

# Global Environmental Challenges: Demand for International Cooperation\*

**Elena A. Goryushina**, North-Western Institute of Management, Russian Academy of National Economy and Public Administration under the President of the Russian Federation; Faculty of International Relations and Politics (Saint Petersburg, Russian Federation)

*MA student;*

*e-mail: e.goryusninaa@gmail.com.*

## **Academic Supervisor:**

**Natalia G. Zaslavskaya**, North-Western Institute of Management, Russian Academy of National Economy and Public Administration under the President of the Russian Federation; Faculty of International Relations and Politics (Saint Petersburg, Russian Federation)

*Associate Professor, PhD in History; e-mail: zaslavskaya-ng@ranepa.ru.*

## **Abstract**

The paper highlights the relevance of doing research into global environmental problems, and considers some of the major issues, viz.: global climate change, environmental pollution, as well as the reduction of biodiversity. The article investigates the response of the international community to the development of the global environmental issues mentioned above. Moreover, the author considers the process of formulating and developing the environmental policy of diverse states, being one of the priority tasks of international actors. The final section presents the major conclusions on the subject.

**Keywords:** environmental challenges; international relations; climate change; international community; biodiversity; pollution; politics.

## Глобальные экологические вызовы: необходимость международного сотрудничества\*\*

**Горюшина Елена Александровна**, Северо-Западный институт управления Российской академии народного хозяйства и государственной службы при Президенте Российской Федерации; факультет международных отношений и политических исследований (Санкт-Петербург, Российская Федерация)

*студентка 2-го курса магистратуры;*

*e-mail: e.goryusninaa@gmail.com.*

## **Научный руководитель:**

**Заславская Наталья Генриховна**, Северо-Западный институт управления Российской академии народного хозяйства и государственной службы при Президенте Российской Федерации; факультет международных отношений и политических исследований (Санкт-Петербург, Российская Федерация)

*доцент кафедры, кандидат исторических наук, доцент;*

*e-mail: zaslavskaya-ng@ranepa.ru.*

## **Аннотация**

В работе продемонстрирована актуальность изучения глобальных экологических проблем, а также рассмотрены одни из основных их видов, а именно: глобальное измене-

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ние климата, загрязнение окружающей среды, а также сокращение биоразнообразия на планете. В ходе исследования была рассмотрена реакция международного сообщества на развитие упомянутых выше глобальных проблем, а также изучен процесс формирования и развития экологической политики государств, выступающей в качестве одной из приоритетных задач международных акторов. В заключении представлен краткий вывод по исследуемой теме.

*Ключевые слова:* экологические вызовы; международные отношения; изменение климата; международное сообщество; биоразнообразие; загрязнение; политика.

The modern technological development of the world entails a lot of positive and negative consequences for human existence. Because of the rapid pace of the civilization's development, humanity and its living conditions are rapidly changing. New technologies affect not only the economic issues but also the environmental ones, which affect the lives of the whole population around the world. That is why it is extremely important to have broad international cooperation in this field. The purpose of this scientific article is to study the most urgent environmental issues, as well as to analyze the nature of international cooperation on the environmental agenda.

All the global environmental challenges are inextricably linked with ecology. That is why it is extremely important to understand its definition and nature. The term “ecology” was coined in 1866 by the German zoologist, Ernst Haeckel. In his book “General Morphology of Organisms” the researcher gave the following definition: “ecology is the sum of knowledge that belongs to the economy of nature — the study of the totality of the relationship between animals and the environment, and above all its friendly or hostile relations” [Stauffer, 1957, 139]. Today, this definition sounds a little different, namely: ecology is the science of the relationship of living organisms with the environment<sup>1</sup>. This term was fixed in everyday life in the 70s of the XX century.

Nowadays the environmental situation in the world is changing for the worse. There are the deteriorations of environmental indicators in most states of the world, as well as its impact on human health. A key issue, confirming the relevance of this global problem, here is the fact that quite a large number of countries have made the environmental agenda one of the key priorities of their security.

