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GREEN ECONOMY: PRINCIPLES, STRUCTURE AND IMPLEMENTATION TOOLS

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It has been established that mankind has long been familiar with natural disasters, which, according to scientists, may have arisen due to, among other things, human impact on the environment. It is proved that since the industrial revolution in the world, mankind has rarely thought about the damage caused to nature and the consequences in the future. It has been established that there has been a noticeable recent trend towards environmental protection. Trends reflecting the dynamics of changing attitudes towards nature have been investigated: people all over the world are coming together to try to rectify an unfavourable environmental situation and prevent the environment from deteriorating even further. We note that large companies are switching to non-hazardous products to reduce their carbon footprint, production methods are changing, and additional equipment is being installed to clean up systems. The essence of the concept "green economy" is investigated and author's definition is given. The article reveals the content and essence of the concept of "green" economy. The reasons for transition to green technologies are considered. On an example of experience of overseas states (France, Denmark, South Korea, Poland, Japan, etc.) The analysis of world experience of transition to "green" economy is carried out. At the same time the preconditions for the transition to green economy in Ukraine (to start "green" construction, the development of "green" transport, the introduction of eco-labelling, the development of organic agriculture, etc.) are considered. It is proved that in all developed countries there is the sorting of waste, measures are taken to clean forests and water bodies. The system of green economy principles proposed by international organisations and initiatives is summarised. It is noted that in Ukraine, in contrast to European countries, measures aimed at protecting the environment, restoration of natural balance and programs for the transition to green economy have appeared relatively recently. Let us summarise the structure of the global Green Economy Index.

ЗЕЛЕНА ЕКОНОМІКА: ПРИНЦИПИ, СТРУКТУРА ТА ІНСТРУМЕНТ РЕАЛІЗАЦІЇ

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екологія, природа, зелена економіка, ресурси, економіка, людина, держава, навколишнє середовище, ефективність, розвиток, принципи

Встановлено, що здавна людству знайомі природні катаклізми, які, за словами вчених, могли виникнути, в тому числі через вплив людини на навколишнє середовище. Доведено, що з часів промислової революції у світі людство рідко замислювалося про те, якої шкоди завдає природі і які наслідки це може мати у майбутньому. Визначено, що останнім часом спостерігається помітна тенденція захисту довкілля. Досліджено тенденції, які відображають динаміку зміни підходів до природи: люди по всьому світу об'єднуються для того, щоб спробувати виправити несприятливу екологічну обстановку і не допустити ще більшого погіршення екології. Зазначимо, що величезні підприємства переходять на безпечніші продукти, щоб знизити викиди газів в атмосферу, змінюються способи виробництва, встановлюється додаткове обладнання для очищення систем. Досліджено та надано авторське визначення сутності поняття «зелена економіка». У статті розкрито зміст та сутність концепції «зелена» економіка. Розглянуто причини переходу до зелених технологій. На прикладі досвіду розвинених країн (Франція, Данія, Південна

Корея, Польща, Японія та інших.) проведено аналіз світового досвіду початку «зеленої» економіки. Поряд із цим розглянуто передумови переходу до «зеленої» економіки в Україні (започаткувати «зелене» будівництво, розвиток «зеленого» транспорту, впровадити екомаркування, розвивати органічне сільське господарство тощо). Доведено, що у всіх розвинених країнах існує сортування сміття, проводяться заходи щодо очищення лісів та водоймищ. Узагальнено систему принципів зеленої економіки, що запропоновано міжнародними організаціями та ініціативами. Відмічено, що в Україні, на відміну від країн Європи, заходи, спрямовані на захист навколишнього середовища, відновлення природного балансу та програми з переходу на «зелену економіку» з'явилися відносно недавно. Узагальнено структуру глобального індексу «зеленої економіки».

The purpose of the study

Study foreign experience in the practice of development and implementation of green economy elements in the developed countries of the world.

Problem statement

At the current stage of development of the world economy one of the effective directions is the «green economy», which emerges as a tool to combat environmental and resource development problems of the countries of the world in response to the financial and economic crisis in 2008. The UN Environmental Program (UNEP) in the same year announced the transition to the so-called «green economy», which should contribute to the recovery of the world economy, increase employment, fight against poverty, while accelerating the fight against climate change and degradation of the natural environment.

