

Varazdin Development and Entrepreneurship Agency  
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Azerbaijan State University of Economics (UNEC)  
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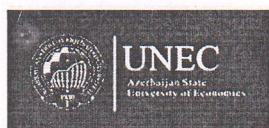
## Economic and Social Development

37<sup>th</sup> International Scientific Conference on Economic and Social Development –  
"Socio Economic Problems of Sustainable Development"

### Book of Proceedings

Editors:

Muslim Ibrahimov, Ana Aleksic, Darko Dukic



ISSN 1849-6903



9 771849 690004 >

Baku, 14-15 February 2019



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**Publishing Editor ■** Domagoj Cingula

**Publisher ■ Design ■ Print ■** Varazdin Development and Entrepreneurship Agency, Varazdin, Croatia / Azerbaijan State University of Economics (UNEC), Baku, Azerbaijan / University North, Koprivnica, Croatia / Faculty of Management University of Warsaw, Warsaw, Poland / Faculty of Law, Economics and Social Sciences Sale - Mohammed V University in Rabat, Morocco

**Printing ■** 100 CD

**ISSN 1849-6903**

The Book is open access and double-blind peer reviewed.

Our past Books are indexed and abstracted by ProQuest, EconBIZ, CPCI (WoS) and EconLit databases and available for download in a PDF format from the Economic and Social Development Conference website: <http://www.esd-conference.com>

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## MECHANISMS OF NATURAL RESOURCE REVENUES AND ECOLOGICAL BALANCE

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### ABSTRACT

*Economists and politicians in many countries predict the collapse of the economy's commodity models. This is largely due to the future depletion of certain natural resources. Partly knowing this risk is still a lot of doubt. But the main threat to the operation of the "raw material economy" is the formation of the so-called economy of information. The resource economy is aimed at studying and evaluating economic resources, especially resources - public goods, when determining their optimal placement. The methodological basis of resource economics is a system of methods and tools for non-valuables valuation and this allows for determining costs or benefits related to resources that are free of charge. In many countries, active research is being carried out to improve the use of alternative fuels and resources. Therefore, knowledge becomes a kind of multiplier that increases the value of other economic resources. Countries with rich mineral resources need to start shaping elements of knowledge economy by increasing the scientific and technical potential, increasing the scientific and technical potential by obtaining a supercontrol by reducing the dependence on natural resources in the long run, using dependency on external systems.*

**Keywords:** ecological balance, environmental economics, ecological economics, environmental taxes, ecological policy

### 1. INTRODUCTION

As we know, the 21st century has been declared a century of ecology, sustainable development, health in the world. It is for this reason that this global-scale problem has always been and remains the focus of world scholars at all stages of society's history. Research shows that the dispute with the scientist working in these areas is still ongoing. In general, recent studies on the regulation of the world, local and regional environmental safety problems in the world are insufficient. In particular, the studies on the establishment of a regulatory legal framework for environmental safety should be further expanded. In the modern era, the causes of environmental threats are military, economic and social, travel and terrorism. If the threat of military threat - the global nuclear war, the proliferation of weapons of mass destruction, international armies, major wars and local conflicts, economic and social hazards. Connections between environmental protection and international trade have been recognized for many decades. In recent years the political rise of environmentalism has focused acute attention on possible conflicts between environment and trade values and rules. National environmental law has become more comprehensive and more central in most polities, and present or proposed measures of environmental protection often touch matters addressed by international trade rules. (Environmental Regulation and Economic Growth, By A. E. Boyle, 1994, pp 189-190).

### 2. ECONOMIC DEVELOPMENT AND DIRECTIONS TO SOLVE THE PROBLEMS OF AND ENVIRONMENTAL PROTECTION

Implementation of the principles of protection of natural resources, science-based development at the national, international and regional levels by strengthening the coordination of state activities in the field of environmental protection in order to achieve ecologically sustainable socio-economic development, ensuring the sustainability of the country's economic and human resources should be implemented.



