

Green economy as a factor of sustainable development: European experience

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Abstract. The experience of implementing approaches of the green economy as an interaction and mutual influence between urban civilization and the biosphere is discussed. Sustainable urban development, based on the principles of a green economy, leads to an increase in human well-being in the long term, while not exposing future generations to significant environmental risks. The issue of sustainable development is being actively studied since currently the welfare of mankind is more and more determined by the quality of life in cities. In the future, the gap in numbers between urban and rural populations will only grow, and an increasing part of the world population will be represented by residents of urban areas. Sustainable urban development is understood as the ability of the urban environment to change, satisfying subsequent generations of residents in terms of security, convenience of living and activities, communications, logistics, infrastructure, architecture and design, with minimal costs for multiple transformations. European countries such as Sweden, Denmark and others show an increase in public investment in infrastructure consistent with the principles of sustainable development (including public transport, renewable energy, construction of energy-efficient buildings) and natural capital; Existing models for implementing the principles of the green economy and the practice of their implementation in Europe have shown that Russia needs social strategies designed to ensure alignment between social goals and existing or proposed economic strategies.

1. Introduction

The term “green economy” first appeared at 1989 in the book “Blueprint for a Green Economy”. During the 1990s and most of the 2000s the concept of “green economy” was not widely used, it gained a new life after the financial crises of 2008, when many governments around the world needed to stop economic recession while also furthering environmental and climate protection.

At that time some international organizations, most notably UNEP (United Nations Environmental Program), proposed that financially supporting environment and climate activities could also help to stimulate economic growth. They brought this idea to the “Rio +20” Global Summit in 2012. Here UNEP defined a “green economy” as one that generates increasing prosperity while at the same time reducing environmental impact. In essence, such an interpretation made it possible to combine the



need for development in accordance to the limits of the local, regional, and global environmental systems.

There are also narrower interpretations of the green economy, that may include proper pricing, also called environmental externalities. The latter refers to the costs that society is forced to bear due to ecosystem degradation and environmental pollution. Some interpretations require acceptance of the "polluter pays" principle. This means that those companies and individuals who are responsible for the environmental impact must bear their costs. Others call for financial investments in renewable energy, energy efficiency, which help both create jobs and reduce greenhouse gas emissions.

Broader interpretations of the green economy argue that current levels of consumption and production in Western societies are inherently unsustainable. Planetary ecosystems could be saved from collapse only by very radical changes human behavior (including economics). The green economy concept is not new, but it became popular outside of academic circles right after the 2008-2009 global financial crisis. The crisis was driven by numerous interrelated issues, including the subprime housing market, the credit crunch, the lack of regulation of financial markets, and the total collapse of large financial institutions. Some scholars also argued that unsustainable patterns of production and consumption also were key drivers of this crisis. That's why economic downturn encouraged numerous pledges to reform current economic systems towards a path much less damaging to society, the environment and the financial system itself. As a result, numerous countries implemented green economy stimulus packages to reinvigorate production and consumption, particularly in the short term.

2. Materials and methods

Why do cities need a climate and environmental agenda? One of the reasons for the global relevance of the concept of "green cities" is growing urbanization. The cities' population is growing every year and by 2035 will be 50% of the world's population (fig.1) [1. P.10]. So we could define cities are the main centers of production, which are the main sources of pollution. Consequently, the issues of green economy in cities come to the fore.

