

# “Green” Standards as a Tool for Preserving the Environment

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**Abstract.** At present, the ideas of economic, social and environmental balance of development, harmonization of nature and society are no longer new, however, the transformation of the economy based on “green” standards, taking into account rational environmental management and eco-efficiency, remains very relevant in modern conditions. The problem of environmental protection and rational nature management is complex, interdisciplinary and multifaceted. This nature of the problem is determined, first of all, by the complexity of the structure of the managed object. The most important components of the ecological-socio-economic system are nature, man, society and production. All these elements are closely interconnected. Thus, human well-being depends on the socio-economic level of development, the level of manufacturability of production and the state of the natural environment. The development of production depends on the number of workers, the level of their education and training, the state of health and the interest of people in the development of production. At the same time, production depends on the scale and intensity of the use of natural resources. In turn, the state of ecological systems to a decisive extent depends on the scale of production and the nature of production technologies, the results of their impact on nature.

## 1 Introduction

Green growth policies are designed to stimulate economic development and promote human well-being through the conservation and sustainable use of natural capital, that is, natural resources and ecosystems that provide raw materials, energy, water and a variety of ecosystem services on which the well-being of countries depends (OECD 2011a, 2011b) [1]. When we say “green growth”, we argue that the greening of the economy can stimulate its development, and this requires the development and implementation of a framework system that generates price signals and defines regulatory measures that together create incentives to find alternatives to limited natural resources, to innovate, increase productivity

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and human capital development. Economic growth is usually presented as a process that brings together workers, machines, machines, equipment, materials, new ideas and technologies in the production of goods and services that are necessary or useful to individuals and society as a whole. The concept of green growth expands on this notion by adding four essential considerations [1-2]: It emphasizes the importance of changes in a country's total wealth, referring to all of its capital: natural (e.g. ecosystems), human (e.g. education and competencies), physical (e.g. , equipment) and intangible assets so necessary for the progress of mankind - ideas, innovations and so on [3]. Among other things, this comprehensive approach addresses such a significant aspect of growth as the nature of contradictions and trade-offs that arise at the edge of current possibilities. For example, the replacement of environmental assets in production or consumption does not always go smoothly: the economy and society can reach a breaking point when renewable resources cease to be renewable (e.g. fish stocks, soil) or non-renewable assets are depleted to the point where they are replaced by other resources or functions becomes impossible (climate, biodiversity), and this threatens economic growth and well-being. These include thresholds, possible irreversible effects and discontinuities that complicate policy development. Each environmental asset, renewable or non-renewable, requires separate considerations; there is no single rule indicating whether a given asset is worth keeping or not. It proceeds from the dual role of natural capital: nature gives resources to the economy, and receives pollution and waste. Natural capital provides the most important factors of production, renewable and non-renewable [4]. The well-being of the individual and society depends on it - through the impact of ecology on people's health, in connection with the level of comfort, aesthetic and other intangible values, through the quality of ecosystem services. Recognizes that investment in natural capital is a matter of public policy because market incentives in this area are weak or non-existent, since natural capital involved in the production or maintenance of quality of life is often not valued either in monetary terms or in other respects. The lack of its proper assessment, the weakness of market incentives or price signals negatively affect behavior patterns (of the population, business), can lead to the choice of exhausting development trajectories and the adoption of decisions that ignore growth opportunities and do not maximize the welfare of society. Indicates the importance of innovation that bridges the gap between the need to invest in (dwindling) natural capital and increased consumption or investment in another kind of capital. Indeed, increasing resource efficiency, on which, in fact, green growth relies, pushes back the boundaries beyond which the contradictions become especially acute. Traditional economic policies mainly stimulate those innovations that increase the efficiency of existing technologies (for example, in the energy and transport sectors). It's in the nature of things: innovation builds on previous innovations by building on existing technologies. Breaking this path-dependency that hinders the development of green technologies with the right innovation incentives is one of the most important tasks of green growth policy, which also uses "learning by doing" and economies of scale to do this.

## **2 Research Methodology**

The environmental performance of eco-innovation is achieved by providing cost-competitive goods and services that meet human needs and maintain quality of life while reducing environmental impact and material consumption throughout the life cycle of the product. Moreover, environmental and economic activity begins to acquire the properties of not only a commodity, but also a significant capital, since it multiplies the entire system of creating additional opportunities for sustainable socio-economic development, the transition

