Chapter 41
From Scientific and Technical to Socio-Ecological revolution–A Step into the Future

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41.1 Introduction

The paper is devoted to the most pressing issues related to rapid environmental changes. Unfortunately, many of these changes are dramatic and force urgent action. The question is–what exactly needs to be done. Understanding this is an extremely challenging task that is unlikely to be undertaken for one person or a single group of scientists. Currently, it is only apparent that local, point changes, or separate actions are drowning in a sea of growing problems.

Let us pay attention to the very authoritative forecast of Bank of America Merrill Lynch, made by the bank for its investors in 2019. The conclusions of this forecast are replete with pessimistic expectations in the global economy, with the most ambiguous and most negative conclusions concerning, among other things, the environment: "By the end of the decade, the world's population will increase by almost 1 billion people. An increase in population will overload the planet's limited resources, but it can also exhaust the remaining carbon budget, accelerating the pace of global warming and raising temperatures above the critical point, which will have devastating economic, social, and political consequences".

However, is everything so hopeless? Is it worth talking about ecology, predicting an inevitable catastrophe? Perhaps, it is necessary to consider the salvation resources

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E. G. Popkova and B. S. Sergi (eds.), *Current Problems of the Global Environmental Economy Under the Conditions of Climate Change and the Perspectives of Sustainable Development*, Advances in Global Change Research 73, https://doi.org/10.1007/978-3-031-19979-0_41

that humanity can attract by changing the settings of its collective mind from negative to constructive-positive and, based on positive expectations, move on to systematic smart multifaceted measures to improve their own habitat and, as a direct consequence, to save nature.

Can we assume that the main cause of environmental problems is population growth? Does not it seem that such ideas are far from new? Back at the turn of the eighteenth–nineteenth centuries, Thomas Robert Malthus believed that the world was in danger of overpopulation and famine in the nearest future. However, he could not consider one important factor that nullified all his forecasts–he did not consider scientific and technological progress. Nowadays, such ideas are unacceptable from ethical and humane positions, as well as from the standpoint of historical experience, which has shown that such a development factor as "intellect" should be considered and actively used to solve such a problem.

We believe that the alarming environmental situation is caused not by the growing population but by the environmental irresponsibility of economic and business entities. To make actions for saving the environment effective, it is necessary to transform key economic, political, and social channels and management mechanisms.

41.2 Methodology

The research aims to initiate a discussion on the issues of the "green economy", in particular, on the development of mechanisms to stimulate economic entities to be environmentally and socially responsible through "green" monetary and financial instruments.

How do we do this? In which direction should we move? What are the forces that can help carry out this transformation? What resources should be connected, and which technologies should be implemented? Who will have the courage and make responsible decisions? This is only part of the issues that now concern environmentalists and common people.

If it were not for the linguistics section of derivatology, we might not have known that the concepts of "economics" and "ecology" have a common root and a close origin. Their lexical core is the Greek word οἶκος ("house"). In the word "economy", the suffix νμμειν means "management", "household management", or "management of resources". In turn, λγγια at the end of the word "ecology" means "study". Since immemorial times, people have perceived the world around them as an extension of their own home. Nevertheless, ecology and economics turned out to be on different sides over time. These two concepts will become a dialectical pair in a little longer, turning from a single common root into an absolute dialectical opposite. This change will mean that a direct rigid inverse relationship will be established between the development of the economy and the state of the environment: the economy is growing–the ecology is being destroyed.

What happened to a civilization where the economy and ecology stood on opposite sides?

Nowadays, the connection between economics and ecology remains inextricable, not yet unambiguous. However, the economy increasingly harms the environment and "cleans up after itself" less and less.

More resources are required for the development of the economy, which, in turn, must be renewed with increasing speed and intensity or, in case of exhaustion, replaced with alternative ones. The recycling problem–the reverse effect of resource consumption–is becoming increasingly acute. This problem is growing exponentially because economic growth and income growth are currently spurred by aggressive advertising cultivation of overconsumption, the introduction into the consumer's consciousness of the possibility of receiving system discounts, cashback, easy consumer loans, etc., and various banking tricks, stimulating consumers to buy new items.