Today, the process of developing scientific, theoretical and methodological principles of green economy is taking place in the world. So, the concept of «green economy» is now one of the most pressing issues in the developed world. The problem is solved at the level of creation of documents, implementation of relevant projects, holding summits, forums, implementation of publications of world famous scientists.

Relevance

The development of a green economy is still very slow and uneven, despite the public demand for rapid growth, and individual areas of green growth, even if supported by public policy measures, are poorly connected and not developed in a systematic way.

Analysis of recent research and publications

Analysis of the scientific literature shows that the term «green economy» was first used by a group of scientists

D. Pearce [1], A. Markandya [2], E. Barbier [3] in the report of the UK Government «The concept of green economy» (1989). Officially, the policy of «green economy» was adopted by the OECD in 2009 as a strategic direction of development («Green Growth Strategy of the OECD»). According to the UNEP definition, a green economy is an economy focused on improving human well-being and social equity by substantially reducing risks from environmental change and environmental resource scarcity.

Results

The green economy is a form of new economy, a transition to which many countries have proclaimed in one form or another. The United Nations (UN) describes a green economy as one that promotes the well-being of the population and reduces risks to the environment. The common characteristics of a green economy are the efficient and rational use of natural resources, the reduction of greenhouse gas emissions and the introduction of new, green technologies.

The concept of a green economy is now being actively discussed at the level of international organisations, national governments and among academics. Thus, approaches to the interpretation of the green economy and the definition of its basic characteristics have been the subject of research in many UN documents, in particular the Environmental Programme (UNEP) and the UN Department of Economic and Social Affairs (UNDESA).

We propose to consider the concept of «green economy» as an economy based on the rational use of natural resources through the introduction of alternative energy sources in order to reduce energy, technology and material intensity. The analysis of advantages in application of green economy for the state and economic entities is given in table 1.

Table 1 – Analysis of the benefits to government and businesses of applying a green economy

For the state	For business entities
<ul style="list-style-type: none"> – reducing the economy's dependence on external supplies of raw materials and price fluctuations; – introduction of energy- and resource-saving technologies; <ul style="list-style-type: none"> – access to new markets through clean technologies; - Attracting foreign direct investment; – improving the environmental situation and conservation of natural resources; <ul style="list-style-type: none"> – building a positive «green» image 	<ul style="list-style-type: none"> – Reducing the unit cost of resource consumption; <ul style="list-style-type: none"> – modernisation of production; – generating additional income based on the use of available resources (through waste recycling); <ul style="list-style-type: none"> – improved quality and competitiveness of products; – Opportunity to benefit from government incentives; – diversification of asset structure and reduction of strategic risks associated with traditional production.

Source: Developed by the authors based on [4]

Green growth means stimulating economic growth and development, while ensuring the conservation of natural assets and their uninterrupted provision of the resources and ecosystem services on which the well-being of all depends [4]. To this end, it must catalyse investment and innovation that will underpin sustainable growth and generate new economic opportunities.

Motives for companies to adopt an active environmental policy [5]:

1. Changing or limiting natural systems, reducing the availability and increasing the cost of critical raw materials, forcing companies to focus on resource efficiency and recovery of raw materials from waste.

2. Stakeholder demands and expectations related to the implementation of sustainability-related actions.

The transition to a pro-active environmental policy is one in which the enterprise begins to see environmental imperatives as an opportunity and an additional opportunity for business development through product change, technology change, staff competence improvement, etc. The enterprise's management process as a whole is organised so that market, commercial, social and environmental objectives can be reconciled. It is on such a proactive basis that today's business leaders build environmental management.

An active environmental policy of the enterprise (the «start of the pipe» solution) involves:

- pollution avoidance or prevention (considers pollution at source; zero-waste production);
- permanent improvement rather than temporary effects;
- has many positive effects (no need for waste sorting and recycling);
- regulatory compliance;
- saves money, time, space and other resources.

