“Contemporary paradigm of sustainable development: the evolution of formation and development”

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Contemporary paradigm of sustainable development: the evolution of formation and development

Abstract

The research reveals the peculiarities of shaping the sustainable development paradigm since the publication of the first studies on the human activity impact on the environment to date. Three main stages of development with the focus on the key goals and tasks through an analysis of the main documents regulating activities in this area are determined. The results showed a change in the vector for further development and of identification the financial component as an independent element.

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Introduction

The rapid social development and sharp population increase in the 20th century have led to a significant negative impact of the technologies use on the environment, which in turn negatively affected the quality of life. As a result, in the late 20th century, a new global paradigm of sustainable development emerged, which was promulgated in 1992 at the Rio de Janeiro UN Conference on environmental issues and development. It is commonly known that the basic definition of sustainable development was proposed by the UN World Commission on the Environment and Development as "a development that meets the needs of the present, but does not compromise the ability of future generations to meet their needs" (Earth Summit, 1992). Nowadays, the changes both in the goals and in the tasks of the sustainable development paradigm are of obvious importance, therefore, it is necessary to systematize and generalize the main developments in this area for forecasting its further development vectors, and therefore taking measures to prevent the violation of sustainable development

1. Literature review

One of the first studies in this direction was "World Dynamics" by Jay Forrester, Professor at the Massachusetts Technological University (Forrester, 1971). Forrester proposed the World 1 model. The major study taken as a basis of the sustainable development concept is "The Limits to Growth" by Meadows, Meadows, Randers, & Behrens III (Meadows, Meadows, Randers, & Behrens III, 1972). These authors presented an analysis of causes and consequences of population growth and material consumption in the long term, using system dynamics theory and computer modeling and proposed a model of World 3. In particular, it was noted that the impact on the environment on a world basis due to pollution emissions and the use of natural resources will significantly affect world development in the 21st century. The authors developed 12 scenarios based on the thesis on the natural resources exhaustion and the limited capacity of the planet to absorb industrial and agricultural pollutants. The growth of the population and material capital in the scenarios gradually makes the human race send more and more money to solve environmental problems caused by its own impact. Subsequently, to deal with the consequences, it is necessary to spend so much that it is impossible to further support industrial growth. When industrial production decreases, society cannot provide growth in other sectors of the economy: food production, services and other areas of consumption. When growth stops in these sectors, population also stops growing (Meadows, Meadows, Randers, & Behrens III, 1972).

It should be noted that this group of authors, except for Behrens III, wrote another work "The Limits to Growth: 30 Years Later" (Meadows, Randers, & Meadows, 2012). In the research, they analyzed what happened over the past 30 years in solving the sustainable development issues. In particular, it was pointed out that there were many positive changes, i.e. new government entities and public organizations were created, the latest technologies were developed, the consumer tastes and certain priorities changed, multilateral agreements were

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concluded, and ecological education was developing. In addition, a significant database has been accumulated, which will allow for more substantiated conclusions. At the same time, the accumulated data and their analysis allowed to conclude that the maximum grain per capita was cultivated in the mid-1980s, expectations of a significant increase in sea fishing were not satisfied. Natural disasters are becoming more and more expensive every year, and the struggle for fresh water and fossil species of fuel is becoming more and more rigorous. There are still regions in which there is a decline in economic activity (Meadows, Randers, & Meadows, 2012). It should be noted that in this study, the industrial capital rather than money is of high priority. All we have listed has a physical inclination, it is not cash flows, but real things... They are the ones that rather than the dollars put the economy and society in motion. They, not the dollars, are extracted from the environment and sooner or later we return them to the same place – in soil, water and air (Meadows, Meadows, Randers, and Behrens III, 1972). This thesis has been substantially changed in recent years. At the present stage, the financial system itself plays a leading role in the world economy development, and processes of further financialization are taking place.

Another concept that was actively used to form the sustainable development paradigm was that of organic development by Pestel stated in "Outside of Development" (Pestel, 1988), and later published in the second report in the Club of Rome based on the research by Pestel and Mesarovic in 1974. The concept is outlined as follows:

- systemic interdependent development, when no part (subsystem) grows threatening others; progressive changes in one part have a real significance only if they meet the progressive processes in other parts;
- multi-dimensional development that meets the needs of different parts of the system, that is why different regions of the world will necessarily evolve in different ways; besides, the processes of development will eventually change;
- the harmonious coordination of the goals ensures the world consistency;
- mobility, flexibility – the ability of the system components to absorb disturbing influences in the development process;
- development quality is especially important;
- a certain time horizon that allows for predicting difficulties and defining development goals, taking into account the complexity of new problems;
- constant "updating" of goals when "new" goals arise after reaching or rethinking the "old" ones (Mesarovic & Pestel, 1974).

The aforementioned concepts were made public at the Club of Rome meetings and were criticized, because they were based on limited databases, but they caused changes in the world system of relations and became groundbreaking for shaping the basic ideas of the sustainable development concept.

This article does not aim at defining the sustainable development concept, because a considerable amount of research was done by both Ukrainian and foreign scientists in this direction. Burkynskyi, Voloshyn, Havrylyshyn, Hizatullin, Hordiienko, Kakutich, Kovaliov, Melnyk, Trotskyi, and Kharkikov are among them.

2. Theoretical background

The emergence of sustainable development paradigm was due to the long-term work of the Club of Rome members, who repeatedly discussed the need to revise approaches to organizing economic activity, which too actively used existing natural resources to meet current problems, while forming harsh imbalances in the conditions of the population life across the globe, contributed to the even greater gap between the incomes of different social groups in different countries and increased the variation between the low-income and high-income population.

The basis for the paradigm was the correlation between the mankind needs and the possibilities of their satisfaction at the expense of available natural resources, after all, the needs of mankind increased with the development of scientific and technological progress, while natural resources were extremely limited, moreover, it took place against the backdrop of a significant population growth, which led to the global food shortage. In addition, the very intensive development of science and technology without taking into account the need for environmental protection has led to an accelerated destruction of the environment due to the deterioration of soil quality, drinking water, reduction of fresh water supplies, air pollution through emissions of harmful substances, reduction of raw materials for carbon energy, etc. Before the emergence of the sustainable development paradigm, two concepts were discussed actively, which were developed with the support of the Club of Rome members: the concept of dynamic growth (Forrester, 1971; Meadows, Meadows, Randers, & Behrens III, 1972; Meadows, Randers, & Meadows, 2012) and the concept of organic growth (Pestel, 1988).