Currently, there are a number of global environmental challenges. For example, a) global climate change; b) environmental pollution; c) reduction of biodiversity, as well as other important issues [Dinar, Rapoport, 2013, 79-81]. All the issues listed above are global by nature. One or even several states are not able to solve these problems on their own. Only the entire world community can resist the negative consequences of its development and reduce the negative effect of environmental challenges.

Hereby, to understand the importance of global environmental challenges, it is necessary to consider some of the most urgent in more detail.

## CLIMATE CHANGE

The scientific researches related to climate change were conducted already in the 19th century [Hall, 2016, 1]. At that time scientists proved that the process of industrialization had a significant impact on the climate agenda.

<sup>1</sup> What is Ecology? [Electronic resource]. The Ecological Society of America, 2022. URL: <https://www.esa.org/about/what-does-ecology-have-to-do-with-me/#:~:text=Ecology%20is%20the%20study%20of,and%20the%20world%20around%20them> (date of application: 31.05.2022).

In the middle of the 19th century, many scholars found that increasing concentration of carbon dioxide in the atmosphere was linked to an increase in world temperature, and also proved the “greenhouse effect” [Hall, 2016, 1]. The “greenhouse effect” is a rise in temperature on the planet’s surface as a result of thermal energy that appears in the atmosphere because of the heating of gases.

Thus, the importance of the climate change issue can be demonstrated by global cooperation activities dating back to the second half of the 20th century. This cooperation has progressed gradually and changed ever since. The first and very important step toward universal recognition of the climate change problem was the World Climate Conference, which was held on 12-23 February 1979 in Geneva and organized by the World Meteorological Organization<sup>2</sup>. At this conference, scientists presented the results of their researches and concerns about how climate change might affect human activities. The scientific gathering issued a declaration calling on the world’s governments “to prevent potential changes in climate that might be adverse to the well-being of humanity”<sup>3</sup>.

The next step was the first intergovernmental conference on climate change in Toronto in 1988; it was at this event an intergovernmental scientific body was created to monitor this problem: the Inter-Governmental Panel on Climate Change (IPCC) [Hall, 2016, 1-2]. In 1990, the IPCC called for the preparation of a special global agreement to address climate change. This call was supported in the Ministerial Declaration at the Second World Climate Conference held in Geneva in October-November 1990 [Matveeva 2010, 248]. The UN General Assembly responded to these requests in December 1990 by adopting resolution 45/212, based on which a special Intergovernmental Negotiating Committee (IPC) was formed on this issue<sup>4</sup>. Thus, at the fifth session of the IPC in 1992, governments adopted the UN Framework Convention on Climate Change. The Convention was opened for signature on June 4, 1992, at the UN Conference on Environment and Development held in Rio de Janeiro, and entered into force on March 21, 1994.

The next stage in the process of global cooperation on climate change dates to December 1997, when the Kyoto Protocol was adopted by delegates from more than 160 countries. The main aims of this protocol included the three points: a) the determination of the permissible amount of greenhouse gas emissions in the 2008-2012 period and for all industrialized participating countries; b) the development of mechanisms for adjusting quotas for individual countries and, finally, c) the formation of mechanisms for controlling emissions levels<sup>5</sup>.

One of the largest gatherings of world leaders ever was the 2009 UNFCCC summit in Copenhagen. This was a remarkable moment for global politics with almost every head of state speaking at the negotiations. It is important to recognize that the Copenhagen Accord (the document which delegates agreed to «take note of» at the plenary session on 18 December 2009) also formed the basis for «hybrid multilateralism», which was institutionalized in the 2015 Paris Agreement [Bäckstrand, Kuyper, Linnér, Lövbrand, 2017, 563]. One of the central elements of the Copenhagen Accord is the recognition that emissions reduction is

<sup>2</sup> Proceedings of the World Climate Conference: A Conference of Experts on Climate and Mankind [Electronic resource]. WMO, 1979. URL: [https://library.wmo.int/index.php?lvl=notice\\_display&id=6319#.YZouZvBBzIU](https://library.wmo.int/index.php?lvl=notice_display&id=6319#.YZouZvBBzIU) (date of application: 15.06.2022).

