Introduction

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The degree of modern human impact on natural ecosystems and components exceeds the natural abilities of their self-restoration; as a result, environmental problems become global. The scale of human influence on the environment is currently comparable to geological, and therefore the concept of Anthropocene was introduced and widely popularized. The Anthropocene is an informal geochronological term for the era with the highest level of human activity that plays a significant role in the Earth's ecosystem and biogeochemical cycles (Stephen et al., 2011).

Catastrophic changes occurring in the natural environment under the influence of anthropogenic activities determine the development of a system of political, economic, legal, educational and other measures taken to manage the environmental situation and ensure rational use of natural resources, i. e. *environmental policy*.

In a broad sense, *environmental policy* is a set of actions launched by society and individual stakeholders (the interaction of various economic, political and social structures) with the aim to implement environmental management and nature conservation strategy. This is an activity through which society's attitude to nature is regulated to enhance its protection and development. The role of mediator in this process belongs to the state, public and political organizations and institutions.

In a narrow sense, environmental policy is a set of documents, programs and strategies developed and adopted at the international level of a group of countries (e. g. international environmental policy, environmental policy of the European Union), one country (e. g. national environmental policy of Russia), a region, a municipality (e. g. environmental policy of Krasnoyarsk Kray, a watershed management plan), or a particular enterprise (environmental policy of Gazprom, RusHydro, electric grid complex, etc.).

Although the state plays the main role in the implementation of environmental policy, at least in some countries, it is not the only implementer of environmental policy. The latter can be represented as an inter-level interaction of the state, environmental parties and

movements of regional, national and international levels, individual enterprises and large corporations.

B. Williams and A. Matheny (1995) distinguish three main types of state environmental policy: *managerial*, *pluralist*, and *communitarian*.

In a *managerial environmental policy*, individuals who implement it focus on the technical aspects of making relevant decisions. The main role is played by experts who establish both the framework for the consideration of a particular issue and the degree of its significance ("top-down" approach).

In the *pluralistic type* of eco-policy not only experts, but also civil society representatives participate in the decision-making process. However, citizen participation is not carried out directly, but through some kind of civil society organizations. Eco-policy is implemented through the interaction of government agencies with non-governmental organizations ("bottom-up" approach).

The *collective type* of eco-politics is based on the concept of "rights of indigenous people". In this case, the state employs the practice of transferring authority in making certain decisions to a group of citizens who are primarily affected by this decision. This way a collective participation in making decisions is insured. Such an approach has become quite common in a number of countries (see Hill et al., 2012; Pimbert, 2004; Notzke, 1995, etc.), in some other countries it is on the agenda (see Chunhabunyatip et al., 2018; Shukla et al., 2014, etc.).

It is possible to identify the most significant common trends that currently determine the vector of development of environmental policy (Morozova et al., 2014):

– *globalization* (integration to solve global environmental problems). The environment has become a key area of international concern, as the impacts of human activities threaten not only local ecosystems but also touch upon the Earth's system, and emerging problems have been addressed on international scale in many multilateral forums and treaties;

– *glocalization* (local or regional response to global environmental changes, for one of the examples see the activities of Arctic Council (https://arctic-council.org/index.php/en/);

– *democratization* (expansion of the channels of civil society influence on the adoption of environmental policy decisions, the right to receive information on the state of the environment, the right to participate in the development of environmental policy);

– "*green economy*" — an economy that aims to reduce environmental risks, enhance resource efficiency, and promote social inclusiveness, in order to ensure sustainable development;

– *networking environmental policy* (increasing the role and importance of network structures with high potential for self-organization and mobilization and the emergence of various mechanisms for the influence of network activity on the development and reproduction of environmental policy);

– *internalization* of environmental values among the population as a result of the development of environmental awareness.

Another important trend is environmental policy integration, or sector integration (Persson, 2004). Preservation of the environment has now ceased to be a narrow departmental task, the execution of which is exclusively entrusted to environmental authorities. The causes and solutions of many environmental problems often lie in sectoral strategies, therefore environmental aspects and objectives of environmental policy are increasingly associated with various fields and sectors of economic activity, including energy, agriculture, transport, trade, industry, etc. The essence of environmental policy integration is in combining socio-economic development with the need to protect the environment (see also Mullally et al., 2018; van Osten et al., 2018; Jordan & Lenschow, 2010, etc.).