The sustainable socio-economic development of any country means, in the end, the functioning of its national economic complex, when growing material and spiritual needs of the population are satisfied; rational and ecologically safe management and highly efficient use of natural resources are provided; maintenance of natural and ecological living conditions favorable to human health, preservation, reproduction and enhancement of the quality of the environment and the natural and resource potential of social production are ensured. In other words, sustainable development is, first and foremost, an economic growth that effectively addresses the most important problems of society's survival without depletion, degradation and environmental pollution (Trehobchuk, 2002).

It should be emphasized that after the Rio de Janeiro Conference, significant changes took place in key paradigms of sustainable development that were discussed and implemented following the results of meetings at the highest level in different periods of time. Nowadays, the sustainable development paradigm is fully or fragmentarily supported by most countries of the world.

It should be noted that the formation of a sustainable development paradigm took place for a rather long period of time, and changes are taking place at the global level for the sake of achieving sustainable development, since at the current stage, the interdependence of countries is in no doubt, regardless of the level of their economic development and growth, in terms of the environment, the level of social development and the stability of financial systems. Different scholars, in different periods of time, divided the formation of the sustainable development concept into periods. In particular, Ignatieva (2011) and Agapova, Lipina, Lipina, and Shevchuk (2016) identified four stages. The first stage (1950–1960's) is associated with the perception of the economy's dangerous impact on the environment and human being, not only locally, but also globally – including due to chemical and radiation pollution of the environment. The interconnections between the processes of economic development and the degradation of the environment are already well understood, but ecologically-based rhetoric is basically limited to the need to take into account the interests of nature conservation in the process of economic development. The authors mainly focus on the environmental problems that existed in this period, it is they who determine the list of documents that are considered at this stage as the basis for shaping the sustainable development paradigm. At the second stage (1960–1970's), it was said that the excessive use of natural resources and pollution caused by economic development undermine the very economy, destroying its material and resource base and reducing the human welfare (that is, the economy "torpedoes" itself). The peculiarity of this period is the need for the rational economy formation. The period of 80-90s is defined as the third stage, which is characterized by the rapid development of "green" technologies in developed countries. At the same time, according to the authors of the current article, there has not yet been a rapid development of green technologies during this period, if compared to their intensive introduction at the present stage. Undeniable for this period is the formalization of the sustainable development paradigm and its adoption as a document ratified by the vast majority of countries around the world. According to Runnalls (n.d.), the sustainable development paradigm arose on the basis of a certain contradiction of interest between the "North" and "South" economies. According to the "South" countries, which were not economically developed at that time, "North" countries, as economically advanced, promoted this idea for the purpose of obtaining additional economic benefits in the world economic arena. But it is during this period that the United Nations Commission on Sustainable Development is being formed, as well as a number of fundamental international documents were adopted that underlined the sustainable development paradigm of the world economy. The period from 2000 to 2010 is defined as a period of consolidation of the sustainable development concept in international and national legislation, in the business environment, public debate and mass media. The global financial and economic crisis highlights the problem of the volatility of the global economic system in a new way, demonstrating that the "free market" is not capable of self-regulation not only in the interest of preserving the biosphere resources and social justice, but also to ensure long-term economic stability (Ignatieva, 2011). Despite the fact that the work by Agapova et al. (2016) was published in 2016, the authors also highlighted the fourth stage as noted above and analyzed the UN Conference on Sustainable Development (Rio+20), which took place in Rio de Janeiro in 2012 and today is a turning point in changing the vector of the sustainable development paradigm towards the "green" economy and focusing on the formation of "green" finance.

A number of other scientists, namely Chereshnev, Nikulina, and Boiarskykh (2014), distinguish only certain events that they consider to be the main in the context of the sustainable development formation, based on the United Nations Environmental Program (UNEP).

Given the significant changes that have taken place

since the second half of the 20th century to date, dividing the formation of the sustainable development paradigm into periods should be presented in three stages, which cover longer periods of time and are conceptually consistent with each other as complete timespans.

The first stage (50-80's of the 20th century) is the shaping the prerequisites for the sustainable development paradigm (see Figure 1). During this period, a number of measures were taken to realize the threat of rapid economic development and the intensive use of new technologies and their impact on the environment. In this case, it was also related to air pollution, as well as the transition to intensive use of herbicides and pesticides in agriculture, the use of DDT insecticide, after which legislation in the United States was adopted to restrict their use.