'The materials balance principle' is the term that economists tend to use to refer to the law of conservation of mass, which states that matter can neither be created nor destroyed. (Perman et al, 2003, pp-22). It is essential to eliminate and limit the serious environmental problems that arise during economic activity to ensure sustainable development from ecologically sustainable and can be achieved by fulfilling the following objectives in interconnectedness:

- Using appropriate methods of managing economic and human potential to improve the quality of the environment;
- the creation and use of economic models and technologies that stimulate the well-being of present and future generations;
- implementation of guarantees between representatives of the same and different generations on the principles of fairness;
- Protecting systems, ecosystems and biodiversity that can provide human life.
- The implementation of these tasks is based on the following principles:
- Implementation of the decision-making principle, taking into account short-term and long-term economic, environmental and social outcomes and probable consequences;
- taking into account alternatives in decision-making processes;
- Preventing the implementation of economic, social and environmental projects that may cause irreversible damage to any component of the environment;
- Ensuring strong and diversified economic development, allowing allocation of funds for environmental protection and sustainable development;
- Expansion of involvement of representatives of public and non-governmental organizations in decision-making process in sustainable development and environmental protection.

Natural resource availability and environmental factors are not seen as providing significant limits to economic growth. Indeed, the most optimistic thinkers see economic growth as a positive means to reduce scarcity permanently through the accumulation of capital and knowledge and other effects. Some growth optimists see global advantages through greater economies of scale and argue that economic growth results in a faster rate of technological progress (Tisdell, 1990, pp 2-5). In Europe, the United States, Japan and China, active and highly successful scientific studies are being carried out to create the most powerful thermoelectric power plants capable of meeting the demand for a long-term country and several countries. Solar power stations and their placement in space are the following. Two models can be combined organically: the information in the resource model can be regarded as an economic resource, and resources themselves can be the main object of studying the knowledge economy. Unlike many resources, information and knowledge can be used indefinitely and are actually used more and more. In this context, the information acquires the characteristics of capital as an increasing value. Resources are available in quantitative and qualitative levels. This is a quantitative character that reflects the volume and speed of resource utilization and the quality of the potential that they can afford. Quantitative characteristics of resources and the level of utilization of them reflect the efficiency of resource utilization. At the same time, quantitative characteristics of resources can increase or decrease resource potential from a quantitative perspective. For example, while the world oil market price fell to \$ 38 per barrel in 2014, the oil price in Azerbaijan in 2014 was \$ 60-70 in October 2018. On the other hand, resources are not the same as quality. The quality of the mineral raw material is determined by its composition, ie the rate of the ingredients contained in it. Land quality is determined by their fertility rate. The development of resource potential (resource resources) is related to the complexity, completeness and substitution of resources. Resource complexity is expressed through the acquisition of some of their resources. At the same time, complex utilization of resources reduces the production of natural raw materials. For example, during oil extraction it is obtained in natural gas.



The nature of the resources to complement each other is explained by the fact that sometimes there are some resources in the production process. The production process can not be started as a result of at least one of them. For example, raw materials, fuels, fixed and circulating funds and labor resources complement each other in the production process. The ability to replace resources contributes to achieving the desired result as a result of the use of different resources in different ways. That is, the same resource can be used by replacing other resources to meet different functional requirements in different fields. For example, petroleum gas can be replaced by gas, coal, atomic energy, metal plasma in industry, and labor resources can be replaced by machines and equipment. From the point of view of ecological security, opportunities for replacement of resources within the national economy are constantly examining and expanding towards expansion. At the same time, this feature can be applied both to internal and external resources. Thus, a number of raw materials, fuel and other resources can be imported, which is due to their cheaper receipt. Therefore, taking into consideration the economic growth and the depletion of a number of resources, various countries take this step by increasing their reputation. The functions of the state in the mixed economy include the establishment of legal basis for economic decisions, the stabilization of the economy, the achievement of macroeconomic and structural balance, the development strategy, and the creation of favorable investment, business environment, resource allocation, and economic and environmental security, and solution of social problems, these functions include specific areas, regions, spheres of regulation in the transitional period. The policy objectives should be based on the criteria system that forms the basis of the state, society and economic entities. All of this, in turn, is a constant focus on preventing the initial quantitative and qualitative changes in the environmentally-friendly tangible assets and the need for future generations to utilize the natural environment, leading to a breach of the ecological sustainability of the environment to meet the social and economic needs of the community a consistent monitoring of the use of natural resources efficiently and economically without regulating the environment, ecological sustainability of the environment, and the preservation of biodiversity and the sustainable use of ecological systems expansion.