<sup>3</sup> Climate Change Information Sheet 17, 2000 [Electronic resource]. Information Unit for Conventions (IUC). URL: <https://unfccc.int/cop3/fccc/climate/fact17.htm> (date of application: 15.06.2022).

<sup>4</sup> Protection of Global Climate for Present and Future Generations of Mankind: Resolution/adopted by the General Assembly [Electronic resource]. UN General Assembly, 1990. URL: <https://www.refworld.org/docid/3b00f221f.html> (date of application: 15.05.2022).

<sup>5</sup> World Wildlife Fund Climate Change and Kyoto Protocol: Realities and Practical Opportunities, 2021 [Electronic resource]. URL: [https://wwf.ru/upload/iblock/7bb/climatechange\\_kyoto\\_reality.pdf](https://wwf.ru/upload/iblock/7bb/climatechange_kyoto_reality.pdf) (date of application: 18.06.2022).

a necessary move for both developed and developing countries that indicate the need for international cooperation in the field of the global climate agenda.

The next important international conference was the UN Climate Conference. It was held in Paris in December 2015. It was carefully managed by parties to the UNFCCC event, designed to lower expectations but maximize chances of success. Importantly, the Paris conference was preceded by intense diplomatic efforts which build the momentum and capacity necessary to deliver what Copenhagen could not: a new global climate treaty.

The 2015 Paris Climate Agreement had a historical character both in terms of the number of participants and the scale of the commitments made, and it is unprecedented in the history of negotiations on combating climate change. In Paris, 197 negotiators (state representatives) have pledged to develop strategies with low greenhouse gas emissions in the long term future. A number of legally binding rules were to be applied to the participating states and, in particular, the developed countries were to provide the financial support to developing countries to implement the agreement and improve the climate agenda, by funding projects aimed at improving climate change indicators, such as sea-level rise, sea ice melting and so on<sup>6</sup>. Moreover, one of the most important elements embedded in the Paris Agreement was the official recognition of the importance of engagement of all levels of governments and on the pretext that the solution to the problem of climate change can be achieved only by making common global efforts.

In the 21st century, the majority of states have accepted the problem of climate change as a priority in their policies. The USA and China, the two major world powers, made climate change a central part of their bilateral negotiations which signals the pressing importance of the climate issue. Furthermore, after the 2015 Paris Conference on Climate Change, the states agreed to make common efforts to maintain an increase in the average global temperature about by 1.5 degrees to prevent the worsening of the situation.

Thus, all the events and documents analyzed above confirm the obvious importance of the climate change issue, especially its global nature. However, besides the problem of climate change there are other global environmental challenges.

## ENVIRONMENTAL POLLUTION

Currently, environmental pollution is also one of the most dangerous global challenges for mankind. So, environmental pollution can be defined as “the contamination of the physical and biological components of the atmosphere to such an extent that usual environmental processes are adversely affected”<sup>7</sup>. Densely populated centers of cities with developed industries are most susceptible to environmental pollution. In turn, about 70% of polluted water falls on the share of least developed countries<sup>8</sup>. The most acute challenges of environmental pollution are air and water pollution.

Considering air pollution it should be noted that clean air is one of the basic requirements for the vital activity of any living organisms on Earth. However, the rapid pace of economic development, urbanization and transport development have made air pollution a global

<sup>6</sup> Paris Climate Change Conference, or COP21, 2021 [Electronic resource]. URL: <https://www.diplomatie.gouv.fr/fr/politique-etrangere/climat/la-lutte-contre-le-changement-climatique/la-conference-de-paris-ou-cop21/> (date of application: 29.07.2022).

<sup>7</sup> SinceDirect, 2022 [Electronic resource]. URL: <https://www.sciencedirect.com/topics/earth-and-planetary-sciences/environmental-pollution#:~:text=Environmental%20pollution%20is%20defined%20as,From%3A%20Environmental%20Management%2C%202017> (date of application: 21.05.2022).