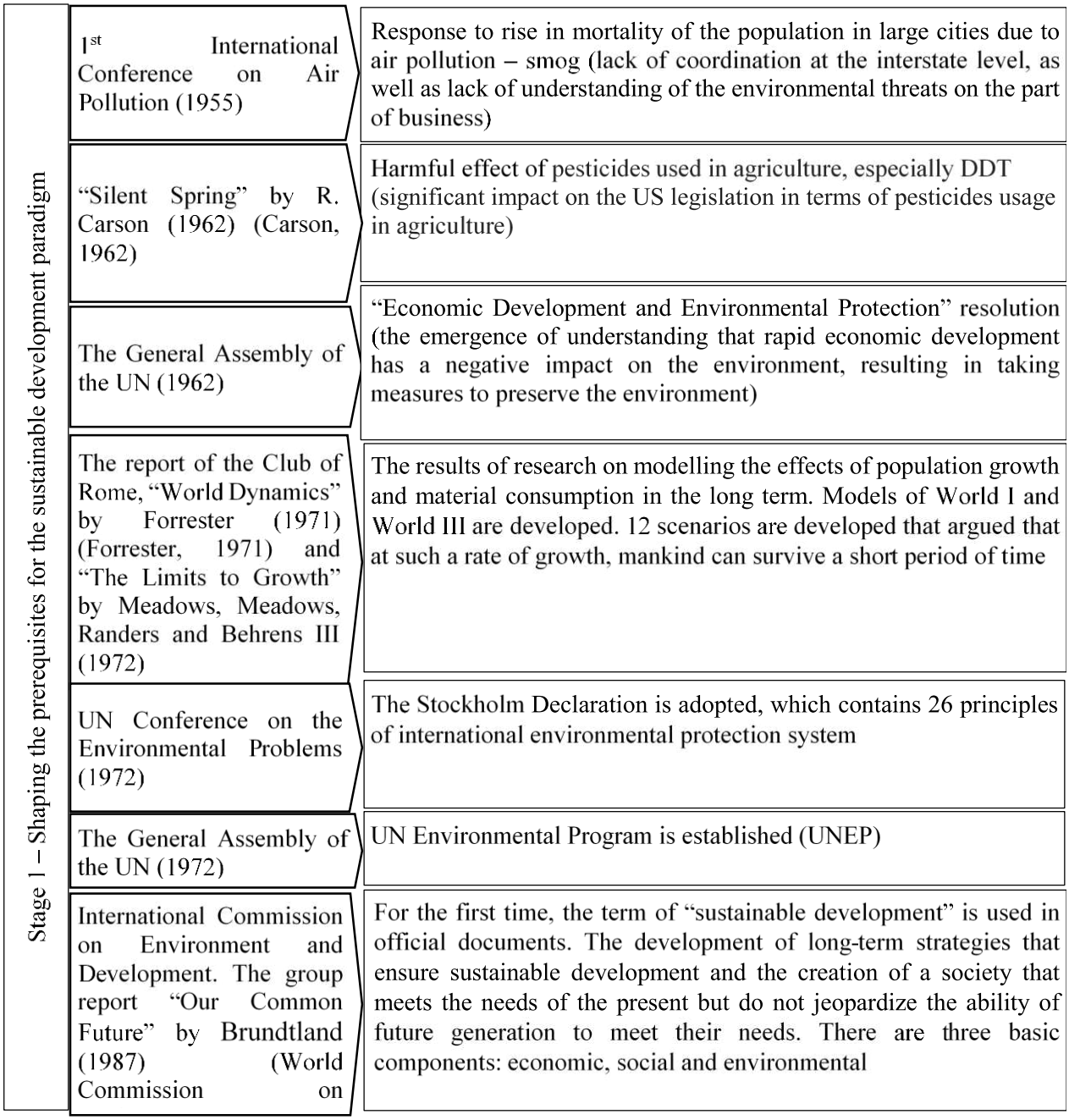


Fig. 1. Evolution of forming the prerequisites for the sustainable development concept (the first stage – 50-80's of the 20th century)

Source: Compiled by the author.

Despite the measures (see Figure 1) taken in the mid-1950's, only in the late 1980s, in particular, in the Brundtland report (World Commission on Environment and Development, 1989), it was pointed out that it is necessary to study ecological problems in a relationship with social and economic

development. In the conclusion of the Brundtland Commission, it was noted that the environment does not exist in isolation from human activity, from the needs and desires of people. And attempts to protect it that do not take into account the human needs satisfaction led to the fact that in some political circles these attempts began to be treated as something naive, away from reality of life. The environment is the place of our life, and development is our actions to improve our well-being in it. Both of these concepts are inseparable (World Commission on Environment and Development, 1989). Thus, during the first stage, all prerequisites for the emergence of a sustainable development paradigm were formed. In the second stage, which covers the period from the 90s to the middle of the 20th century, formal consolidation of the sustainable development paradigm in the world organizations reporting, as well as in the documents of the national and supranational levels (Figure 2) took place. In fact, the age of sustainable development of humanity began.

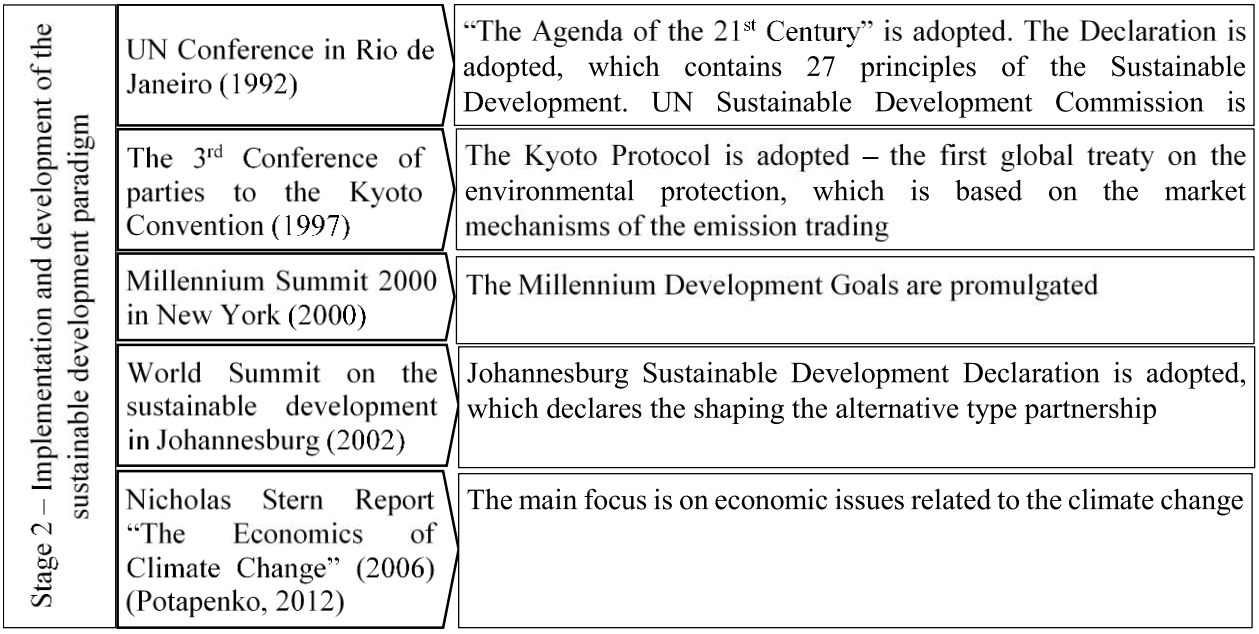


Fig. 2. Evolution of the implementation and development of the sustainable development paradigm (the second stage – 2000–2007)

Source: Compiled by the author.