It seems that some irresponsible business leaders with the right to make important decisions actively launch an "information virus" that only a billion inhabitants should remain on the planet, that everything is bad and hopeless to such an extent that it is time for people to come to terms with the rapidly deteriorating ecology because it is people's fault that there are too many of them, and soon, they will exhaust resources and will not be able to feed themselves. Thus, these business leaders shy away from solving pressing problems, particularly environmental problems (Kontinent 4V, 2008; Overpopulation). This position leads to the introjection of the idea into the consciousness of consumers that irreversible climate changes are coming, it is time to forget about earth and look at the prospects of Mars colonization, etc. Moreover, there is an active purposeful primitivization of the population's consciousness, which contributes to the launch of such myths (Information Agency "Regnum", 2021).

The only environmental problem that cannot be localized and that causes noticeable material damage to global business and the entire human civilization is global climate change. Perhaps, this problem remains in the top trend just for this reason. According to the European Commission, from 2007 to 2016, economic losses from extreme weather conditions increased worldwide by 86% and amounted to €117 billion in 2016 (Delbeke & Vis, 2016; National Center for Public Private Partnership, 2021; Sorokin, 2011).

Global warming is not an independent problem. It is an integral problem, derived, among other things, from the predatory attitude toward nature in all areas of nature management and irrational use of resources by contemporary civilization. To think about global warming without raising all causes of its occurrence is an overgeneralization.

As mentioned earlier, the functioning of economic entities (including consumers) is one of the main causes of global environmental problems, including the following:

- emissions into atmospheric air;
- discharges into the water;
- land pollution, impoverishment, and desertification;
- destruction of forests;
- waste generation;
- effects of toxic and dangerous substances on humans and wildlife;

- loss of non-renewable natural resources;
- other forms of pollution (noise, smell, visual effects, light pollution, vibration, electromagnetic radiation, radiation, infectious agents, etc.).

Corporations realize their commercial or other goals, and, following a normal healthy logic, they should be responsible for their contribution to the overall deterioration of the environmental situation. The responsibility should be shared, regardless of whether they work in environmentally hazardous or manufacturing industries or simply engage in office activities because they are all interconnected in economic turnover and are participants in common supply chains. Therefore, reducing the ecological footprint is the task of each organization, regardless of the nature of its main activity.

41.3 Results

We will deliberately not delve into specific areas of ecology, discussing only the "ecological footprint" of an ordinary office company. Considering the issue from this angle will only strengthen the impression of the scale of environmental problems because the most numerous office companies in the world believe that they are poorly involved in causing environmental damage.

Offices are quite large consumers of heat and energy resources. Water and transport are required to ensure their work. Moreover, offices purchase various types of inventories. Up to 20% of the electricity and up to 45% of the generated thermal energy is consumed for municipal needs. The energy sector, whose consumers are offices, accounts for more than one-third of total CO_2 emissions, which is the main source of greenhouse gases. Water consumption in offices is associated exclusively with municipal needs. Nevertheless, this does not remove from them the urgency of the problems of pollution of reservoirs and lack of freshwater. The reserves of freshwater, the need for which is especially great for people, are insignificant and exhaustible. There is an acute shortage of freshwater in many places on the planet. According to today's science, freshwater accounts for approximately 2.5% of the world's reserves. If we consider that about 75% of freshwater is frozen, about 24% is underground in the form of groundwater, and 0.5% is soil moisture, then freshwater accounts for slightly more than 0.01% of the world's water reserves. It should be noted that 80% of all diseases worldwide are associated with poor quality of drinking water and violations of sanitary and hygienic standards of water supply (Water Science School, 2018). It should also be noted that the property located in the office (including electricity and water resources) does not belong to employees, and the necessary culture of handling "shared" resources is most often not formed.