to a “green” growth strategy that implements the innovative policy of a new technological order based on eco-innovations. , prioritizing the introduction of “green” technologies into business processes [5]. All this should lead to a reduction in emissions of pollutants and greenhouse gases into the environment, which will reduce the technogenic impact on nature and, along with an increase in nature management and eco-efficiency of production, will improve the quality of life and the living environment. At the same time, it should be noted that a new project or an advanced technology is recognized as effective and better if it allows to increase output with minimal present costs [6]. Meanwhile, the high economic efficiency of production from the standpoint of an economic entity is not always such from an environmental and social standpoint, since it is sometimes achieved at the cost of large financial investments and a decrease in the efficiency of this production. Under these conditions, enterprises are not interested in the introduction of new resource-saving technologies, moreover, the lack of efficiency of existing environmental, economic and management mechanisms is manifested. Nevertheless, it must be stated that sustainable socio-economic development, taking into account rational nature management and eco-efficiency, should be based on the principle of environmental and social acceptability of the impact of anthropogenic activities on the environment. The concept of green growth recognizes that economic and environmental policies can stimulate green growth and improve carbon, energy and material efficiency while conserving natural assets and improving people’s quality of life [7]. Responding to the challenge of the times, a number of countries have taken a course towards greening the economy, which requires improving production processes and creating new, more efficient products, stimulating innovation and structural changes in the economy, creating conditions for financial consolidation by revising the composition and efficiency of public spending and increasing income for by raising pollution charges, building investor confidence through greater predictability and stability, creating a more balanced macroeconomic environment and stable natural resource prices. Designing effective policies to support green growth requires reliable information that reflects the relationship between the economy and the state of the environment. Monitoring processes and evaluating progress with regard to green growth not only contributes to a better understanding of the determinants of green growth, but also points to opportunities for synergy with respect to interrelated economic and environmental goals [6-7]. A correct understanding of the country’s natural assets and existing economic opportunities, monitoring of the environmental aspects of the quality of life contribute to the determination of public policy priorities. Reliable data is also needed to inform the public about progress in green growth. At the international level, a wide range of partners are working together to create and implement a framework related to measuring the processes of green transformation of the economy. The OECD is supporting these efforts by facilitating the exchange of experience and the dissemination of best practices regarding the development of green growth indicators (GGIs) and the promotion of a coherent, coherent framework that makes green growth measurable. The practical application of the GPPs developed by the OECD is currently being expanded to the EU Eastern Partnership countries (Azerbaijan, Armenia, Belarus, Georgia, the Republic of Moldova and Ukraine) within the framework of the Greening Economies in the Eastern Partnership (EaP GREEN) project, which is designed to help these countries in green transformation of the economy [3].

### **3 Results and Discussions**

The results of the application of the Green Growth Measurement Methodology have identified the main steps to develop a national set of GGs and related tools that can be used to inform policy makers and the general public. First, that the implementation and use of

the measurement system should go hand in hand with the development of the national green growth strategy. If such a strategy has not yet been agreed upon in the country, it would be useful to conduct a national-level pilot study on the measurement of green growth, which would probably help in assessing the current situation and developing the strategy. Second, the need for such a system and an understanding of its purpose should first be assessed [4]. If the need for the system is not yet clear to the government and society, it is recommended to test the OECD set of green growth indicators in a pilot mode. This measure will be a catalyst - it will stimulate the development of green growth policies. Thirdly, it is essential that participants in this process come to a clear agreement on its key stages and the division of responsibilities in the process of developing a green growth strategy and corresponding indicators for the national measurement system. This work can be led by the Ministry of Economics, but environmental departments and organizations and statistical services should also have a real opportunity to participate in it and influence it. Ministries involved in the process can establish an inter-ministerial coordinating or oversight group that provides communication, information exchange and political support for the initiative, and is able to plan further policy actions [5]. Participation in the process of representatives of the scientific community, non-governmental organizations and the private sector is desirable. Finally, testing a national system can provide two additional outcomes: an expert analysis of the need for regular assessment of progress towards green growth in a given country, the feasibility and feasibility of such an assessment, and an information report on the results of a pilot application of a set of GGs proposed by the OECD, based on data currently available [6]. Participants in the process will be able to develop a communication strategy to inform the government and the public about the results of the application of GMP and discuss measures to organize systematic measurements. Thus, we can state the existence of mechanisms for managing the transformation of the economy based on “green” standards, based on environmental restructuring and modernization of production while preventing the environmentally hazardous, destructive impact of human activity on the environment, the introduction of environmental management systems at industrial enterprises as a mechanism for greening production and management [7-8]. For these purposes, it is necessary to create tools for environmental activities, stimulate markets for environmental services, provide risk management services in substantiating environmental risks and assessing the impact of economic activities on the state of the natural environment. There should be close cooperation between scientific organizations, enterprises and financial institutions (banks, insurance companies), taking into account environmental aspects, which will help reduce the anthropogenic pressure on ecosystems and, as a result, reduce the negative impact.

