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## **«Green Economy»: Emerging National Models, Estimations, Trends in EU and CIS**

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**Abstract:**

*Green economy as a transitional phase to sustainable development has gained impetus after adoption of the 2030 sustainable development goals.*

*The article contains analysis of the existing conceptual foundations of the green growth together with the assessment tools thereof on the one part and the results of the green economy models under gradual formation in the EU and the CIS on the other part.*

*Such approach allowed the authors to set forth the most urgent lines of development of the statistical assessment tools for the green economy achievements with the purpose of its efficient implementation.*

**Keywords:** *Green economy, sustainable development, indicators of green growth, international economic unions, statistical trend analysis.*

**JEL Classification Codes:** *F53, F63, F64, O11, O44, O47, O57.*

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## 1. Introduction

The outcome document of the UN Conference RIO+20 (2012) named «The Future we Want» (The Future we Want, 2012) contains the newly stated priorities for achievement of sustainable development based on the “green” economy principles. Improvement of the well-being of the society should occur with simultaneous reduction of negative impact on natural environment. The increased popularity of the “green” economy concept is emphasized in the report of the UN Environment Program (UNEP, 2011) prepared in 2011. Up to the present moment no explicit definition of “green” economy has been set up, however, the term implies that economic growth and environment protection are mutually reinforcing strategies (D’Amato, 2017; Walz, 2017; Ward, 2016; Surzhikov, 2015; Medvedeva *et al.*, 2016; Kovalenko *et al.*, 2016). UNEP defines a green economy as one that results in *“improved human well-being and social equity, while significantly reducing environmental risks and ecological scarcities”*.

According to the experts’ estimates, in the short run “green” economy is capable of ensuring the GDP growth, increase in income per capita and in employment. To start transition to “green” economy it is needed to invest 2% of the world’s Gross Domestic Product in ten key sectors in 2012-2050: agriculture, housing and communal services, power economy, fishing industry, forestry, manufacturing industry, tourism, transportation, waste disposal and recycling, water resources management. It was emphasized in the report that the gravest danger faced by the world today is that the things will remain unchanged.

At the UN Summit for the adoption of the post-2015 sustainable development agenda which took place in New York City in September 2015 the Sustainable Development Goals for the period up to 2030 were adopted for the sake of the humanity and all the countries. The eight goals out of the 17 Sustainable Development Goals declared by the UN for the nearest fifteen years correlate to ensuring of environmental sustainability. The new goals and targets call for development of such an economy development model that would ensure economic growth and increase in the welfare of the society without deterioration of environment. The international community expresses obvious interest in reliable power supply, fight against climate change and its consequences, sustainable use of ecosystems, and etc.

The final achievement of the Millennium Development Goals (MDG) for 2000–2015 has shown that the countries of the world have managed to make considerable progress in the fight against famine, poverty, diseases, maternal and infant mortality. In the Millennium Development Goals Report 2015 it is noted that the achieved progress was spotty and did not involve everybody. Inequality still prevails in the world, and many people still suffer from poverty, diseases and hardship. The threats related to climate change and deterioration of environment remain (The MDG

Report, 2015). From this point of view this research is aimed at analyzing implementation of green economy and its elements in the European Union and the CIS countries for defining the lines of its development as a transitional phase to sustainable development. To achieve the set goal the work was structured in a certain way. Firstly, the key changes accompanying the change of the sustainable development goals affecting green economy were defined. Secondly, analysis of the practice of the green economy achievements monitoring was carried out. Thirdly, comparison of the elements of green economy on the level of economic unions was made. The last part contains the general lines of development of the economy models under formation singled out by the authors.

## 2. Materials and method

In September 2015 the UN Summit for the adoption of the post-2015 sustainable development agenda took place in New York City with the principal objective of consideration and adoption of the Sustainable Development Goals for the period up to 2030 – the Sustainable Development Goals (SDGs) have superseded the Millennium Development Goals (MDGs) since 2016. What's unique about the Summit's outcome document «Transforming our world: the 2030 Agenda for Sustainable Development» (UN, 2015) is that it harmonically integrates the three components of sustainable development: economic growth, social well-being and environment protection. The new goals and targets as compared to MDGs are broader in terms of both quantity and concept and are related to poverty eradication, health care, securing of gender equality, fight against climate changes, stimulating of economic growth, improvement of access to the modern energy sources, extension of water supply and sanitary services, securing of safety for cities and other localities. As compared to the MDGs in the SDGs up to 2030 special emphasis is given to the environmental component (Table 1).

**Table 1.** Analysis of the dynamics of environmental component development for the purposes of sustainable development.