The ten key sectors of the green economy include agriculture, housing, energy, fisheries, forestry, industry, tourism, transport, waste management and recycling, and water management. Each of these sectors has its own objectives and certain goals, for example [6]:

1. Improving the energy efficiency of housing – 'greening' by retrofitting housing, creating zero-emission buildings; zero-energy and energy-efficient buildings. This can reduce energy consumption by almost 80% compared to conventional building design, creating millions of jobs.

2. Sustainable transport – greening involves switching to low-carbon fuels; investing in energy-efficient modes of transport; and planning green urban infrastructure for transport. This can achieve a 50% reduction in fuel consumption by the global car fleet by 2050, avoiding CO₂ emissions of 2 gt annually and creating 3.8 million new jobs worldwide.

3. Sustainable energy – shifting to new alternative energy technologies would create more than 20 million additional jobs: 2.1 million in wind power, 6.3 million in solar photovoltaics, and 12 million in agriculture and biofuel industries.

4. Sustainable agriculture – investing in sustainable agriculture, including organic land use. By 2050, UNEP predicts that one hectare of land should feed 6.1 to 6.4 people, compared to 4.5 people in 2005.

5. Environmental infrastructure – includes investments in healthy ecosystems: watersheds, river systems, wetlands, soils, forests, oceans and coral reefs that provide important economic services. Such investments would create large numbers of additional jobs (between 10 and 40 percent of investments) and significantly reduce the use of natural resources.

6. Waste management and recycling – provides for the safe and clean shipment, removal, storage and disposal of waste, while respecting three rules: waste reduction, recycling and reuse. The sector is expected to grow rapidly in the face of rising commodity prices.

Overall, UNEP estimates that the annual financing needs to meet the goals and green the global economy range from \$1.05 trillion to \$2.59 trillion. This represents less than 1/10th of the world's annual investment (global gross fixed capital formation, which was 22% of global GDP in 2009) [7].

The global scale of production and employment in the green economy. The scale of the green sector of the global economy is still relatively small, which is why the term «green economy» is often used in specialist literature alongside the term «green sprouts» of the economy. Indeed, the value of products and services produced in this sector is estimated at about 2 trillion dollars, or 2.7% of world GDP, profits – 530 billion dollars, employment – within 10 million people [8]. But the contribution of the «green» sector in the development of the economic complex of individual states, concentrating most of the capacities and investments in this area, is markedly higher: in the USA the «green» economy provides products and services for more than 600 billion dollars (4.2% of GDP). (4.2% of GDP), employment in it is estimated at 3 million people; in Japan – 3.4% of GDP and approximately 1.5 million people; in the EU as a whole – 2.5% of total GDP and over 3.4 million people. However, 199 is higher in individual countries: in Germany – about 4.8% plus global leadership in the export of environmental goods and services (in particular, more than 12% of global trade in climate protection equipment); in the UK, the world leader in the share of the «green» sector in GDP – \$240bn (11.8% of GDP). (11.8% of GDP), the share in exports was 5%, in total employment – 3% [9].

In Germany, GDP growth was 1.6% in 2014. At the same time, total energy expenditure fell by 4.7%. Among these, electricity costs fell by 3.7% and CO₂ emissions from energy production by 5%. For the European Union, from 1990 to 2014, GDP grew by 46% and the reduction in CO₂ emissions by 23%. This is due to increased efficiency, especially in industry, as well as the rapid growth and expansion of renewable energy sources [9].

The Green Economy Index is an index that assesses and compares individual countries on the state of development of the green economy. Essentially, the index is the integral sum of two components – performance measurement and expert judgement (Figure 1).

The Global Green Economy Index (GGEI) [10], which measures the environmental performance of 80 countries and provides expert assessments of the greening of the economy.

An important and effective tool of green economy is a system of principles (tab. 2).