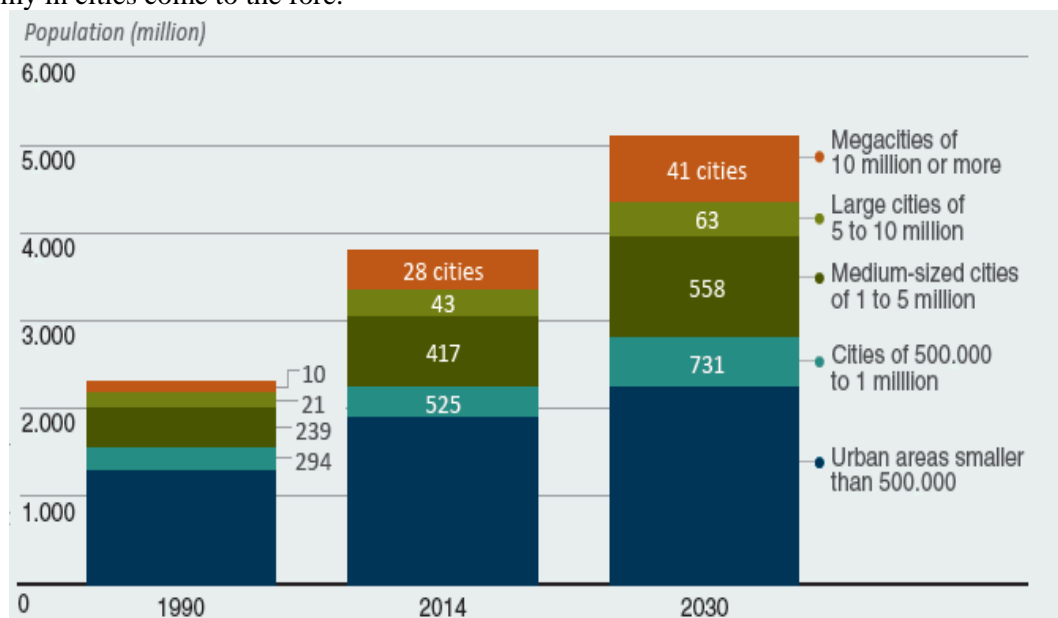


Figure1. Global Urban Population Growth Is Propelled by the Growth of Cities of All Sizes.

The 21st century has been called the "century of cities" by UN-habitat (the United Nations Agency responsible for sustainable human settlements development) and many others. In fact, more than 50% of the world's population now lives in urban areas, and this trend will continue. The age of cities is not only linked to the fact that more and more people live in cities, but it is also increasingly recognized

that the policies of international bodies and national governments must be implemented at the city level in order to have an impact. One example is the strategic importance of cities in the context of sustainable development and the green economy.

Looking at climate governance in this way has helped us to recognize a new phenomenon – the growth of urban experiments designed to respond to climate change. But what does this language of experimentation mean? It is not the same as the kind of experiment we might be used to – one carried out in a controlled laboratory environment by a professional scientist. Rather, it is a more common way in which we use the term experiment, when we are trying out something new, for example, a new haircut or a fashion look. Cities are experimenting with responses to climate change as a way of “trying on for size” new approaches to developing technology, organizing society, and planning urban development.

A survey conducted for a research project funded by the UK Economic and Social Research Council has found that in 100 global cities, there are over 630 different urban climate change experiments taking place [10]. Interestingly, no region of the world is more or less likely to have such experiments taking place in its cities – it seems that experimentation as a response to climate change is now a global phenomenon.

Cities play a dominant role in global consumption, production, and pollution, and are associated with several major environmental problems, including air pollution, greenhouse gas emissions, waste, and poverty. At the same time, the concentration of people, activities and resource use in cities creates the potential for increased efficiency and multi-purpose solutions that combine different sustainable development goals. UNEP (The United Nations Environment Program) is just one of many international organizations that focus on cities to reduce problems and expand opportunities. Cities are centers of innovation and creativity that create huge potential for change.

As urban climate responses come to focus on decarbonisation and a more diverse range of cities and actors get involved, we can find examples of climate governance not just in city halls, or in the corridors of private sector organisations, but also in the mundane design and operation decisions being made in the provision of everyday services – like waste, water, transport and energy. Decisions about whether we heat buildings to 21 degrees, or how much space we allow for bikes on the streets, are also climate decisions and political decisions.