The use of transport is associated with the primary and economic activities of any organization, and offices are no exception. It has a very significant impact on the atmosphere through CO_2 emissions, leaving a carbon footprint, ultimately contributing to global warming. The harmful effects of transport do not end with CO_2 emissions. The

use of transport entails emissions of exhaust gases into the atmosphere, leading to an excess of permissible concentrations of toxic substances and carcinogens in the air and smog formation. The greatest danger is nitrogen oxides. When using sulfurous gasoline, sulfur oxides may enter the exhaust gases when using leaded gasoline – lead (tetraethyl lead), bromine, chlorine, and their compounds.

A great challenge for the environment is the use of various types of inventory items in the administrative and economic activities of office organizations; these are paper, office and household appliances, lighting equipment, stationery and household products made of plastic, metal, and wood, detergents, and antiseptics.

These inventory items are products of many manufacturing industries: petrochemical and chemical (the most unfavorable in terms of environmental impact), paper pulp and wood processing, instrumentation manufacturing industry, and other industries that consume resources and lead to various pollutions and carbon emissions.

Offices are key consumers of paper. For its production, wood is required, obtained mainly due to deforestation of natural origin. Approximately 20–25 trees need to be cut down to produce 1 ton of paper (Department of Nature Management & Environmental Protection of the City of Moscow, 2010). Deforestation leads to the destruction of ecosystems, disruption of carbon exchange, mechanical pollution of territories, and irreversible climate changes, including the formation of vortex flows leading to tornadoes and hurricanes. The most dangerous toxins used in paper production are dioxins, furans, sulfates, phenols, etc.

Housings and many electronics and electrical engineering components are made from gas and petrochemical products. Plastics are now produced mainly from natural gas or gas condensate. The production of synthetic plastics is based on polymerization and polycondensation reactions of low molecular weight starting substances extracted from coal, oil, or natural gas, such as benzene, ethylene, phenol, acetylene, and other monomers.

Toxic substances are widely used in producing materials for the manufacture of furniture: phenol (carbolic acid) and formaldehyde, which are poisonous and flammable. Formaldehyde has a high carcinogenic effect.

According to the researchers of the Waste Electrical and Electronic Equipment (WEEE) Forum, in 2021, people were expected to throw out 57.4 million tons of such garbage (Antoshchenko, 2021). The Great Wall of China weighs less, and it is the heaviest artificial object on the planet, writes the Independent (Cockburn, 2021).

The environmental situation in Russia is not the worst yet. Russia ranks 58th in the international rating of the Environmental Performance Index, 2020 of the Yale Center for Environmental Law and Policy (Yale Center for Environmental Law & Policy, 2020). If we compare it with the leaders of environmental indifference: Liberia, Myanmar, and Afghanistan, occupying 180, 179, and 178 positions, respectively, it seems that everything is not so bad. If we pay attention to the countries at the top of the rating, we see that these are our closest neighbors: Finland–7th place, Sweden–8th, Norway–9th, Estonia–30th, Lithuania–35th, Latvia–36th, and Poland–37th place, having either common borders with us or located in close regional proximity. After that, Russia's 58th place no longer seems to be a reason to remain calm.

The speed of climate change in Russia is of particular concern. According to observations of Russian weather stations, the average annual air temperature in Russia has increased by 1°C over the past century (which is significantly higher than the global average), of which 0.4°C–only in the last decade of the twentieth century and by 0.47°C in a decade (from 2008 to 2018). Simultaneously, the average temperature of the entire planet increases by 0.17–0.18°C per decade. This means that global warming in Russia is 2.5 times faster than worldwide (Smirnova, 2019).

When we study global statistics, it seems that office companies can do nothing for the environment, and climate change is hardly under their control. It is difficult to disagree with this. However, about ten years ago, we hoped that the concept of corporate social responsibility (CSR), which came to Russia from abroad, would work a miracle. In Russia, the corresponding ISO standard was put into effect in the form of the National Standard of the Russian Federation "GOST R ISO 26000–2012" (International Organization for Standardization, 2010).