<sup>8</sup> Guidelines for the Safe Use of Wastewater and Excreta in Agriculture and Aquaculture: Measures for Public Health Protection / prepared by Duncan Mara & Sandy Cairncross [Electronic resource]. World Health Organisation, 1989. URL: <https://apps.who.int/iris/handle/10665/41681?locale-attribute=en&> (date of application: 28.05.2022).

problem of our time. The most common ambient air pollutants encountered in the daily life are particulate matter (PM), sulfur dioxide (SO<sub>2</sub>), nitrogen dioxide (NO<sub>2</sub>), ozone (O<sub>3</sub>), carbon monoxide (CO), and carbon dioxide (CO<sub>2</sub>) [Sani, 2015, 58-61].

According to the United Nations Environment Programme, air pollution is caused mainly by five human activities: agriculture, transport, industrial production, waste and household. Agriculture is the main source of methane (hydrocarbon that is one of the components in the formation of ground-level ozone-smog). Methane is not only one of the factors of climate change but also a dangerous air pollutant that causes asthma and other respiratory<sup>9</sup>. Methane ranks second after carbon dioxide (CO<sub>2</sub>) and among the greenhouse gases released as a result of human activity. CO<sub>2</sub> emissions of particulate matter, which are even more dangerous from the point of view of global warming on the planet, mainly come from industrial production. Emissions associated with transport are also the cause of premature death of people. Nowadays vehicles continue to emit fine solid particles, black carbon and nitrogen dioxide into the atmosphere.

An important factor in the analysis of air pollution is the response of the international community. Nowadays the UN draw special attention to this challenge more than ever before, as evidence of the effects of air pollution on human health is becoming more and more obvious. In recent years, it has been found that air pollution increases the risk of diabetes, leads to dementia, and developmental disorders. Moreover, gas contamination turns into cardiovascular and respiratory diseases.

Another example of an international response to the analyzed issue is the European Green Deal (EGD). Conceived as the development plan of the European Union, the EGD should transform the EU into the most climate-neutral region by 2050. The goal here is to reduce greenhouse gas emissions by at least 55% by 2030<sup>10</sup>. It sets out an integrated vision by 2050: a world where pollution is reduced to levels that are no longer harmful to human health and natural ecosystems<sup>11</sup>.

The component of environmental pollution is water pollution. It is also associated with daily human activity. Clean water is an important component of human health and well-being. However, according to the World Health Organisation sixth of the world's population, it is approximately 1.1 billion people do not have access to safe water and 2.4 billion lack basic sanitation. Polluted water consists of industrial discharged effluents, sewage water, and rain water pollution.

Water pollution occurs from the production activities of different factories and plants. Filters and cleaning systems are not able to carry out a complete cleaning of pollutants. Moreover, people produce tons of synthetic detergents. With a mixture of detergents the biological waste gets into the sewer. So, all these factors lead to contamination of surface and underground water sources<sup>12</sup>.

All these consequences of water pollution have received an international response. There are a huge number of programs and organizations controlling and regulating this issue.

<sup>9</sup> The United Nations, 2021 [Electronic resource]. URL: <https://news.un.org/ru/story/2021/09/1409462> (date of application: 30.07.2022).

<sup>10</sup> The EGD: Risks and Opportunities for the EU and Russia. April 21, 2021 [Electronic resource]. URL: <https://russiancouncil.ru/en/analytics-and-comments/analytics/the-european-green-deal-risks-and-opportunities-for-the-eu-and-russia/#:~:text=The%20European%20Green%20Deal%20approved,at%20least%2055%25%20by%202030> (date of application: 15.07.2022).

<sup>11</sup> European Green Deal: Commission Aims for Zero Pollution in Air, Water and Soil [Electronic resource]. The European Commission, 2022. URL: [https://ec.europa.eu/commission/presscorner/detail/en/IP\\_21\\_2345](https://ec.europa.eu/commission/presscorner/detail/en/IP_21_2345) (date of application: 28.05.2022).

<sup>12</sup> Water Pollution [Electronic resource]. Harvard T. H. Chan School of Public Health, 2022. URL: <https://www.hsph.harvard.edu/ehep/82-2/#:~:text=Water%20pollution%20is%20the%20contamination,make%20their%20way%20to%20water> (date of application: 02.07.2022).

