

CHAPTER VI ECONOMY: PHYSICAL, CIRCULAR, GREEN

6.1. FOREIGN EXPERIENCE OF "GREEN CONSTRUCTION" PROMOTION AND POSSIBILITY OF ITS IMPLEMENTATION IN UKRAINE

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In modern society one of the most actual question is the threat of an ecological catastrophe that has reached the global level. Economic development has led to the rapid accumulation of physical and human capital through exhaustion and degradation of natural capital. There are many ecological problems which need the solution right now. The amount of environmental problems makes it necessary to develop and implement measures to all spheres of human activity. The importance of the topic raised for the first time was recorded in the Report of the International Commission on Environment and Development in 1987, in which the "sustainable development concept" was first defined at the international level. And the Climate Summit in Paris on December 11, 2015, started the real implementation of green technologies, environmental and economic concepts that were developed by many international conferences, where the principles and recommendations for a balanced solution of socio-economic objectives and the preservation of the natural environment and natural resource potential during the transition to sustainable development on the way to green economy were developed: Rio de Janeiro Conference (1992), Kyoto Protocol (1997), Development Finance Conference (Monterrey, 2002), World Summit on Sustainable Development (Johannesburg, 2002)

The main concept of each society is to ensure the normal mental development and preservation of human health. This is due to the progressive deterioration of the quality of the environment, on the one hand, and the stress-induced and immunosuppressive effects of the environmentally modified environment on the human body, on the other. The factors shaping the health of a modern person are distributed as follows: lifestyle - 53%, ecology - 21%, biology - 16%, health care

system - 10%. In Ukraine, the unfavorable environmental state of the environment results in an increase in the ecological component of health to 60-70%. The RI-92 conference proposed a financial mechanism to support the new socio-economic system at the stage of its formation by allocating 0.7% of gross national income to industrialized countries to help exporting countries of raw materials.

All countries, with different level of activity, have started to introduce a new economic concept of the "green economy". An analysis of foreign experience has shown a rather positive perception of the new model both at the business environment and at the public level because it led to consensus over the long-term confrontation between environmental and economic interests, as well as the development of technologies has explained the link between economic growth and negative environmental impacts. In addition, it should be emphasized that today the construction branch is one of the most important branch of the national economy and plays a key role in prosperity of the whole national economy, so most often the construction industry and "green construction" created a multiplier effect for the development and further transition to eco-technologies of other sectors of the economy.

Green construction is the component of green economy. "Green" buildings have less negative impact on the environment than standard buildings. This is achieved through more efficient and rational use of resources, the use of alternative resources for the conservation of natural, waste processing. Those widespread use of "green" construction in the world can be one of the most effective tools for sustainable development of society. "Green" buildings are designed primarily to reduce energy and water consumption. You can reduce the consumption of these resources by an average of 25-30% and 30-50%, respectively. There is a lot of research that shows that the cost of designing and building "green" buildings differs little from the cost of designing and building conventional buildings. For example, the cost of constructing of 33 "green" buildings in Massachusetts is, on average, only 2% higher, and studies of more than 150 buildings that received the lowest rating in the US building system in the United States have shown that the construction of such a building is on average only 0.8% more expensive than building an ordinary building [1].

The state financial support for "green construction" projects in Germany is carried out by the national investment bank Kreditanstalt für Wiederaufbau (KfW), which was established in 1948 to implement the Marshall Plan. The bank is in the shared ownership of the German Federal Government (80%) and land (20%) [2]. The main directions of KfW financing in the field of ecology are renewable energy sources, energy efficiency, low-carbon transport. In 2011, 22.8 billion euros were allocated for financing in the field of ecology, which is one third of the bank's financing of preferential programs and development programs. Supporting green projects, The Bank implements the following instruments [3]: cheap concessional lending by using several sources of borrowing; intermediary crediting; targeted subsidies for improving energy efficiency; assistance through the structure of the fund; guarantees and risk distribution through the on-lending system; sectoral guarantees; provision of external expertise. As a separate measure of state support for the financing of green construction in Germany is a preferential tariff program, which encourages investments in renewable energy sources, was first established in Germany in 1990, and in 2000 the Law on Renewable Energy Sources was accepted. Financing of this program is carried out through the distribution of costs for all consumers, which guarantees a low cost of electricity [4]. In addition to the state investment bank, there are several financial institutions in Germany that provide "ethical financial products" (environmentally and socially oriented) or "ethical banking": GLS bank, Triodos Bank, Umwelt bank, Ethik Bank.

The active moves towards a green economy in the United Kingdom began with the adoption of the Climate Change Act 2008, which aims to reduce carbon dioxide emissions by 80% by 2050 compared to the 1990 base year defining as well national environmental goals and the objectives of the European Union: the production of 15% of all energy from renewable sources (EU Renewable Energy Directive); processing of 50% of household waste by 2020 and reducing the landfill of biodegradable municipal waste by 35% by 2020 compared to 1995 (EU Waste Framework Directive). But the transition to a "green construction" in the UK requires significant investment. For example, in the field of energy (renewable energy sources, collection and storage of