The UN Conference in Rio de Janeiro formally consolidated the Sustainable Development Paradigm in the Agenda of the 21st Century, after which similar processes were launched at the European countries level, in particular, the Helsinki Convention on the Protection and Use of the Environment came into force in 1992 in the Baltic region, the Ministerial Declaration on the Protection of the Black Sea, and a number of other documents. The significance of the sustainable development paradigm has increased over time, as evidenced by the repeated world forums, summits, and conferences devoted to this issue. Most countries have recognized this concept as the basis for their further development, considering that it must coordinate difficultly coordinated goals – economic, social and environmental, starting from a separate locality, region, country and ending with the global scale, and taking into account the needs and living conditions not only for the present, but also for future generations. It should be emphasized that the goals and objectives of this paradigm were eventually corrected, taking into account the implementation of certain intermediate tasks, but the key idea remained unchanged. Over time, the risks and determinants of vulnerability have become more prominent. Environmental degradation, climate change, natural disasters and other threats to the global environment (including oceans, forests, and biodiversity) create additional difficulties for the ability of all countries, in particular developing ones, to achieve sustainable development. The global financial and economic crisis has exposed the risk within the international financial system, as well as the vulnerability of countries in terms of external financial shocks, which have a detrimental effect on their ability to mobilize development resources (Popova, 2010).

The first global environmental agreement, the Kyoto Protocol, based on market mechanisms for emissions trading, was of global importance. It should be noted that at the international level, this program has not been recognized as successful, although its goals have been achieved, in particular, it relates to the

commitments undertaken by developed countries. Almost all of them have reduced the CO2 emissions since the signing of this document. According to the BP Corporation, which forms an annual review of world energy market indicators since 1998, after the abovementioned document was adopted, the economically developed countries have significantly reduced emissions, which is primarily the case in European countries. So the Table 1 data show the evidence that the coun-tries of Europe and Eurasia have cut their emissions for more than 50 years and their share in the global emissions is 19%. Denmark, Finland are the leaders in reducing emissions, Romania also demonstrates positive dynamics. In relation to Ukraine, it should be noted that the growth of emissions for the period from 1985 to 2016 was much slower than after the Kyoto Protocol adoption. Middle Eastern countries such as Qatar and the United Arab Emirates demonstrate the most negative indicators for increasing the rate of emissions, their share in the longer period is the highest in the world – 344 and 1.299 times, respectively, which is attributed to the development of the oil industry, while their share in the world is not significant, less than 1%. It should be noted that, despite the fact that the United States have not ratified the Kyoto Protocol, nevertheless, they show a positive dynamics of emissions, while having 16% of the total emissions. At the same time, against the background of emission reductions by economically developed countries, all measures are neutralized by the influence of a small number of countries that account for almost half of all emissions. In this case, it is about China, India, Indonesia, South Korea and other Asian countries, with a total share of emissions of 48%. China and India are not part of this program, in addition, the intensive economic development of these countries in recent years has led to the fact that their contribution to the environment deterioration is the largest in the world. In particular, over the period from 1965 to 2016, China has more than 18 times increased its emissions, and almost three times since 1998, with its share of 28% of the total emissions. It is noteworthy that the influence of BRICS countries (Brazil, the Russian Federation, India, China and South Africa), which have a significant impact on the development of the world economy in re-cent years, is also significant on this issue. Their share in 2016 is 40%, the bulk of which is formed by China and India. Calculated values of the Pearson coeffi-cient for determining the correlation dependence have once again shown the close connection with the world's CO2 emissions and their values in the Asian region.

Table 1. CO2 emissions in the world

Country / region	Growth rates		Share in the world	Pearson coefficient
	2016/1965	2016/1998		
USA	1.47	0.93	0.16	0.815
North America	1.6	0.96	0.19	0.871
Brazil	8.9	1.55	0.01	0.984
South and Central America	4.54	1.49	0.04	0.991
Denmark	0.82	0.6	0.001	–0.529
Finland	1.8	0.74	0.001	0.550
Czech Republic	0.67	0.84	0.003	–0.766
Romania	0.96	0.68	0.002	–0.441
Ukraine*	0.3	0.62	0.006	–0.786
Russian Federation*	0.68	1.02	0.04	–0.656
Europe and Eurasia	1.17	0.94	0.19	–0.114
Qatar	344.16	3.28	0.003	0.911
UAE	1,299.27	2.23	0.009	0.976
Middle East	15.49	2.12	0.07	0.982
South Africa	3.69	1.28	0.01	0.963
Africa	6.05	1.62	0.04	0.987
China	18.67	2.88	0.27	0.968
India	13.54	2.53	0.07	0.964
Indonesia	26.37	2.37	0.01	0.974
South Korea	26.62	1.68	0.02	0.968
Asia	11.27	2.24	0.48	0.982
BRICS countries	2.81	2.24	0.4	0.989
World	2.94	1.44	x	x

Source: Compiled by the author based on BP Statistical Review of World Energy (2017).

Note: * Data available since 1985

It should be noted that the improvement of the situation with emissions is not always the case, that is, its reduction is due to the introduction of modern technologies aimed at preserving the environment, since to a large extent, especially in the countries of the post-socialist space, this is due to the transformational decline in these economies, as well as the narrowing of the economic activities. This also applies to Ukraine, which during the period of independence demonstrates a gradual reduction of GDP if it is valued in dollar terms.

It is worth noting that the Paris Agreement, which is scheduled to be implemented from 2020 (the Kyoto Protocol will be completed at this time), has come to an end, replacing this document. Its main objective is to provide support for the average temperature of the planet below 2%. Accordingly, countries need to develop and implement measures to reduce the use of carbon technologies. In addition, the creation of the "Green Fund", which is planned to be within USA 100 billion to finance the fight against climate change, is foreseen.

Solving the climatic problems is complicated by the situation in the energy sector, as trends are currently emerging to exacerbate the competitive struggle between different countries of the world in the international energy market. In some regions, including the Middle East, which has significant reserves of carbon energy, there is permanent military and political instability due to geopolitical conflicts that can significantly affect the world market situation and cause crises in the global economic space. Developing countries do not have enough financial resources to introduce modern energy-saving technologies. With regard to the Ukrainian economy, the most important types of alternative fuels that have real prospects and in the near future can make a notable contribution to the energy balance of the country, include: biogas (i.e. methane, produced from solid and liquid household wastes and organic waste); briquettes and pellets (i.e. solid, standard pellet forms, formed of wood waste or straw); bioethanol (alcohol-containing liquid fuel made from of sugar beet, corn, etc.); biodiesel (an oil-like kind of liquid fuel made from turnip, soya, sunflower, and other crops or animal fats); mine methane (associated gas of coal production). Of all the above types of fuels, there are already industrial capacities in Ukraine (Melnyk, 2015).

