PREFACE

Scientists in general agree that processes of ecosystem change, including climate change, have reached a stage where it is no longer possible to avoid negative effects for humanity and the world economy. Our era is called the Anthropocene,[1] which means that humans are the predominant instigator of change at a planetary level. Some changes are seen as particularly detrimental and even dangerous for human well-being and further development of our civilization. These include, inter alia:

– increased frequency of extreme weather phenomena influencing not only the size and quality of agricultural production and the annual harvest, but the safety of the population and the sustainability of infrastructure as well;

– significant changes in the quality and availability of water resources defining the potential for food production;

– significant changes in the water cycle and those elements of the environment, whose productivity is determined by access to water;

– increasing pollution of air, water and soil, adversely affecting the quality of life and health of the inhabitants, especially in highly urbanized and industrialized areas and areas subjected to intensive agricultural production,

– increasing pollution and appearing of dead zones in oceans and seas;

– reducing the content of organic matter in the soil, and thus reducing its fertility; posing a threat to human, animal, and plant health by creating conditions conducive to the spread of harmful (micro-) organisms.

As a result, these processes have a major impact on the functioning of natural systems around the world and the whole global ecosystem, consequently affecting social and economic systems.

Under these conditions, the quality of life, health, development and competitiveness of the economies will be largely dependent on the quality of the natural environment and uninterrupted access to natural resources. This requires the in-

[1] "Ambio", December 2007, Vol. 36, No. 8, Royal Swedish Academy of Science, p. 614–621, http://www.ambio.kva.se [download 20.10.2014].

clusion of environmental (natural) criteria into the decision-making strategies for the socio-economic development of countries and regions, and the development of knowledge and new skills better suited to the changing conditions of life and maintaining in global scale.

The inspiration for the authors of this book was to answer the following questions: How can we ensure that we keep the green economy within ecological limits? What instruments and what measures can we use to assess progress in development of green economy? How can we ensure benefits for all humanity?

An attempt to meet the challenges of development is the concept of a green economy, which is espoused not only by environmentalists but also by the European Union (EU), the Organization for Economic Co-operation and Development (OECD), the United Nations Environment Programme, (UNEP), and by various think tanks, universities and sections of the business community itself.[2] The starting point for all deliberations on the green economy is the impending threat of climate change and resource scarcity. Decarbonizing the global economy and extensive investment in resource efficiency and renewables are declared objectives of all protagonists of a green economy, for whom the "business-as-usual" scenario is no longer an option.

In the scientific literature and official documents and programmes of international organizations there is no unity in terms of the name and scope of activities appropriate for this new concept. The United Nations Environment Programme, UNEP, speaks of the "green economy," while the OECD and the World Bank refer sometimes to "sustainable growth" and at other times to "green growth". There is also talk of "greening the economy." The idea of a "Green New Deal" was introduced into the debate during the global economic crisis of 2008 – primarily by UNEP – to stimulate a "greener" economic recovery package.

In its report *Towards a Green Economy* UNEP defines the green economy as one that results in improved human wellbeing and social equity, while significantly reducing environmental risks and ecological scarcities and facilitating sustainable resource management.[3] According to the report all global problems have a common basis – the misallocation of capital. During the past two decades most capital has been directed into property, fossil fuels and financial market products, including derivatives. By comparison, relatively little has been invested in re-

[2] UNEP, (2011), *Towards a green economy. Pathways to sustainable development and poverty eradication*; UN, (2011), *Working towards a balanced and inclusive green economy – environmental management group*; UNEP, UNCTAD, UN-OHRLLS, (2011), *What a green economy matters for least developed countries*; UNEP, ILO, (2011), *Green jobs towards decent work in sustainable, low-carbon world*; UNEP, (2012), *Green economy – Briefing Papers*; UNEP, (2012), *Measuring progress towards green economy*.

[3] UNEP, (2011), *Towards a Green Economy: Pathways to Sustainable Development and Poverty Eradication – A Synthesis for Policy Makers*, www.unep.org/greeneconomy p. 9 [download 10.09.2014].

newable energy, energy efficiency, public transport, sustainable agriculture and conservation of ecosystems, biodiversity and water resources.[4]

According to the report the greening of economies is seen as a new engine of growth. It focuses on key findings, namely that the green economy:

– recognizes the value of, and invests in, natural capital;
– is central to alleviation of poverty;
– creates jobs and enhances social equity;
– substitutes renewable energy and low-carbon technologies for fossil fuels;
– promotes enhanced resource and energy efficiency;
– delivers more sustainable urban living and low-carbon mobility;
– grows faster than a brown economy over time, while maintaining and restoring natural capital.[5]

The transition to a green economy requires changes in the behavior of policy makers and business associated with:

– shifting investment, both public and private, to transform key sectors that are critical to green the global economy. The most important sectors are agriculture, forestry, freshwater, fisheries and energy, which are seen as the most attractive for the creation of new, green jobs, essential in the reduction of persistent poverty;
– reducing or eliminating environmentally and socially harmful subsidies, particularly in the agricultural and transport sectors and for coal and oil, by addressing market failures created by externalities or imperfect information;
– creating market-based incentives, an appropriate regulatory framework, including green public procurement, stimulating pro-ecological investment.[6]

Furthermore, the proper valuation of ecosystem services is important for the development of the green economy. Their undervaluation as an economic factor and mismanagement are key reasons for their degradation and may lead to their progressing loss. It is assumed that the protection of ecosystems and biodiversity would be is easier if it was not for free.

The next important contribution to the discussion about a more green future is the strategy Towards Green Growth, published in May 2011 by the OECD. The greener growth approach has been debated since 2009. The starting point for the OECD's deliberations were concerns about the effects of climate change and the drastic decline in certain resources, unchecked biodiversity loss, overfishing, and the growing scarcity of land and water. "We need green growth because risks to development are rising as growth continues to erode natural capital," states the OECD report. The most promising green growth stimulators are :

– increased productivity – efficient use of energy and resources;

[4] *Ibidem*, p. 9.
[5] *Ibidem*, p. 28–35.
[6] *Ibidem*, p. 10.

– innovation – new ways of creating value and addressing environmental problems, which can help to "decouple growth from natural capital depletion" new markets – stimulating demand for green technologies, goods and services.[7]

Along with development of the concept of the green economy the concept of green jobs began to spread. The development of the green economy requires structural changes, including the creation of green jobs. The development of renewable energies and environmental technologies will create many millions of new jobs – the OECD estimates that up to 20 million new jobs could be created worldwide by 2030 in the field of renewable energy generation and distribution.[8]

A relatively new concept associated with the development of a green economy is the bio-economy. It focuses similarly on technological innovation to enhance efficiency and the use of natural resources for food, energy, pharmaceuticals and the chemicals industry.

Our book is a contribution to the ongoing discussion on the current desired track of the development of society and the economy. The authors propose to look at the green economy from the more practical perspective. The contents of this book cover the following issues in the context of the development and functioning of a green economy: ecosystem services, performance measurement, development of appropriate policy instruments, production and consumption, energy supply and creation of green jobs.

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[7] http://www.greeneconomycoalition.org

[8] OECD, 2011a, p. 15.