures at national level has recorded a decreasing trend, both in terms of volume and weight in GDP. The best



represented sector was waste management where have been recorded the highest expenditures.

As in the other EU countries, the highest environmental protection expenditures were recorded by specialized producers, followed by non-specialized producers and the Public Administration.

Although much of the European environmental directives have been transposed into national legislation, waste management has been transposed into the national law, some of the sector's actions have not been implemented either because of lack of funds or a lack of vision regarding the future development.

Thus, the European Commission has launched several infringement procedures. Therefore we mention infringement procedures relating to: electrical and electronic equipment waste, landfills, respectively the continued use of non-compliant landfills or waste management in the extractive industries.

A series of actions with a positive impact on the environment have been suspended or canceled. We refer to suspending the *Forest Inspector* mobile application and of the site [www.inspectorulpadurii.ro](http://www.inspectorulpadurii.ro). or the cancellation of environmental tax stipulations for second-hand cars.

Reducing the expenses on environmental protection, failing to enforce legislation and failing to address environmental issues, incoherent and without vision measures such as the cancellation of the environmental tax lead us to the conclusion that the Romanian state has incoherent and inconsistent environmental policies.

## References

1. Bebeșelea Adriana și colectiv (2013), Politici de mediu, Editura Fundației pentru cultură și învățământ „Ioan Slavici”, Timișoara.
2. Comănescu Mihaela (2010), Creșterea responsabilității față de mediu, Economie teoretică și aplicată, Volumul XVII, No. 5(546), pp. 39-52.
3. Pearce David, Palmer Charles (2001), Public and Private Spending for Environmental Protection: A Cross- Country Policy Analysis, Institute for Fiscal Studies, Vol. 22, no. 4, pp. 403-456.
4. Petrescu-Mag Ruxandra-Mădălina (2011), Protecția mediului în contextul dezvoltării durabile.Legislație și instituții, Editura Bioflux, Cluj-Napoca.
5. Săvoiu Gheorghe și colectiv (2014), Integrarea României în Uniunea Europeană, surprinsă în indicatorii statistici ai mediului, Revista Română de Statistică, Supliment nr. 2.
6. Constituția României modificată și completată prin legea 429/2003.



7. OUG nr.195/2005 privind protecția mediului.
8. Declarația de la Stockholm din anul 1972.
9. Curtea de Conturi a României, Eficiența și eficacitatea utilizării fondurilor în acțiunile de gestionare a deșeurilor și ecologizare a zonelor afectate de activități industriale pe perioada 2011-2013.
10. Eurostat, Smarter, greener, more inclusive? Indicators to support the Europe 2020 strategy, 2017.
11. Institutul European din România, Ghidul politicii Uniunii Europene, Broșura nr. 4, București, 2012.
12. Institutul Național de Statistică, comunicatele de presă nr. 253/2013, 256/2014, 265/2015, 273/2016, 268/2017.
13. Pure Earth and Green Cross Switzerland (2016), World's worst pollution problems.
14. <https://dexonline.ro/>.
15. [http://www.europarl.europa.eu/atyourservice/ro/displayFtu.html?ftuId=FTU\\_5.4.1.html](http://www.europarl.europa.eu/atyourservice/ro/displayFtu.html?ftuId=FTU_5.4.1.html).