After the Rio de Janeiro Conference, the World Johannesburg Summit, after which the sustainable development paradigm was formally established, became of great significance. Within the summit, the creation of a "second-level partnership" was launched, that is, the involvement of the private sector and the public in solving the sustainable development problems. In this context, public-private partnership was discussed.

The Stern Report was the final event of this phase. Nicholas Stern headed an international team of authors who studied the effects of climate change on economic growth and development. In particular, it was determined that by 2050 global emissions should be reduced by 25-70% from the current level. In addition, the cost of measures aimed at reducing emissions, including the costs for developing and implementing highly efficient, climate-friendly technologies that reduce emissions as well as the cost of consumers to switch from goods and services, whose production and/or consumption is accompanied by significant greenhouse gas emissions, to low-emission products and services were calculated. Taken together, these costs are estimated at an average of 1% of world GDP, and in an unfavorable scenario – 3.5% of world GDP (The Economics of Climate Change, 2006).

In recent times, there are different estimates regarding the size of the required funding for sustainable development needs. The quantitative definition of needs is a complicated case, as the estimates depend on a number of assumptions, including macroeconomic and political conditions, at the sectoral level and the economy as a whole, international rules, norms and standards. The achievement of sustainable development is also dependent on the efficient use of resources (Schmidt-Traub & Sachs, 2015).

It is during this period that the term of "green economy" appears, but has not yet become widespread and does not appear in official documents.

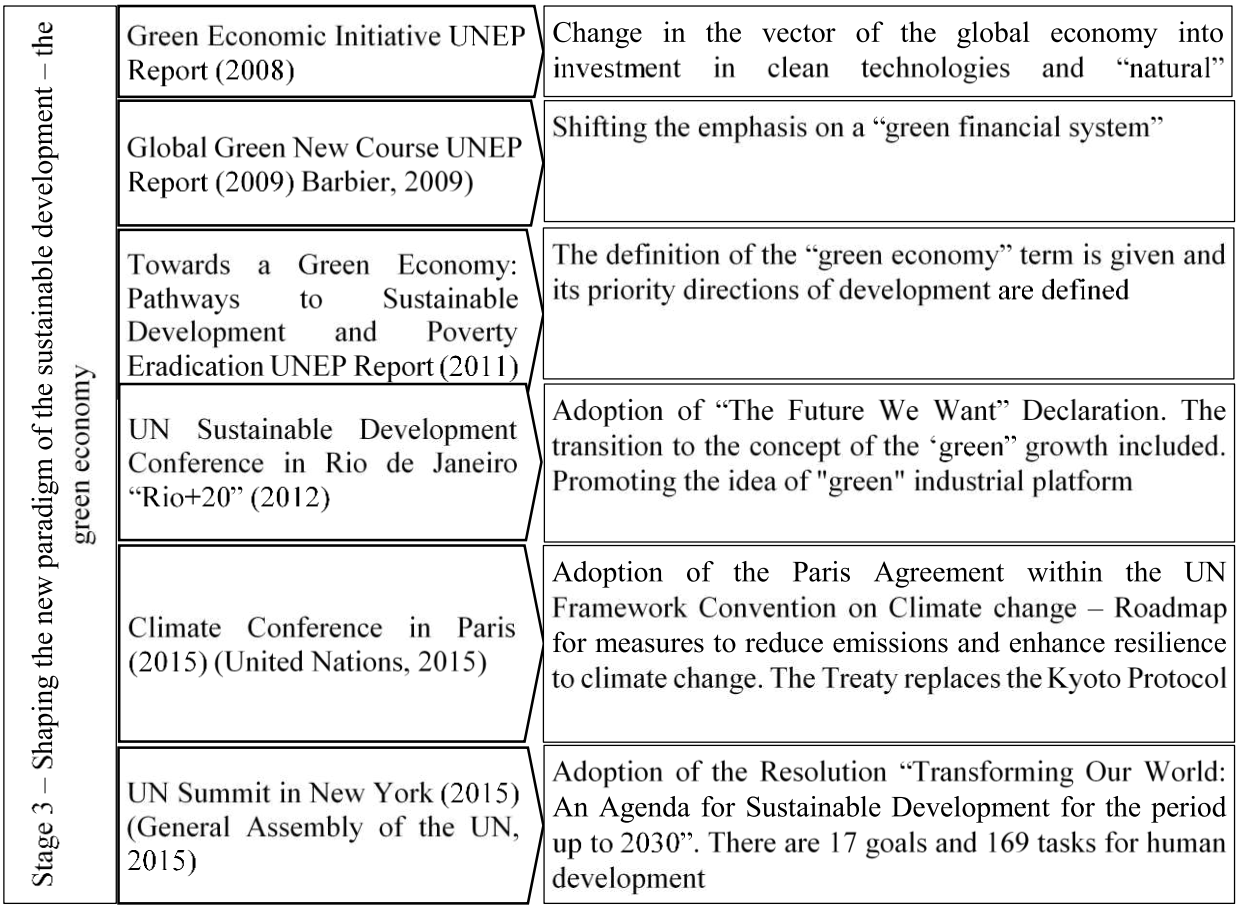


Fig. 3. Shaping the new paradigm of the sustainable development – the green economy (the third stage – from 2007 to date)

The sustainable development paradigm is gaining new significance after the 2008 global financial crisis. It becomes apparent that the inability to build a stable global financial system has a significant effect on the financial support for sustainable development. The global processes of the economy financialization led to the need to revise the sustainable development goals and recognized the signifi-cant need for the development of the financial mechanisms for ensuring the sustainable development achievement. That is why in 2008, the UNEP report "Green Economic Initiative" was published, which announced the vector for the global economy development to support the financing of investments in clean technologies. At this time, along with the "green economy", the terms of "green finance", "smart industry", "reasonable agro-production" appear, also, "organic farming" and "natural agro-production" are increasingly used.

In 2009, a new report by UNEP "Global Green New Deal" appears in which the focus shifts towards the study of green finance financing instruments. In particular, it was stated that the overall goals and objectives of the new course should contribute to multilateral and national efforts to overcome the current financial crisis, its social, economic and environmental impacts, while addressing issues related to global climate, food, and fuel and water resources that have serious consequences for society in the medium term (Barbier, 2009). The document outlined three general objectives for the further support for sustainable development:

1) to remove the financial system from the crisis, to overcome the recession in the economy and to slow down sharp job cuts;
2) to ensure further post-crisis economic development within the sustainable development paradigm, while not increasing but reducing the risks of lack of environmental products – the so-called "ecological hunger" and climate instability;
3) to solve the extreme poverty problem by 2015 (Barbier, 2009).