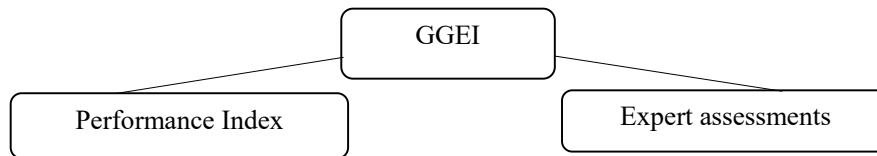


Fig. 1 – Structure of the Global Green Economy Index

Source: Developed by the authors based on [10]

Table 2 – System of green economy principles proposed by various international organisations and initiatives

Name of organisation	The principles of a green economy
UNEP	1. Ensures sustainable development. 2. Ensuring equality – the principle of equity. 3. Creates prosperity and well-being for all – The Principle of Dignity. 4. Improves the natural world – The integrity of the earth, planetary boundaries and the Precautionary Principle. 5. Inclusive and participatory decision-making – Inclusion Principle. 6. Accountability – Stewardship Principle. 7. Builds economic, social and environmental sustainability – Principle of sustainability. 8. Ensures sustainable consumption and production – Principle of efficiency. 9. Investing in the future – Intergenerational principle.
Stakeholder Forum, Bioregional Initiatives and Earth Charter Initiatives	1. Equitable distribution of wealth. 2. economic justice governed by the principle of universal but differentiated responsibilities. 3. Equity for all generations. 4. Preventive approach. 5. Right to development. 6. Internalisation of externalities. 7. International co-operation. 8. International responsibility. 9. Information, participation, reporting. 10. Sustainable consumption and production. 11. Strategic, coordinated and integrated planning for sustainable development, green economy and poverty reduction. 12. Transition. 13. Rethinking well-being. 14. Gender equality. 15. Protecting biodiversity and preventing pollution of any component of the natural environment.
The High-Level Panel on Global Sustainability – UN Secretary General	1. Potential driver of sustainable development, stimulating economic growth, necessary to eradicate poverty. Can provide an integrated approach to sustainable development when adapted to different countries, localities and areas according to their needs and situations and complemented by social protection to ensure inclusiveness and sustainability. 2. Adopts a long-term view, providing a sustainable model of growth that can withstand external shocks. 3. Measures progress beyond GDP alone. 4. Promotes employment, strengthens green business and provides green jobs. 5. Highlights technology and innovation, cooperation and institutions. 6. Sends clear signals by including social and environmental costs in the pricing mechanism. Ensures that finance is used to lay the foundations for higher sustainable development with sufficient financial returns. 7. Facilitates the transition from low-carbon and renewable towards energy efficiency. 8. Addresses resource scarcity and improves the condition of environment and natural assets, including ecosystems and biodiversity, by improving and enhancing the natural commons and resource management. 9. Can facilitate stakeholder involvement, participation and cooperation.

Source: Developed by the authors based on [11]

The principles are useful for building a vision, creating a framework and awakening the interest of all stakeholders, but concrete mechanisms and tools are needed to move from theory to practice and implement the principles in question [8].

Conclusions

A green economy is an integral part of sustainable development and implies a balanced coexistence of the environment, social and economic systems.

Regarding the implementation of a green economy, it is advisable for Ukraine:

- 1) to use the experience of developed European countries, which have already achieved significant success in the application of the principles of ecological economy;
- 2) combine environmental and economic components at all levels: local, regional and national;
- 3) switch to energy-saving technologies;
- 4) stimulate implementation of innovations;
- 5) implement new technologies of waste management and recycling;
- 6) expand use of alternative energy sources;
- 7) implement eco-labelling, develop organic farming;

8) start «green» construction, development of «green» transport: trolley buses, trams, bicycles, electric cars, «green» electricity tariffs.

The prospect of further research is to study the international experience of greening the economy and the possibilities of its practical application in Ukraine.

A green economy creates new jobs, generates higher GDP growth, reduces risks such as the effects of climate change and increasing water scarcity, and stimulates economic progress.

The implementation of the green economy model involves creating conditions for business development based on new

environmental standards and technologies, state support for socially and environmentally responsible businesses, increasing the role of the state and intergovernmental bodies in economic and environmental regulation, creating conditions for developing environmental culture of the population and popularizing educational environmental initiatives and resource-saving programs

Thus, the Green Economy is based on alternative energy and fuel sources, cleaner production technology, clean technologies in agriculture, green construction, as well as programmes for cleaning air, water and soil from pollution, recycling and disposal of waste, etc.

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