Thus, the UN Global Programme of Action for the Protection of the Marine Environment from Land-based Activity concentrates on the regulation and reduction of wastewater, marine litter and nutrient loading. In the turn, UN Environment Programme promotes nature-based solutions to water resources management, including water quality, and is contributing to the topic for the 2018 World Water Day and 2018 World Water Development Report<sup>13</sup>.

It is also important to note the presence of many international environmental organizations dedicated to the problem of environmental pollution. The most important among them are the following:

- International Anti-Poaching Foundation;
- International Association of People-Environment Studies;
- International Organization for Sustainable Development;
- International Ecological Safety Collaborative Organization.

International cooperation in the field of environmental pollution confirms the relevance of environmental challenges in our time. Another urgent problem is the reduction of biodiversity.

### **REDUCTION OF BIODIVERSITY**

All the challenges analyzed above, namely climate change and environmental pollution, directly affect the reduction of biodiversity. According to the UN Secretary-General, biological diversity is essential for maintaining human well-being. The quality of water, food, and air depends on the preservation of the health of nature.

The importance of this issue can be demonstrated by the example of the international development of the global challenge. Thus, the first step was the signing in Paris of the International Convention for the Protection of Birds (1902) by several states. The beginning of the study and conservation of biodiversity was laid in 1948 when the International Union for the Conservation of Nature and Its Resources was established. Its importance as a non-governmental organization under The United Nations Educational, Scientific and Cultural Organization, The Economic and Social Council and The Food and Agriculture Organization with consultative status reflects the participation of 82 states, more than 1300 state and non-governmental organizations, about 15000 voluntary experts from 185 countries of the world<sup>14</sup>.

The next step for the allocation of biodiversity into an independent scientific direction was a special international conference of experts on the scientific foundations of the rational use and protection of biosphere resources in Paris (1970). Based on the United Nations Environment Programme (UNEP), an Ad Hoc Working Group of Experts was established in 1988 to study and develop an international convention on biodiversity. In 1989, an Ad Hoc Working Group of Experts on Technical and Legal Issues was established to prepare an international legal instrument for the conservation and sustainable use of biodiversity. In 1991, this Group was transformed into an Intergovernmental Negotiating Committee [Bobylyev, Medvedeva, Solovyova, 2002, 601-603].

These events laid the foundation for international cooperation in the field of biological diversity. This problem has moved from the field of scientific knowledge to the sphere of international obligations of states to preserve the diversity of life in the territories. The

<sup>13</sup> The United Nations, 2022 [Electronic resource]. URL: <https://news.un.org/ru/story/2019/05/1355591> (date of application: 30.06.2022).

<sup>14</sup> Biological diversity, 2022 [Electronic resource]. URL: [http://www.spbrc.nw.ru/ru/councils/ecology/school\\_science/bio\\_diversity](http://www.spbrc.nw.ru/ru/councils/ecology/school_science/bio_diversity) (date of application: 15.06.2022).

field of international legal cooperation has emerged as a new way of ecological monitoring the Earth. In addition, a Program of Action in the 21st century was adopted, which drew special attention to the primary goals of human activity related to the identification of the state of biodiversity and potential threats to its world<sup>15</sup>.

A significant event was the adoption by the states to the Convention in Nagoya in 2010 of the Strategic Plan for the Conservation and Sustainable Use of Biodiversity for 2011-2020. Within the framework of the ten-year plan, all countries should take measures to preserve biodiversity. There are some important strategic goals here:

- combating the main causes of biodiversity loss by including its issues in the activities of all states;
- reducing direct pressure on biodiversity and promoting sustainable use of resources;
- improving the state of biodiversity by protecting ecosystems, species and genetic diversity;
- improving implementation efficiency through community planning, knowledge management and capacity building<sup>16</sup>.

Even today, the problem of reduction of biodiversity development is highly significant. The UN Secretary-General António Manuel de Oliveira Guterres is deeply concerned about the rapid rate of loss of biodiversity — thousands of species of animals and plants are at risk of extinction: from frogs, and poultry to giraffes and elephants, from huge plants and corals to tiny insects. What is more, the United Nations has proclaimed May 22 the International Day for Biological Diversity<sup>17</sup>. On this holiday, the UN Secretary-General urges everyone to take urgent measures to protect the biological wealth of the planet.