Goals	Period	Context	Indicators
MDG	2000-2015	Goal 7: Ensure environmental sustainability	10
SDG	2016-2030	Goal 6: Ensure access to water and sanitation for all	10
		Goal 7: Ensure access to affordable, reliable, sustainable and modern energy for all	6
		Goal 11: Make cities inclusive, safe, resilient and sustainable	15
		Goal 12: Ensure sustainable consumption and production patterns	13
		Goal 13: Take urgent action to combat climate change and its impacts	8
		Goal 14: Conserve and sustainably use the oceans, seas and marine resources	10

	Goal 15: Sustainably manage forests, combat desertification, halt and reverse land degradation, halt biodiversity loss	14
	Goal 17: Revitalize the global partnership for sustainable development	1

It is evident that the number of the indicators used to estimate achievement of the said goals has increased, and considerably, – from 10 to 78. Today it is impossible to assert that there is any specific mechanism drawn up to form “green” economy of sustainable development. Rather a wide choice of organizations and agencies involved in estimation of “green economy” incites broad interpretation of both the “green economy” concept covering a number of branches and priorities and the “green economy” indicators with the strategy formulated by the OECD and being part of the OECD contribution to the Rio+20 Conference program.

Development of the “green” growth indicators for economic areas included active participation of OECD, UNEP, various UN agencies, World Bank, Eurostat, European Environment Agency (EEA), and etc. As it was mentioned above, indicators of both MDGs and SDGs include the environmental component, and it shows growth by the number of indicators. For several years (2000, 2001, 2002, 2005) the Environmental Sustainability Index (ESI) has been calculated which then has transformed to the Environmental Performance Index (EPI) for the period of 2006, 2008, 2010, 2012, 2014 and 2016. ESI does so by integrating 76 data sets – tracking natural resource endowments, past and present pollution levels, environmental management efforts, and the capacity of a society to improve its environmental performance – into 21 indicators of environmental sustainability.

These indicators permit comparison across a range of issues that fall into five broad categories: environmental systems, reducing environmental stresses, reducing human vulnerability to environmental stresses, societal and institutional capacity to respond to environmental challenges, global stewardship (SEDAC). The EPI utilizes a proximity-to-target methodology focused on a core set of environmental outcomes linked to policy goals in Ecosystem Vitality and Environmental Health. Trend data for each indicator, where available, are provided for the 2012 and 2014 versions of the EPI, along with trend EPI scores (EPI).

Within the framework of the European Union EaPGREEN project the guide for assessment of the “green” transformation of economies for the project member countries was worked out with the attempt to estimate the indicators of “greening” of the countries’ economies. They were represented grouped in five – the socio-economic context, the environmental and resource productivity of the economy, including carbon productivity; the natural asset base, the environmental quality of life, economic opportunities and policy responses (EaP GREEN, 2016). The Green Growth Knowledge Platform (GGKP), which was established in January 2012 by the Global Green Growth Institute, the Organisation for Economic Co-operation and

Development (OECD), the United Nations Environment Programme and the World Bank, is a global network of international organizations and experts that identifies and addresses major knowledge gaps in green growth theory and practice. The platform offers analysis of the green economy achievements by 6 groups of indicators: socio-economic context, natural asset base, environmental and resource productivity, environmental quality of life, policies and economic opportunities, wealth changes.

The Global Green Economy Index (GGEI), which was launched in 2010, has signaled which countries are making progress towards greener economies, and which ones are not. The comparison of national green performance and perceptions of it revealed through the GGEI framework is more important than ever today. This is because while there is far greater public and political focus on climate change and green growth now than when the GGEI was first published, often the commitments and targets communicated by leaders do not match the reality. The GGEI (version 2016) is defined by 32 underlying indicators and datasets, each contained within one of the four main dimensions of leadership and climate change, efficiency sectors, markets and investment and the environment.

The presented list of assessments is by no means all-inclusive and it will certainly be expanded (Mekhantseva, 2016; Gissin, 2014). Meanwhile one cannot leave unnoticed such peculiarity of the indicators and the green growth estimates as against the sustainable development indicators as their integral nature. However, when turning to the «Inclusive Growth and Development Report 2017» (Samans, 2017) it is easy to detect the relation between both the green economy indicator groups and the presented growth estimation technique, and the form of these indicators.

It is beyond argument that the successful distribution and implementation of the sustainable development concept based on “green” economy depends on each country’s specifics. Many countries implement anti-crisis programs taking into account the “green economy” principles, however, the methodological approaches to representation of the “green economy” indices and indicators in the reporting and predictive documents of the European countries, the North American countries, the Asia-Pacific countries, and the CIS countries, are considerably different. The practice of goal setting and monitoring of the goal achievement in two formats (first – in the form of the open accounts of the UN and other involved agencies, including countries, and second – countrywise statistical indicators) in general lay down formation of the green economy models or elements thereof serving simultaneously as basis for development of the green economy concept as a whole.