3. Research results

Today we can really talk about a large-scale and technological movement of European cities to systemically improve the quality of the environment. Why are cities becoming sustainable? On the one hand, it is about taking care of the planet. On the other hand, city administrations are quite pragmatic and understand that no city can exist without a clear strategy. The main world concepts of eco-cities are considered by researchers from the HSE [4]. But in our opinion, only some of their ideas could be accepted for Russian realities (see table 1)

Table 1. Eco-city concepts those are optimal for Russia.

Concept	Description
UN sustainable city (United Nations, 1987 p. 41)	A city that makes rational use of environmental resources, allowing them to recover and preventing their depletion, setting acceptable levels of negative impact of harmful factors on the environment Reducing metabolic inputs and metabolic outputs through rational and efficient use of resources
A city that is easy to live in (Vuchic, 1999) A city without garbage (the Term is suggested Zero Waste International Alliance)	A city that has developed public transport through its management of preferential travel rights, reduced carbon dioxide emissions Reduction of indirect metabolic approaches related to import and export. Main measures: recycling of waste, closed production cycle; reduction of production or rejection of production of products that lead to the appearance of non-recyclable waste

To a large extent, these concepts are based on the development of European and global think-tanks and are already being implemented in some countries. These sustainability steps are quite difficult for Western European cities, because all the obvious and easy solutions have already been implemented. Now it is time has come for deeper transformations. In Paris, for example, the old infrastructure and layout formed the image of the city, which is historical and recognizable, and innovations should not destroy it, so there is an active search for adaptive solutions. Many ideas for sustainable transport are being implemented in the city. As part of the program to create a "low-emission zone" in the Central part of Paris, restrictions are being imposed on access to high-emission vehicles, and from 2024, entry to the city for vehicles running on diesel fuel will be completely prohibited.

Despite various difficulties, Russia is trying to follow the global trends of "green cities". Within the framework of the Climate forum of cities 2019, Moscow and representatives of the C40 group — an international Alliance of 94 cities that take active action on climate protection — signed a Declaration "Green and healthy streets" aimed at reducing air pollution. Moscow has joined 28 leading cities that have pledged to buy zero-emission buses from 2025, and to free most of its territory from exhaust fumes by 2030.

4. Summary

The most widely used ideas for greening cities, that could be used in Russia too, are following:

- Mobility;
- "Smart" technologies;
- Waste management;
- The green frames;
- Multifunctional urban environment.

Increasingly, the term "mobility" is used in urban studies, gradually replacing the phrase "transport systems". The concept itself suggests that the main focus is on organizing movement around the city—sometimes without the use of transport or on its eco-friendly types: electric cars powered by renewable energy, hybrid-hydrogen buses, bicycles, electric scooters.

"Smart" technology. The use of "smart" technologies is growing, both for monitoring the quality of the environment and for making it convenient to use eco-friendly solutions [6]. For example, if we know for sure that we can count on public transport and will not wait for it, then there is a chance that we will not use the car, but will go on public transport.

Waste management. It is based on the separation of garbage, reducing its volume.

The green frames. When forming water-green frameworks, one of the key tasks is to create an effective and continuous urban subsystem that performs its ecosystem functions.

Multifunctional urban environment. Since the city's space is limited, it is important to make the environment more functional, so that the new "smart" territories are combined with public spaces and can serve as transit transport corridors.

In the case of sustainable development, the decision-making process itself becomes more open, because the application of many sustainable technologies and methods is possible only if the entire urban system is initially created in partnership and cooperation with residents.

Our cities need to understand that sustainability is not just abstract actions in relation to nature protection, but the quality of the environment, the well-being and health of people, and the quality of future development, including financial investment. Over the past 20 years, climate change has been actively discussed around the world, and almost everyone knows about it. In Russia, this topic has only recently begun to fill the media space. Businessmen who believe that the environment contradicts their interests should see the benefits in this direction and understand that this is the future. Complex changes contribute to the profitability of environmental investments.

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