Thus, the world community has gradually come to realize the impossibility of implementing a model of social and economic development without prioritizing the value of wildlife as the most important ecological indicator at the regional, national and global levels.

## CONCLUSION

The pressure on the environment is growing based on the pace of the modern world's development. Global population growth, agricultural and industrial expansion, and infrastructure development can lead to potentially deleterious environmental and human health consequences.

Based on the research carried out, it is important to conclude that among the most important environmental challenge, it is worth highlighting the problem of climate change, environmental pollution and the reduction of biodiversity. It doesn't make sense to consider each of these problems separately, a comprehensive solution and efforts of all states are needed to sort out these issues. However, even nowadays, despite all the efforts of the international community, the environmental agenda is quite relevant issue. There is no country, despite its importance in the world arena that can solve these problems on its own, since broad international cooperation is necessary. In addition, not all states are ready to pay attention to environmental policy because of the economic, social or political situation.

The evidence of the relevance of the challenges analyzed above is the data of the World Health Organization. Because of air pollution and insufficient global awareness of this issue,

<sup>15</sup> Ibid.

<sup>16</sup> COP Decision. The Strategic Plan for Biodiversity 2011–2020 and the Aichi Biodiversity Targets [Electronic resource]. Convention on Biological Diversity, 2020. URL: <https://www.cbd.int/kb/record/decision/12268> (date of application: 21.06.2022).

<sup>17</sup> Tackling Global Water Pollution [Electronic resource]. UN Environment Programme, 2022. URL: <https://www.unep.org/explore-topics/water/what-we-do/tackling-global-water-pollution> (date of application: 28.06.2022).

there are around 3 million deaths per year including over 237 000 deaths of children under the age of five<sup>18</sup>.

Moreover, the consequences of the reduction of biodiversity are the facts that only 1,677 out of 15,060 European species of animals are threatened with extinction. What is more, around 6 animal, bird and fish species are facing the risk of extinction in the Russian Federation<sup>19</sup>.

For example, one of the main challenges of ecology is the implementation of the global ecological directives. It obliges states to take measures aimed at achieving special goals within a particular period. The EU countries can be a good illustration in this context. There are a few EU states which fully comply with environmental directives. One of the examples is the directive on Environmental Impact Assessments (EIA). The EIA was in force in 1985 and related to the assessment of the effects of different European projects on the environment<sup>20</sup>. During that time quite a few EU states breached environmental legislation forcing the European Commission to initiate court proceedings against the offending states. Thus, there are a few states in the world that are ready to pay attention to environmental challenges. It directly affects the reaction of the international community as a whole. But only awareness of universal interdependence in the environmental sphere prevents possible social and economic disasters.

Another example is the coronavirus pandemic (2020), which once again showed the necessity for international cooperation in the environmental agenda. For example, according to the report of leading scientific organizations, climate change has not stopped because of COVID-19. The concentration of greenhouse gases is at record levels and keeps growing<sup>21</sup>. Reports confirm that the world community is not moving towards achieving agreed goals about keeping the global temperature rise by about 1.5 degrees. This further corroborates the need for all actors to participate in the elimination of the issue.

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<sup>19</sup> WWF Report, 2022 [Electronic resource]. URL: [https://earth.org/data\\_visualization/biodiversity-loss-in-numbers-the-2020-wwf-report/](https://earth.org/data_visualization/biodiversity-loss-in-numbers-the-2020-wwf-report/) (date of application: 18.09.2022).

<sup>20</sup> Environmental Assessment [Electronic resource]. European Commission, 2022. URL: <https://ec.europa.eu/environment/eia/eia-legalcontext.htm> (date of application: 07.09.2022).

<sup>21</sup> United in Science 2022 [Electronic resource]. World Meteorological Organization, 2021. URL: [https://public.wmo.int/en/resources/united\\_in\\_science#:~:text=For%20the%202021%20United%20Nations,global%20emissions%20by%2045%20per](https://public.wmo.int/en/resources/united_in_science#:~:text=For%20the%202021%20United%20Nations,global%20emissions%20by%2045%20per) (date of application: 29.07.2022).



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