### **2.1. Ecological and environmental economics. basic mechanisms of difference**

Ecological economics is an interdisciplinary area between economics and ecology. Their goal is to develop models that can analyze economic, social and environmental conditions in the form of a network, embedded and evolving system. Environmental economists mainly study the social and political problems of environmental economics. Her work focuses on identifying conditions for a sustainable socio-economic system and developing a model that describes it. Ecological economics is based on ecosystems and is trying to find a solution to conflicts between the economy and society on this basis. After successfully determining the relationship between the economy and the environment, plans and recommendations for adjustments aimed at creating a socio-economic system in harmony with the biosphere can be developed. Opinions of environmental economists are not same . Among the most prominent scientists in this field: Schumacher E., Boulding K. E., Costanza R., Carten D.

### **2.2. Comparison of ecological and environmental economics**

*Figure following on the next page*



Ecological Economics	Traditional Environmental and Resource Economics
1. Optimal scale	1. Optimal allocation and externalities
2. Priority to sustainability	2. Priority to efficiency
3. Needs fulfilled and equitable distribution	3. Optimal welfare or Pareto efficiency
4. Sustainable development, globally and North/South	4. Sustainable growth in abstract models
5. Growth pessimism and difficult choices	5. Growth optimism and "win-win" options
6. Unpredictable co-evolution	6. Deterministic optimisation of intertemporal welfare
7. Long-term focus	7. Short to medium term focus
8. Complete, integrative and descriptive	8. Partial, monodisciplinary and analytical
9. Concrete and specific	9. Abstract and general
10. Physical and biological indicators	10. Monetary indicators
11. Systems analysis	11. External costs and economic valuation
12. Multidimensional evaluation	12. Cost-benefit analysis
13. Integrated models with cause-effect relationships	13. Applied general equilibrium models with external costs
14. Bounded individual rationality and uncertainty	14. Maximisation of utility or profit
15. Local communities	15. Global market and isolated individuals
16. Environmental ethics	16. Utilitarianism and functionalism

*Figure 1: Comparison of ecological and environmental economics (Ecological Economics: Themes, Approaches, and Differences with Environmental Economics, Jeroen C. J. M. Van den Bergh, 2000)*

Environmental economics focuses on value dimensions: namely, utility and welfare in theory, and costs and benefits in practice. Unlike neoclassical economics, ecological economy does not regard a total valuation of changes in ecosystems as the sum of private values. For the latter takes no account, or insufficiently, or insufficient account, of internal environmental system functions, "life-support" functions, future generations, and non-instrumental existence values. EE is inclined to add criteria to the economic values in the context of decision making concerning management of and changes in ecosystems.