In 2012, it seemed that the idea of CSR was rational and quite promising for Russia. Indeed, some Russian organizations have taken a risk and made some progress along this path, but there are only a few of them. For example, VEB.RF adopted a Corporate Social Responsibility Strategy, recognizing that it, as a development institution, can contribute to environmentally oriented economic growth, introduce environmentally efficient technologies, reduce environmental impact, apply environmentally sound waste management, and form an ecological culture. The company began to implement this strategy following the standard (Vnesheconombank, 2011). However, it should be noted that VEB.RF is not an ordinary commercial structure but a state development corporation.

M. Porter and M. Kramer considered two models of CSR development: responsive and strategic (Porter & Kramer, 2006). Responsive CSR aims to solve the company's problems and eliminate negative consequences from its activities. The strategic model provides for embedding the idea of social responsibility into the overall strategy of the company to create long-term competitive advantages.

The initiators of CSR abroad were large corporations, especially those seeking to increase their goodwill. According to the results of achievements in the field of CSR, companies should publish special reports. There are about eight major systems of corporate social responsibility in the world. Corporations join and fulfill the conditions of one or more standards; the minimum of them for a set of requirements, perhaps, is the UN Global Compact with its own rules, which companies undertake to comply with. There is no liability for violation of the obligations assumed by the company. In fact, the UN Global Compact is a kind of elite club, inaccessible to either small or medium-sized businesses.

The practice of CSR is the subject of numerous disputes. The "stumbling block" of these disputes is the question: "Is there a real economic feasibility of expensive measures related to corporate social responsibility?".

The content of these disputes is as follows. Defenders believe that CSR is an economically sound choice of a corporation, and it will receive long-term strategic advantages, not short-term benefits in the form of profit. Critics argue that CSR is an

embellishment of reality that takes business away from its "fundamental economic role".

Analyzing the content of the dispute, we see that CSR supporters have complex long-term tasks of sustainable business development on one side of the scale and short-term benefits on the other. The structure of the opponents' arguments is different; they worry about the "fundamental economic role of business", which socially responsible companies promise to perform properly.

That is, the dispute develops in at least two different planes. Having made a decomposition of this controversy, we will highlight the problematic issues arising from this dispute:

1. What is currently happening with the concept of long-term and sustainable development?
2. Why has the choice in favor of momentary benefits become possible and popular? What contributes to this?
3. What is the "fundamental economic role" of the companies, and why do the opponents of CSR find contradictions with this concept and sustainable development pursuits?
4. Where did the idea come from that a commercial organization has a fundamental role in acting only in the field of the economy?

41.4 Conclusion

Let us analyze these provisions.

If we talk about sustainable development, to which the topic of CSR invariably leads, then we see that the subjects of sustainable development are exclusively global corporations that discover new economic opportunities in adjusting the course of their business according to the green vector. Once again, we meet members of the "elite club" who are engaged in those topics of sustainable development that promise them super-profits. Nevertheless, environmental and nature restoration, social, educational, and similar functions are performed by states, and the customers of green infrastructure projects are also states, but not all of them can afford it.

In response to the question about the essence of the current state of the concept of sustainable development, we will say the following. In the linguistic sense of this word, we do not observe sustainable development as a phenomenon indicating the sustainability of life, especially in the last 3–4 years.

However, the concept of sustainable development exists. It exists in the international business, but only in the form in which it was adopted by global companies specializing in promising projects in the field of alternative energy and alternative transport. Here, they are exactly the "backbone" of the subjects of the concept of sustainable development. Additionally, global companies that increase their moral capital with the help of green and sustainable ratings fit into this concept, along with global financial regulators of green finance and exchange operators.

Why are more and more companies forced to choose short-term solutions and short-term benefits? When international corporations are contriving to create futuristic projects, national business, especially small and medium-sized, serves vital needs of the population at the local level and gives the maximum number of jobs for ordinary citizens. The management with planning, competent management processes, qualified staff with the necessary functionality, etc., has nothing to do with the organization of the work of most local companies. In the production, these are "hangar" workshops; in the non-production sphere, these are offices with an incomplete set of personnel who randomly do any work that the manager assigns to them.