In the last decades, the European Union has played a significant role in solving environmental problems through the development and implementation of environmental policies. Advanced environmental protection measures have successfully been implemented there, a legal framework for the regulation and coordination of environmental activities of the member states has been created, new approaches to protecting and improving the quality of the environment have been developed and introduced (e.g. Directive 92/43/EEC on the Conservation of natural habitats and of wild fauna and flora, Water Framework Directive 2000/60/EC, Council Directive 2009/147/EC on the conservation of wild birds). In particular, in the EU the legal basis for the system for collecting and processing environ-

mental information, environmental monitoring, environmental certification, and environmental impact assessment and the mechanism for financing environmental activities were substantially updated. Regulations for environmental standardization and certification have been developed (e. g. Forest Stewardship Council, which functions at the international scale; Carbon Trust Standard; ISO 14001). The right of citizens to have access to environmental information, the right to participate in the discussion and adoption of legal acts of an environmental nature, the right to go to court on environmental issues, enshrined in the Aarhus Convention in 1998, has been implemented (since Water Framework Directive has entered into force). In addition, the EU is one of the world leaders in the field of international environmental cooperation, since many documents originally adopted in the EU were subsequently implemented outside of it. Thus, the EU, on the one hand, has experience in implementing environmental policies at the regional and local level, and on the other, it has an impact on global environmental policy.

Despite the progress achieved in the EU environmental policy, a number of issues remain unresolved, or even exacerbate, and the new ones emerge, setting new goals and promoting the search for more effective environmental actions and solutions.

This publication presents an overview of environmental policy, starting with the history of environmental thought and growth of environmental awareness to the fundamental concepts, principles and applications. We provide a detailed review of the main methodological tools used in the framework of existing concepts. Particular attention is paid to specific and diverse examples of the application of these concepts and tools in solving environmental management and planning problems in various territorial and socio-economic contexts.

Wherever possible, the authors take the European policy context, and discuss local and regional environmental issues from the perspectives of EU-promoted policy developments.

The target audience for this book is university students and teachers, interested in the field, but also environmental professionals interested to have a better grasp on the tools and methodology, and to learn how policies are developed and work in a variety of contexts worldwide, and how they compare with European contexts. The materials of the monograph can be useful to anyone who is interested in

the issues discussed and in order to better understand the presented tools and methodology, to learn how policies are developed and how they work in different contexts in different regions of the globe, to what extent they correspond to the best world practices.

Many examples and case studies analysed in the book are taken from the context of Central and Eastern Europe, so this book will be of a particular value to those interested in the region (in particular the former USSR).

The materials in the book are divided into three sections:

– Section 1 covers the history, general principles and theoretical aspects of environmental policy. From a historical perspective, this chapter presents landmark documents and international conferences that have set the course for environmental policy at the global and European levels, gives insights into policy of science and scientific politics, and provides a detailed overview of the main instruments and institutions of environmental governance.

– Section 2 deals with learning and knowledge management for the design and implementation of environmental policies. Knowledge is the main and determining factor of environmental policy; this is recognized by the academic community and is demonstrated by the growing volume of publications on knowledge generation systems, dissemination and actual use of knowledge. First, in order to frame the discussion, it introduces the concepts of socio-ecological systems and adaptive governance (2.1). Next, it describes a wide range of issues related to the production and use of knowledge, and relates them to the structure of environmental policy and participants of environmental policy process (2.2). The section ends with concrete examples of knowledge production, such as social learning (2.3) and local knowledge (2.4), as well as a discussion of the problems of their integration into environmental management and governance.

– Section 3 presents an overview of cases that reveal a number of environmental problems in various sectors, socio-economic and biophysical conditions, and also demonstrates different approaches and tools (including management of knowledge systems) of implemented environmental policies, although the principles and mechanisms applied seem to have a lot in common. The chapter discusses four examples of environmental policy analysis from adaptive

management of coastal zones (3.1), biodiversity conservation in mountain ecosystems (3.2), physical planning in urban context (3.3), the dilemmas between biodiversity management and the interests of local communities (3.4), stretching geographically across the whole Eurasian continent from Ireland (3.1) to Tajikistan (3.2) and Southern Siberia (3.3), and to South Africa (3.4).

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