### 3. ENVIRONMENTAL TAXES

Environmental pollution is a global problem of our time, and the efforts of all economically developed countries without exception are aimed at combating it. In world practice, there are two main approaches to the regulation of environmental activities: command and control (administrative) and market. The market approach involves primarily the use of financial instruments to stimulate and deter entrepreneurial activity affecting the field of nature management and ecology. The leading place among such instruments belongs to environmental taxes. An environmental tax cannot guarantee a particular environmental impact polluters behavioural responses may be less, or more, than expected. In cases where the precise achievement of an environmental target is a high priority, this may be an important drawback of environmental taxes, and quantity instruments such as emissions trading may be preferred (Fullerton et.al., 2008 pp. 6-8). Environmental taxes began to apply the Scandinavian countries in the 80s. Until the mid-90s. their role in tax revenue grew slowly. In the EU as a whole, the share of such taxes in the aggregate GDP of the member countries increased from 2.6% in 1980 to 2.9% in 1994. A slight increase was observed in 1995-1996. mainly due to the expansion of the membership of the EU. In the OECD countries, which includes most European countries, the tax shift towards environmental taxes — the Green Tax Reform — began in 1995-1996. In many countries with an effective environmental protection mechanism, environmental taxes play a significant role. The experience of the EU and OECD countries shows that environmental taxes, which constitute a large part of the revenue base of the budgets of these countries, are taxes for environmentally hazardous economic activities. In other words, anything that can cause adverse changes in the environment can be subject to environmental taxation.



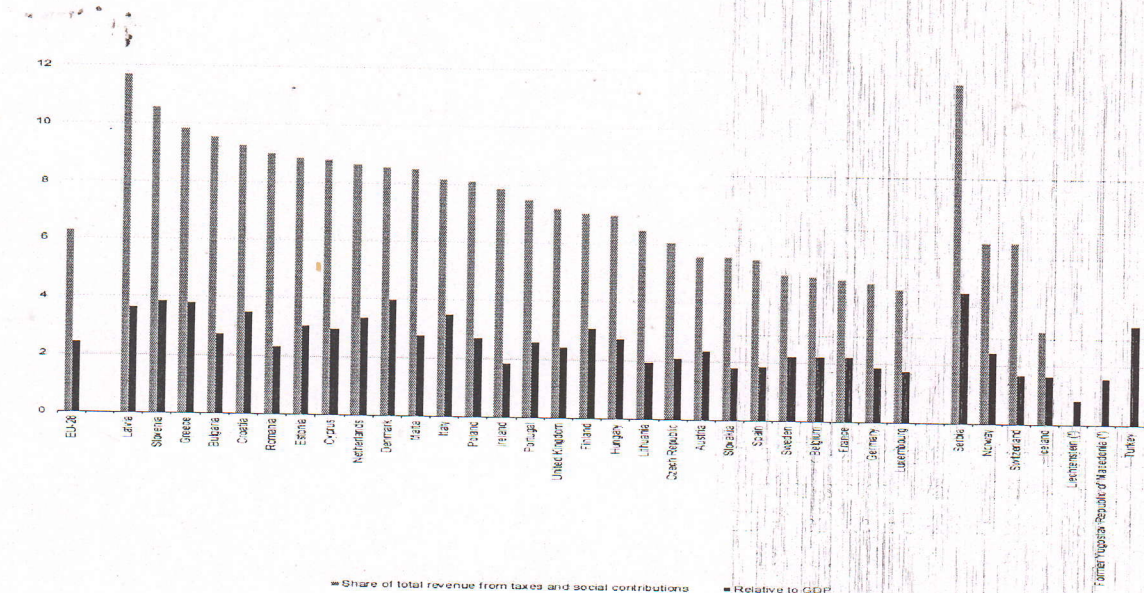
Taking this definition as a basis, the European Commission's Tax and Customs Directorate has divided environmental taxes into seven groups by application:

- energy taxes: motor fuel; energy fuel; for electricity.
- transport taxes: taxes on kilometers traveled; annual tax on the owner; excise taxes when buying a new or used car.
- pollution charges (tax on emissions): emissions of pollutants into the atmosphere; emissions to water basins; emissions of carbon dioxide and other harmful substances (chlorofluorocarbons, oxides of sulfur and nitrogen, lead); emissions of substances causing global environmental changes (such as damage to the ozone layer).
- payments for waste disposal (tax on waste). These include payments for the disposal of waste in landfills and their recycling and taxes on a number of special products (packaging, batteries, tires, lubricants, etc.).
- noise impact tax (earmarked charges).
- payments for the use of natural resources (royalty).