These companies permanently exist in conditions of a shortage of financing of current activities. They do not have funds for development and sustainable development. Their solutions (goods, services, works, and processes) are built on momentary opportunities. For them, the formula "money is more expensive today than money tomorrow" has been brought to the formula "money is today, what will happen tomorrow is unknown". They live from crisis to crisis.

Their marginality decreases after each round of the crisis or the next fiscal blow. The state "releases" another portion of unsecured money to partially dampen the new blow. However, they only partially cover the inflationary growth, as a result of which the purchasing power of the population once again decreases, and companies, reacting to a reduction in effective demand, raise prices. In such a high degree of uncertainty, companies, as a rule, do not have a balanced budget and live by the principle: incomes came–debts were closed–the rest was spent to restore turnover assets until prices rose–and it is good if there is a little money left for wages. Such "development" does not fit the definition of sustainability because, after each economic crisis, local economic entities return to an even worse state than before the crisis.

The next question is related to the origin of the idea that the fundamental role of a business organization is economical. The idea that the purpose of a commercial company is profit was formed in the economic teaching of the classics of political economy in the period from the second half of the seventeenth century to the first half of the nineteenth century. At that time, commercial activity began to be defined through profit, primarily to give it the main distinguishing feature from other non-commercial activities, which was later reflected in civil law.

In the first half of the twentieth century, the famous economist Peter Drucker reasonably questioned this interpretation of the purpose of the company's existence. He reflected that a company could operate without profit but still perform its function. A firm makes an offer to the market in the form of products, works, or services, and if, at the same time, it makes up for costs (reimbursement of material costs and wages) and invests in development, then such a firm can exist and offer a useful product to the market for as long as it wants; it does not cease to be a commercial company, even if it does not have a net profit and does not set this as its main goal. Based on the real experience of companies, P. Drucker suggested that the company's main goal is to consider its survival, striving for which the company pursues several "survival goals" based on "survival functions". Herbert Simon, the Nobel Prize winner in economics,

was of the same opinion. He concludes that profit maximization cannot be a goal because it is only a means to achieve the main goals of the company.

As a result of the development of the idea of the fundamental purpose of a commercial company, four main trends have formed:

1. The goal of the company is profit.
2. The goal of the company is the survival of the business.
3. The goal of the company is to capitalize or increase the value of the business.
4. The company has a system of goals (economic, investment, marketing, production, social, and strategy selection).

It is important to note that the first four approaches are formed from the firm's position. If we move to an independent position (metaposition) and look at the firm from its consumer's perspective, we will see that for consumers and society, the main goal of business is to satisfy needs with the help of goods (utilities). This means that the company, on the part of its consumers, has at least one more goal that is no less important than profit–the offer of a high-quality and in-demand product. This task cannot be attributed simply to the company's economic role. It simultaneously manifests a social role, expressed in the need to bring public benefit.

The fact that commercial companies primarily serve public interests often goes out of the spotlight of economists and ordinary citizens. The existence of a particular business is justified precisely because a particular product is in demand by society. Consequently, the company's main function is not economical at all (economic function is a second order) but bringing public benefit, serving people's interests, and meeting their needs. For this reason, society, in the person of individuals, experiences the corresponding need and pays the company for its goods or services. The free consent of the consumer to purchase the goods offered by the company is the source of its income and profit. Thus, business exists only because people buy what it offers.

What is the main conclusion arising from the first part that will help us move on to the second part of the article, in particular, to the issue of green money? The knot of economic and social contradictions that hinder the solution of environmental problems, at first glance, seems very confusing. However, if we look at it from the outside, it becomes apparent: To stop the environmental crisis, it should be "overtaken", which means going to the steps and activities that give a quick effect. From our experience, we all know that such an effect is provided by material incentives that are clear, understandable, and attractive to all participants in economic turnover. These incentives should work on the principle of money that can be earned only by making a green contribution to all systems of human civilization: economy, politics, culture, education, etc.

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