The important point of this document is that financial instruments them-selves appeared as the elements of the global "green" new course, thus, in the beginning of the third phase of the evolution of the sustainable development paradigm, the focus is on using the financial instruments, which were grouped into three blocks: the fiscal stimulation

block – funds for targeted fiscal stimulation for specific sectors to be received from the USD 3 trillion currently allocated as growth package; an investment bloc that envisioned "internal policy reforms to ensure the success of green" investments in the local economy of individual countries"; and block for reforming international politics and coordination, in order to provide and support local national initiatives. Within the certain initiatives, the investment in sustainable production is important.

In 2011, UNEP report "Towards a Green Economy: Pathways to Sustainable Development and Poverty Eradication" states that the financial and climate crisis is the same thing. The solution is in the "green economy" ... the transition to a "green" economy promises numerous benefits to the international community and all nations in terms of addressing food, energy and water security and climate change problems. It is seen as an effective response to the financial crisis, which can ultimately lead to the achievement of the Millennium Development Goals (UNEPCOM, n.d.).

Ultimately, the idea of moving to a "green" economy was secured at the Rio de Janeiro UN Conference in 2012, during which the transition to the included "green growth" was announced. In fact, in 2012, the change of the sustainable development vector was fixed. As a result of objective processes of environmental transformation influenced by economic activity in a single system of natural resources, there are processes of transformation of economic activity and way of human being life and thinking. Such processes can be called the ecological transformation of the economy, that is, the creation of a new, "green" (pure) sector of production, agriculture and services, which occur in parallel with the transformation processes of "greening" existing industries. In general, the transformation of the natural environment not only caused changes in the economy structure, but also relevant changes in worldview of humanity (Potapenko, 2012).

The key positions of the "green economy" development are as follows:

- it is necessary to generate investments in the amount of about 2% of the world's GDP and direct them into ten basic industries, including agriculture, forestry, fisheries, industrial production, transport, etc., which will enable the transition to a resource-saving and low-carbon economy;
- environmental focus of economic activity will allow to increase the GDP growth rates per capita more rapidly in 5 to 10 years;
- enhancing energy efficiency through the use of non-conventional and renewable energy sources will significantly reduce the demand for traditional energy sources, by about 40% by 2050;
- it is anticipated that the proposed measures could significantly reduce the CO2 emissions;
- all the above will also contribute to the creation of new jobs, which will solve the employment problem, especially this is important for projects involved in agriculture, in the transition to natural agro-industry.

The focus on "green" economy has set the start of a new technological paradigm that has replaced carbon and eco-wasteful one. Progress in the "green" economy is not just a function of extraction of mineral raw materials due to a closed loop, its main task is the introduction of innovations, high technologies, the results of fundamental research, such as the use of new (modified) enzymes for the development of environmentally friendly production processes ("green" engineering). A factor of paramount importance is the innovative activity that guarantees the ecological safety of innovations. Research organizations should be guided by the search for reserves, and the state's financial policy is qualified, with the help of pricing, taxation and other mechanisms, to ensure the introduction and dissemination of "green" innovations. Obviously, the concept of a "green" economy does not replace the concept of sustainable development, but now it becomes increasingly evident that the development stability achievement is almost entirely dependent on the creation of the corresponding economy (Bautin, 2012).

At the moment, the provisions of Resolution "Transforming Our World: An Agenda for Sustainable Development for the Period up to 2030", which was adopted at the UN Summit in New York in 2015, made the base for further sustainable development (General Assembly of the UN, 2015). This document identifies 17 goals and 169 tasks for the mankind development. The Millennium Development Goals were: poverty alleviation, solution to hunger, good health, quality education, gender equality, clean water and proper sanitation, renewable energy, decent jobs and economic growth, innovation infrastructure, reduction of inequality, cities and communities living in accordance with the sustainable development principles, responsible consumption, protection of the planet, providing life under water, providing living on earth, peace and justice, cooperation in order to achieve the goals.

Considering the modern paradigm of sustainable

development, it can be argued that there is a change in the paradigm of the very economic activity of mankind. The economic and ecological situation in the world objectively requires correction, first of all of the idea of the object and the subject of the economy. Now it is not enough to produce goods and sell them in order to maximize profits. The object of efforts in the economy is a nature conservation. In addition, the economy should ensure not only the reproduction of workers (their workforce), but the shaping the development of a new type of worker. In today's conditions, not only the object and subject become different, but the very purpose of the economy must also be different. It can no longer be purely economic, subject to maximization of profit (micro level) and economic growth (macro level). The economy of modern times must necessarily achieve other goals, the main of which is social and ecological sustainability. To reach the trajectory of sustainable development, each country needs to focus on social principles, implement certain imperatives and adhere to criteria that ensure the harmonious development of the economy, social sphere and environment in their interaction and interdependence (Kazhuro, 2016).

Shaping the sustainable development paradigm envisaged three basic elements, the three areas that needed regulation – environmental, social and economic. At the same time, the latest developments in the world economy, the persistent financial crises highlight the problem of financially supporting development as such, including sustainable development. At present, in the context of economic processes financialization, the availability of financial resources and the ability to use them effectively to achieve the declared goals of sustainable development are at the forefront. In this regard, the three basic elements of the sustainable development paradigm should include financial component, thus, the five capital model is more closely coordinated with the financial capital allocated in it (Figure 4).