	million EUR	% of total environmental taxes	% of GDP	% of total revenues from taxes and social contributions
Total environmental taxes	364 398	100,0	2,4	6,3
Energy taxes	280 354	76,9	1,9	4,8
Transport taxes	71 747	19,7	0,5	1,2
Taxes on pollution and resources	12 297	3,4	0,1	0,2

Figure 2: Total environmental tax revenue by type of tax, EU-28, 2016 Eurostat

In 2016, the total income from environmental taxes in the EU-28 (that is, income from environmental taxes collected by governments in all EU member states) was € 364.4 billion; this figure represents 2.4% of the gross domestic product (GDP) of the EU-28 and 6.3% of all government revenues from taxes and social contributions to the EU.





(4.0%), followed by Slovenia (3.9%), Greece (3.8%), Latvia (3.7%), Croatia and Italy (both 3.5%). The lowest revenues from environmental taxes in relation to the country's GDP (below 2%) were recorded in six EU member states (Lithuania, Germany, Spain, Ireland, Slovakia and Luxembourg). Serbia stands out for its environmental tax revenue in 2016 at 4.5%, followed by Turkey (3.4%). Of the EFTA countries, Norway in 2016 recorded the highest level of tax revenues relative to GDP (2.4%). For Switzerland and Iceland, revenues from environmental taxes in 2016 amounted to 1.7% and 1.6% of GDP. The share of environmental taxes in total government revenues from taxes and social contributions also varied considerably across EU member states. Latvia had the largest share in the EU (11.7%), slightly ahead of Slovenia (10.6%). Four other EU member states have a share of at least 9%: Greece (9.8%), Bulgaria (9.6%), Croatia (9.3%) and Romania (9.0%). At the opposite end of the scale, the lowest shares of environmental taxes are Luxembourg (4.6%), Germany (4.8%), France (4.9%), Belgium (5.0%) and Sweden (5.1%), followed by Spain (5.5%). Slovakia and Austria (both 5.6%). The share of environmental taxes in total government revenues from taxes and social contributions registered by Serbia (11.7%) was at the same level as in Latvia, the country with the largest share in the EU. Environmental tax revenues collected in 2016 in Norway and Switzerland accounted for 6.2% of total government revenues from taxes and social contributions, while for Iceland the equivalent share was relatively low (3.2%).

#### 4. CONCLUSION

An important direction in improving nature conservation and the use of natural resources is the determination of an adequate price or economic assessment of natural resources and natural services. The environment provides three functions:

- the provision of natural resources;
- the assimilation of waste and pollution;
- providing people with natural services, such as recreation, aesthetic pleasure, etc.

These three functions can also be represented as components of one general function of the natural environment - life support functions. Real prices of natural resources can be effective levers in the market mechanism. With irrational environmental management at enterprises, their accounting will lead to a deterioration in production indicators, which will affect financial results. Accounting prices of resource estimates will allow more reasonably determine the cost-effectiveness of development alternatives. The use of estimates can significantly affect the choice of capital construction options. For example, taking into account the fact that land resources planned for withdrawal can be used in agriculture and produce, it may make expedient to change investment projects in the direction of higher prices for the construction object itself due to its maximum concentration, additional costs for attracting uncomfortable land. Inadequate assessment of natural resources leads to underestimation of the effects of greening the economy, the transition to sustainable resource-saving development. The annual losses of oil, timber, various minerals of degraded land, etc. can be estimated at many billions of dollars. One of the important reasons for the loss of natural resources and the increase in the environmental intensity of the economy was the deterioration of equipment exceeding all acceptable standards. In the conditions of continuing operation of such equipment, the probability of environmental disasters sharply increases. Now the UN, developed countries are trying to "green" measurement of the main economic indicators, taking into account the environmental factor. In particular. The United Nations Statistics Division proposes a system of integrated environmental and economic accounts aimed at taking environmental factors into account in national statisticians. Also of interest are the following indicators: the human development index proposed by the UN and the sustainable economic well-being index proposed by G. Dali and J. Cobb.