carbon, transmission of electricity, etc.), at least 100 billion pounds sterling is required; on renewable sources of heat - about 10 billion pounds sterling until 2020; on energy efficiency of houses - from 14 to 21 billion pounds sterling [5]. At the same time, the Commission of the Green Investments Bank (GIB) identified a number of barriers to the flow of investment in "green" projects in the UK: the limits of the capacity of the investment market and the limited capacity of the balance sheet; political and regulatory risks; lack of confidence among investors in view of technological risks, lack of transparency in public policy and high capital requirements for commercialization; the difficulty of attracting institutional investors to a large number of small low-carbon projects. The GIB was established by the UK government in 2012 to remove these barriers and attract investment in green projects. The main objectives of this institution are to eliminate the "failures" of the market and stimulate the flow of investment from the private sector into "green" infrastructure projects. The Bank uses next main instruments: loans and equity investments, financing through an investment fund and guarantees [6]. For today the GIB has committed 2.3 billion pounds sterling to 58 projects across several sectors, while mobilizing 7.8 billion pounds of private capital, and 1 pound sterling contributed by the government accounts for 3 pounds additional private capital [7]. To support the green investments into construction, a market mechanism for "green construction" financing appears in the UK, which includes social responsible investment funds that finance social and environmentally oriented (ethical) projects and inform consumers about them. Along with the funds for social responsible investment, ethical (social and environmentally oriented) financial products emerged: current accounts, savings accounts, lending, insurance, mortgage, "ethical banking." These services are provided by the following financial institutions: Charity Bank, Tridos Bank, Ecology BS, Unity Trust, Naturesave, Golden Lane Housing.

"Green" financing in South Korea is carried out through bank loans and credit guarantees. It can also be carried out through the venture capital market. "Green" bank loans are provided through regular commercial banks and state financial institutions. In Korea, 75% of the "green" loans from the total amount are provided by state-funded

banks. There are three types of "green" lending: direct lending, on-lending, a "green" deposit scheme [8]. Direct lending is carried out through government-financed banks directly to "green" companies. The scheme, where the government directs funds to commercial banks through the Korean Finance Corporation (Korea Finance Corporation, and then to the "green" companies, is called on-lending. In the "green" deposit scheme, the government does not participate directly, but offers tax incentives to those who invest at low interest in "green" projects. Credit guarantees are provided in South Korea by two main financial institutions: the Korea Credit Guarantee Fund and the Korea Technology Finance Corp. The Korean Export-Import Bank of Korea, which issued green bonds of \$ 500 million for a five-year period with income of 1.75%, can also be separately identified [9]. In South Korea, there also is a system of "green" certification, includes two elements: The Green Certification Committee and the Korean Institute of Advancement of Technology, which determines which technologies and projects can be qualified as the "green", based on the assessment of the Korea Institute for Technology Promotion [10].

However, the transformational processes are not always initiated from the government, in some countries the initiative was "upwards", and this is the actual experience for Ukraine in the conditions of decentralization. And this made the Canadian federal government develop the Federal Strategy for Sustainable Development 2016-2019, which covers the following topics: consideration of climate change and clean air; support for water quality and accessibility; environment protection; reduction of the impact on the environment [11]. According to a survey conducted by the Canadian Institute of Environmental Law and Policy, the following factors can be identified that constrain the transition to a green construction and the influx of green investments in Canada: the lack of leadership in the "green" economy at the federal level, which creates uncertainty and problems for business; lack of public understanding; tensions among and between stakeholders and government. Therefore, due to the lack of rich experience at the federal level, we will consider the experience of Ontario as the most active province in this area. In Ontario, one of the main problems in financing "green construction" is capital insufficiency, because, for example, the

initial construction of renewable energy sources requires large investments, and the lack of federal support for these projects [12]. Based on the materials studied in Ontario, the following state support measures for green financing can be identified: Ontario green bonds, direct government funding through green funds, energy efficiency lending program, and a preferential tariff program. Ontario is the first province in Canada to issue "green" bonds to finance environmental projects (clean transport, energy saving and energy efficiency, clean energy, le agriculture, land management, adaptation and resilience to climate change.) The Green Investment Fund, which was funded from the provincial budget in Ontario, had become an organization that invests in green projects [13]. Another interesting example of government support for "green" projects in Ontario is the Feed-in Tariff, which was launched in 2009 to develop renewable energy sources, which would be used in construction branch.

Developed countries have been effectively implementing green building construction for a long period. The reason for this is the awareness of the benefits of green construction, environmental, economic and social. In Ukraine, the implementation of the green construction concept is at an early stage. As well as main part of businesses and citizens at the moment are not interested in additional costs for green constructing, the main driving force behind green construction promotion should be the state, having developed the appropriate legislative framework. This will become an important step towards creating an effective legislative framework in the field of green constructing, based on the requirements of the legislation of the European Union and the positive experience of foreign countries, will create conditions for efficient modernization of buildings, using of renewable sources in existing and new buildings, will promote the economic benefit of fuel and energy resources technologies implementation in constructing branch, introduction of mechanisms that will improve the ecological situation in the country.

On our opinion, there are several key directions for the implementing the “green construction” in terms of green economy. They are development of a legal act that would establish requirements for the construction of houses according to

environmental criteria, stimulating the development of the production of effective and environmentally friendly equipment and materials, in particular the introduction of environmental taxes on building materials, development of measures to increase the demand for green buildings, in particular the development and implementation of a program for the formation of ecological oriented demand and increasing the environmental literacy of consumers, introduction of the green construction course into the educational process, raising the professional level of specialists engaged in construction, operation and designing and development of scientific support of green construction.

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