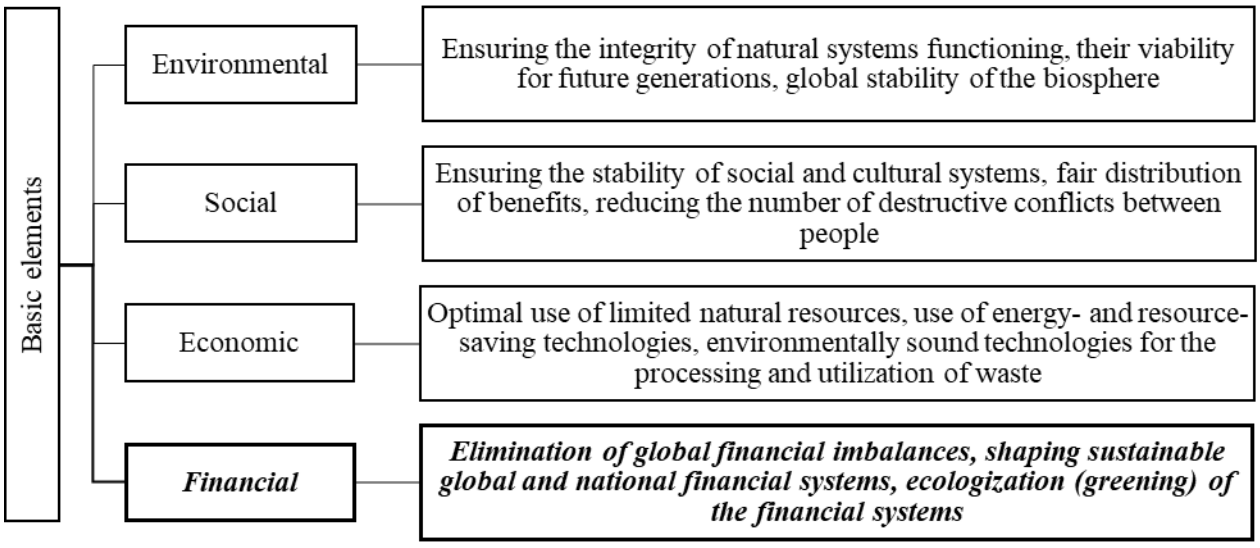


Fig. 4. Modern approach to basic elements of the sustainable development paradigm

Given the above mentioned, the approach of mutual agreement between the basic elements of the sustainable development paradigm and the concept of "five capitals", which was proposed in the framework of the sustainable development paradigm, is somewhat different. Sustainability Integrated Guidelines for Management (SIGMA) (The SIGMA Guidelines, n.d.) were developed by the British Standards Institution (BSI), the Forum for the Future, the International Accountability Center (AccountAbility) with the support of the UK Department of Commerce and Industry. In scientific publications, as a rule, only a separate concept of five capitals is used, while ignoring the importance of accountability. According to the authors of the current article, the Comprehensive Principles should be considered not only in terms of capital treatment, but also in terms of its con-sistency with the basic elements of the sustainable development paradigm and the main forms of accountability. The system approach to this is schematically illustrated in Figure 5. So, according to the five capital theory, the following types are distinguished:

- natural capital – the ecological capital is also often used in publications. Essentially it is about the environment and this type of capital can be presented in a renewable and non-renewable form. In this case, natural capital is actually the

natural resources used in the activities of the economic agents;

- human capital includes knowledge, skills, and health of employees that are a driver of the economic growth;
- social capital refers to the relations arising between individuals, groups of people and in the process of economic entities functioning – among employees. It can be represented as public values, trust, and an effective legal system;
- manufactured capital – material resources that are owned, leased or controlled by an economic entity, infrastructure objects and technology that is the basis for the creation of goods or services, and provides flexibility, innovation and rapid promotion of goods, works, services to their final consumer;
- financial capital is a set of securities – shares, bonds, promissory notes, other types of securities, as well as cash, all that can reflect the efficient use of all the above types of capital, including the cost of brand and reputation, environmental and social costs, implemented communications, etc.