According to the United Nations, it is cities that have a decisive influence on climate change. They already account for 71% to 76% of carbon dioxide emissions [8-9]. Moreover, in the future, an increase in the urban population is expected [10]. UN experts have calculated that air, water and soil pollution kills 15 times more people than wars, and burning 1 kg of gasoline requires almost 15 kg of air or 3 kg of oxygen. Therefore, the green economy vector in the development of cities is decisive for a number of states. Increasing attention is paid to reducing the level of environmental pollution, reducing noise, harmony in the geometry and appearance of city streets. The reasons for this attention are very serious: the Organization for Economic Cooperation and Development predicts that air pollution could cause 6 million to 9 million premature deaths by 2060 and cost the global economy 1% of gross domestic product (US\$2.6 trillion) per year [11]. The economic consequences will affect mainly China, Russia, India, South Korea and the countries of Eastern Europe and the Caspian region. By 2050, air pollution could reduce food production by 10% against a 50% population growth forecast. These and other problems of urban ecology are becoming increasingly understood. As a result, the number of cities that

have joined the European Union's Covenant of Mayors voluntary international energy and climate initiative to reduce greenhouse gas emissions is increasing every year. The solutions to environmental problems were most clearly defined in terms of reducing greenhouse gas emissions, environmental pollution, waste processing, the transition to waste-free production and organic agricultural production, and environmental education of the population. The European Union is currently aiming to reduce greenhouse gas emissions by increasing the share of renewable energy in electricity and heat generation (up to 27% renewable energy in the share of energy generation; 27% increase in energy efficiency; 40% reduction in greenhouse gas emissions by 2030). The European Commission has proposed to ban the use of gasoline-powered cars in cities by 2050 [12]. Some European countries are introducing this ban as early as 2030. According to the estimates of the international energy agency and the auditing company KPMG, the share of sales of electric vehicles in the global motor vehicle market by 2025 will not exceed 15% and will amount to approximately 20 million units [13].

The last quarter of a century has witnessed a quadrupling of global GDP, raising the standard of living of hundreds of millions of people. However, 60% of the world's key ecosystem goods and services that are essential to their existence have declined in quality or have been used in an unsustainable way. This is due to the fact that in recent decades economic growth has been achieved mainly through the expenditure of natural resources; mankind did not allow stocks to recover, but allowed ecosystems to degrade and disappear. For example, today only 20% of commercial fish stocks, mostly cheap species, are underutilized; 52% are fully utilized and there is no opportunity to expand this business; about 20% are overused and 8% are depleted. Water is becoming a scarce resource. Water scarcity is projected to only get worse, and in 20 years water supplies will meet only 60% of the world's needs. In agriculture, the increase in yields was achieved mainly through the use of chemical fertilizers, which reduce the quality of the soil. It has not been possible to reverse the trend towards increased deforestation: in 1990-2005, the forest area decreased by 13 million hectares annually [14]. Therefore, the lack of environmental resources seriously affects all sectors of the economy that play a major role in supplying humanity with food (fishing, agriculture, fresh water supply, forestry) and the most important source of livelihood for the poor. Environmental scarcity and social injustice are defining features of an economy that is far from green. The transition from the consumer model of the existence of society at the turn of the XX-XXI centuries. to a model of a high-quality and resource-saving lifestyle requires a change in the type of thinking and the formation of a new scientific paradigm for the development of cities, which can be based on the concept of the fourth natural-scientific picture of the world based on NBICS technologies (interactions of four scientific and technological areas: N - nano; B - bio; I - info; C - cogno; in recent years, it is customary to "add" a social component to convergent technologies in the form of social technologies with a corresponding change in the abbreviation SNBIC or NBICS) [15]. Among the ten key technologies that, according to the Massachusetts Institute of Technology, are capable of completely changing the world ("Technological Review of MIT"), the "Sensing City" technology is considered in the first place, in which all "smart" technologies known today will be applied [16]. It is assumed that all decisions - design, technological, and even political (as far as urban life is concerned) - will be made on the basis of information obtained from millions of sensors that collect data on literally everything from air purity to the fact that residents do at any given time. The use of information technologies in city management is already a vector of development in world practice and, to a certain extent, a reality of urban life. For its designation, the term "electronic government" (e-Government) is used. The World e-Governments Organization of Cities and Local Governments (WeGO, World e-Governments Organization of Cities and Local Governments) has been created. This is an organization that brings together the

governments of cities around the world interested in improving the quality of life of citizens based on e-government and through ICT tools.

## 4 Conclusions

In order to improve the quality of life in cities, complex and interdisciplinary approaches and the widespread use of information technologies and technical means are required to assess the states and movements of complex systems, such as the phenomena of the development of society and the natural and urban environment. First of all, we are talking about the intellectualization of the urban economy (smart-city), electric power systems (smart-grid), transport (smart-roads) [17]. The creation of projects within the framework of these projects, with proper standardization of databases and technological platforms, can be viewed as the formation, under state patronage and support, of an ecosystem of the digital component of the green economy of megacities, which ensures the constant interaction of interoperable technological platforms and applied Internet services, analytical systems, information systems of organizations, etc. e. A distinctive feature of such an ecosystem is that there is nothing “secondary” in it, everything is interdependent and interconnected. At the same time, it is required to define target indicators of the green economy of megacities and form directions for their observance, focusing on the best world practice and taking into account current national interests and priorities. The general direction of work can be formulated as “a green city is a smart city” - a city based on information, energy-efficient and environmental technologies, in which, thanks to caring for people, it is convenient and pleasant to live.

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