The first one is an aggregate indicator calculated on the basis of the characteristics of life expectancy, level of knowledge and level of mastering the resources necessary for normal life. The second is a fairly comprehensive indicator that takes into account the costs of an environmental nature associated with inefficient management. However, the exit of the economy to the path of sustainable development is impossible only through market mechanisms. The market model, as already shown above, cannot lead to the path of sustainable ecological and economic development of the economy. The market failures are obvious in this case. An important quality of the market is that it makes it possible to ensure the best use of various resources due to price signals of their scarcity. But the real social costs and benefits of the use of environmental resources through the prices of resources emerging on "environmental" markets, it is impossible to calculate. As a result, there is an inadequate assessment of scarce resources, supply and demand quantities, which gives underestimated incentives for the efficient use of natural resources and environmental protection. The reasons for market failures in the environmental field are such as

- externalities (external effects);
- the absence (undervaluation) of prices for natural goods and the absence of such markets;
- public goods;
- transaction costs;
- property rights;
- uncertainty and short-sightedness.

As for externalities, they cannot be adequately taken into account primarily in terms of the social costs of society from environmental degradation. Therefore, the understated prices of natural goods are obvious. Transaction costs can also be quite large in relation to the expected benefits (costs associated with obtaining information, conducting multilateral negotiations, ensuring compliance with negotiations, etc.) And, even if an agreement is reached, the degradation of nature still continues. The market system is not interested in producing public goods, since their features are opposed to the characteristics of individual consumer goods. These large units are indivisible and the principles of exclusion do not apply to them. The benefits of public goods come to society as a result of the production of such goods. A significant problem for the market is uncertainty and short-sightedness. By its nature, the market is focused on getting quick results, profits and does not take into account long-term damages and benefits. Market failures in the economic sphere show that purely market regulators in the use of nature are ineffective. At the same time, the inefficiency of state regulators in solving environmental problems is obvious. Among the examples of ineffective public policy are the following:

- subsidies (for pesticides, energy, irrigation water, etc.);
- tax system (stimulation of environmental activities in agriculture, energy, etc.);
- price control;
- environmentally destabilizing foreign trade policy;
- inconsistent reform of property rights;
- deficiencies in environmental management and monitoring, and so on.

In society, there is a dispute about subsidies, in particular, for electricity. They need to be resorted to because of the distortion of prices for this product. The removal of subsidies will force everyone to save energy and reduce local air pollution, reduce carbon emissions in some countries by 20%, and globally by 7%. Despite the shortcomings, the role of the state in environmental protection is great now and will grow in the future. The experience of developed countries over the past two or three decades shows that the role of the state is important in



setting different standards and standards in the field of environmental protection. He plays a leading role in the implementation of alternative solutions to environmental problems, economic restructuring and others. Today, in many countries in the field of environmental protection, a kind of symbiosis of administrative and market mechanisms has developed. And the search for optimal environmental and economic regulators continues. There is no ready and well-established model of the economic mechanism of interaction between society and nature in the world, but there is an obvious need to balance state and market approaches depending on the ecological situation, characteristics of the economy, etc. As already noted, the greening of the economy for our country, the transition to a sustainable type of economic development is complicated by a structural crisis. Institutional inefficiency (protection of property rights, privatization, incorporation, etc.) only aggravates the situation. This does not mean that it is necessary to slow down the progress towards new forms of management. However, everything new needs to be weighed on an ecological scale; any decisions in the economy, including institutional ones, must begin with the creation of a system of strict environmental protection or an assessment of how a particular decision will affect nature. If today enterprises (in the face of fierce competition, bankruptcies and a constant lack of financial resources) tend to sacrifice primarily nature, then they can be understood. Under these conditions, the role of the state in ensuring the environmental safety of the country increases (preserving the health of the nation and ensuring sustainable socio-economic development with the adequacy of the environmental conditions).

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