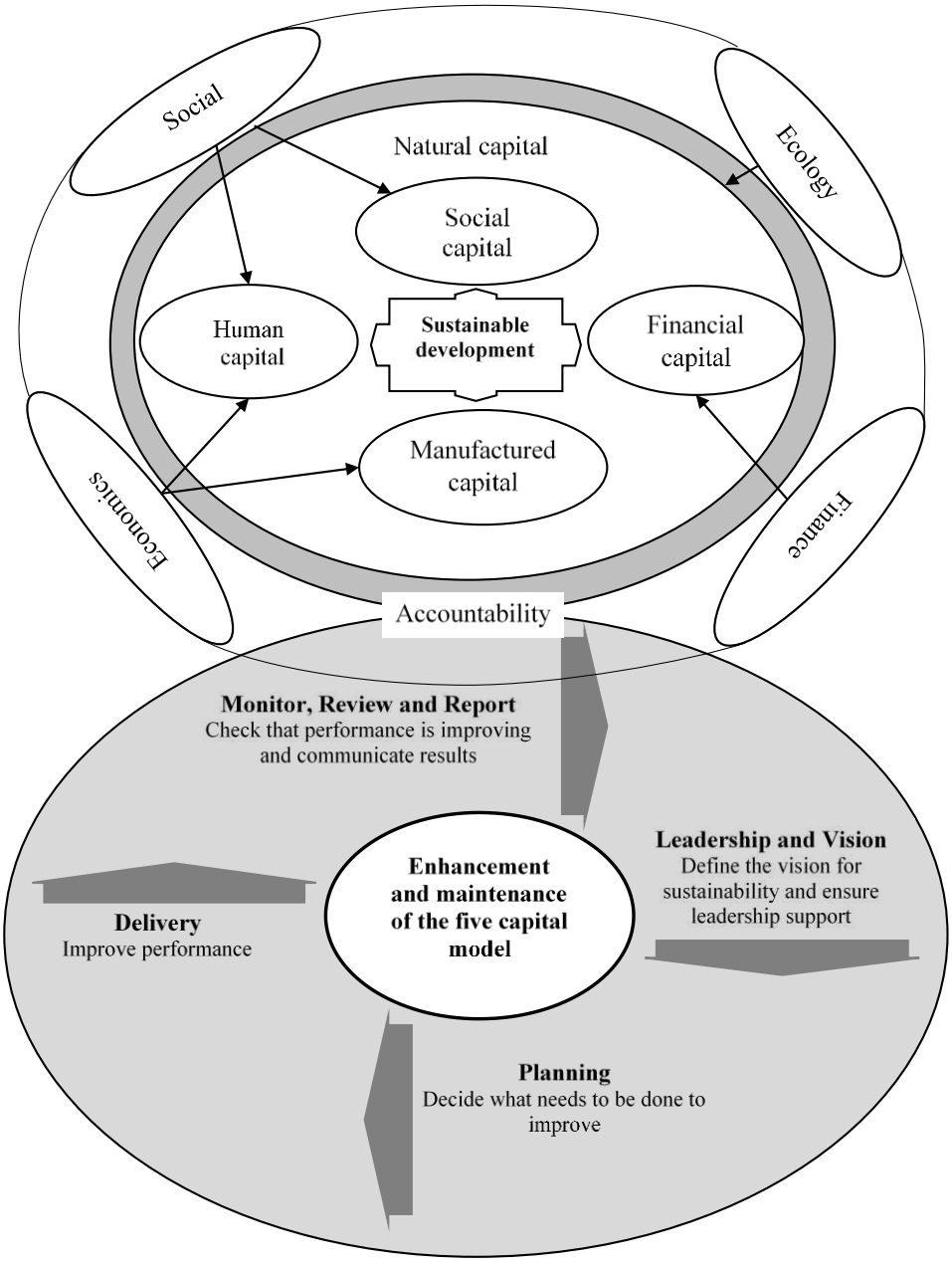


Fig. 5. Harmonization of the modern sustainable development concept and the five capital concept

Reporting is equally important, from the point of view of implementing the modern "green" economy, for the level of individual economic entities functioning, especially in terms of the financial capital use. Reporting was given and paid considerable attention, which is also confirmed by

the SIGMA Guidelines (The SIGMA Guidelines, n.d.). Enterprises should ensure the transparency of reporting related to sustainable development. This is especially true for reporting, which accompanies transactions related to the financial support for the "green" economy operations. In this regard, it is possible to note some progress of Ukraine in the legislative regulation of financial reporting. In particular, in 2017, amendments were made to the Law of Ukraine "On Accounting and Financial Reporting" as part of the requirements for the submission of certain forms of reporting. So, since January 1, 2019, companies will be required to submit a management report that will contain both financial and non-financial information on the state and prospects of its development, reveal the main risks and uncertainties in its activities. In addition, since January 1, 2018, enterprises engaged in the extraction of minerals of national value or timber harvesting and are of public interest will also additionally submit a statement of payments in favor of the state. The introduction of financial reporting taxonomy will also contribute to increasing the financial statements transparency (Supreme Counsil of Ukraine, 1999).

It should be noted that in Ukraine, state authorities are very active in ensuring sustainable development. In particular, in 2015, the Decree of the President of Ukraine "Sustainable Development Strategy Ukraine – 2020" was signed; in 2017, the Ministry of Economic Development and Trade prepared the National Report "Objectives of Sustainable Development: Ukraine", which defined 17 goals and 169 tasks adapted for Ukraine adopted in New York in 2015, as noted earlier. For each goal, a number of tasks as well as their indicators have been identified, adapted to the realities of the current economic, ecological, and social situation in Ukraine. As part of the current research, the authors note that in the list of tasks, significant attention is paid to the development of agriculture. In particular, it is envisaged to double the productivity of agriculture through the use of innovative technologies, to ensure the creation of sustainable food production systems that contribute to the conservation of ecosystems and gradually improve the quality of soils, primarily through the use of innovative technologies (Ministry of Economic Development and Trade of Ukraine, 2017). Nowadays, Ukrainian scientists led by Rudenko, have developed a project of the sustainable development strategy of Ukraine until 2030 (Institute of Geography of NAS of Ukraine, n.d.), which states that sustainable development is primarily aimed at improving people's quality of life in a supportive socio-economic environment and an environmentally friendly, healthy, diverse natural environment. The high intellectual level of human potential should ensure the competitiveness of the country in the future. In this project, too much attention is paid to the development of agricultural production and the operational goal is determined – to promote its sustainable development, which is more detailed and involves the following (Institute of Geography of NAS of Ukraine, n.d.):

- to increase by half the human labor productivity in agriculture by 2030 (up to USD 15 thousand per year per one employed in the agricultural sector) and the incomes of small agrarian producers, in particular women, farm households, cattle farmers and fishermen, including via ensuring guaranteed and equal access to land, other productive resources and factors of agricultural production, knowledge, financial services, markets and opportunities for increasing value added and employment in non-agricultural sectors;
- to facilitate the creation and development of small agricultural enterprises (up to 50 hectares of land);
- to increase the share of food products and the processing of agricultural raw materials in exports to 40%;
- by 2030, to ensure the establishment of systems for balanced food production and introduce farming methods that increase viability and productivity, increase production, promote ecosystem conservation, strengthen the ability to adapt to climate change, extreme weather events, droughts, floods and other natural disasters and gradually improve the quality of land and soils;
- by 2030, increase the area of agricultural land occupied by organic production, up to 3 million hectares, and ensure an annual increase of at least 5% from the year 2020 on the production and organic products marketing;
- by 2020, to ensure the preservation of the genetic diversity of seeds and cultivated plants, as well as of agricultural and domestic animals and their corresponding wildlife, including through the proper maintenance of a variety of seed banks and plants at the national level;
- to increase investment in rural infrastructure, agricultural research, technology development and the creation of genetic banks for plants and animals;
- by 2020, the illegal cultivation of genetically modified plants and the GMO use should be stopped;
- to ensure the proper functioning of the food

markets, in particular by reducing market risks for farmers and diversifying market instruments (insurance, guarantee funds, forward trade, derivatives trading, e-commerce, etc.), the use of mechanisms for commodity and financial interventions;

- to provide the population, in particular low-income population, with the main types of food according to the scientifically-based international standards.

The implementation of these and other normative documents will allow to improve the standard of living of the population, and will promote economic growth. It should be noted that the effective realization of these tasks is possible only with the cooperation of all participants in the economic process – state, business and population. At the same time, the first priority in the realization of the sustainable development goals is the financial support of these processes, including the introduction of modern "green" financial instruments in Ukraine both on the part of the state and the business entities.

Conclusion

In summary, it can be argued that the formation of a sustainable development paradigm has already been passed through several stages: the first stage is the formation of the prerequisites for the emergence of a sustainable development paradigm, the second stage is the implementation and further development, and the third stage is changing the development vector and shaping a new paradigm. According to the authors, there is a change in the very significant vector of tasks that are due to the growing influence of financial processes on ensuring sustainable development, which allows to distinguish a separate sphere of sustainable development – financial. This is also consistent with the five capital model developed within the framework of the paradigm. Accordingly, this poses new challenges that consist in determining the role of financial support for sustainable development, taking into account the financialization of the global economic space.

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