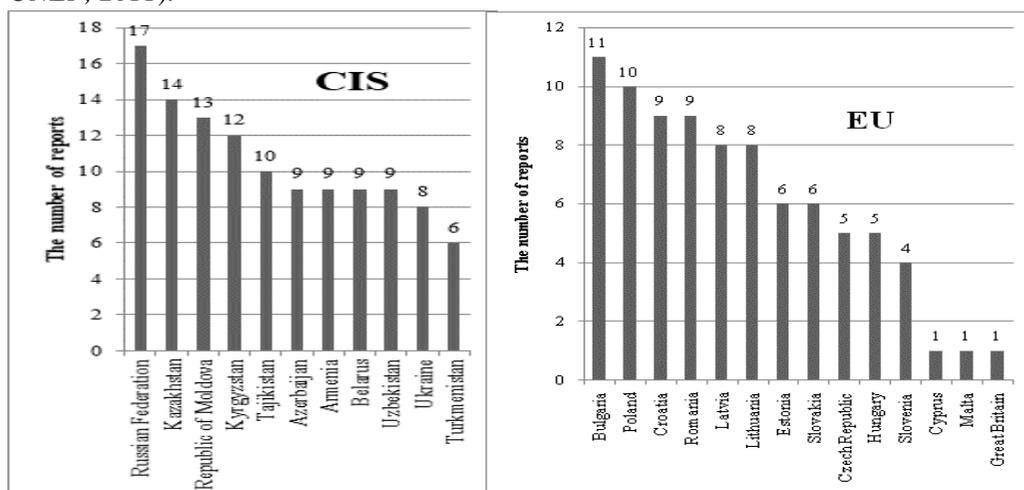
### **3. Results**

As mentioned above, the existing diversity of the ideas of green economy, its

assessments and basis therefor gradually form practices of the countries in the area of green growth. We found it necessary to make comparison of the practical aspects of assessment of the green economy achievements in the two commonwealths - the European Union and the Commonwealth of Independent States.

Analysis of the open reporting on green economy by the commonwealths' countries (Figure 1) shows that the CIS countries pay more attention to the green growth assessment than the EU. More than half of the EU countries do not submit open reports on green economy, while these practices are in effect in all the CIS countries. In general, the CIS countries have prepared more reports on green economy than the UE countries. Certainly, the suggested estimation makes no pretense to be absolute, but at least it attests to the advantages of the analysis of economic unions not territorial ones. Thus, it is the framework agreements between such unions that are particularly capable of standardization of the reporting elements taking into account best practices of any given country and simultaneously of taking due account of the specific features of both countries and the terms of union agreements to ensure movement not only to the comparable growth estimates but to their fulfillment in total.

**Figure 1.** Analysis of the open reporting on green economy by the EU and the CIS from 1995 to 2016. (calculated by the authors based on UN Development, 2017; UNEP, 2011).



Analysis of the dynamics of inclusion of statistical reporting in the GGEI (Table 2) calculation has shown a certain skewness in terms of inclusion of the countries of the commonwealth under study as against the general data growth. Thus, for example, in 2016 the index was calculated with involvement of the Russian Federation and Azerbaijan for the first time, while the EU countries were represented in total. However, it is worth mentioning that the vastest development of green economy in the CIS trough governmental programs and open reporting on

achievements was witnessed in Kazakhstan, Belarus and the Russian Federation.

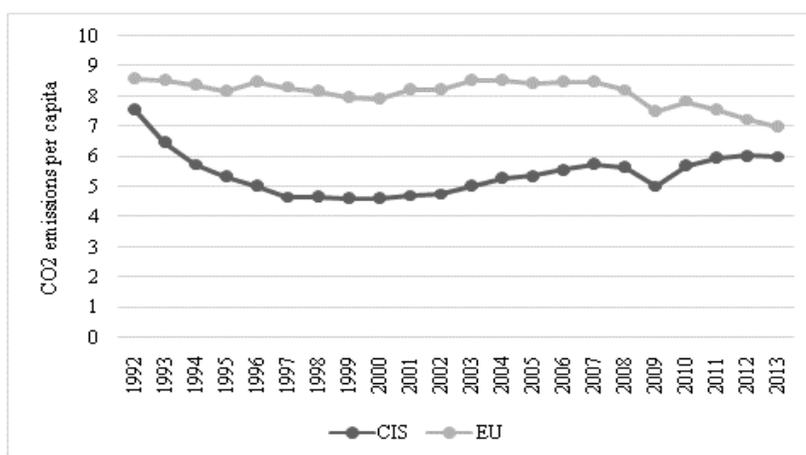
**Table 2.** Analysis of the GGEI statistical basis dynamics (calculated by the authors based on GGEI, 2016).

	2011	2012	2014	2016
Number of countries	27	27	60	80
Number of cities			70	40
Number of EU countries	9	9	16	28
Number of CIS countries				2

Analysis of the TOP-10 countries in real time from 2011 to 2016 shows the growing leadership of the EU countries. In 2016 the Russian Federation took the 51st place, and Azerbaijan took the 76th place in the GGEI rating.

Proceeding to the statistical indicators we assume that the main interest is obviously aroused by the practices of collection of the open comparable data represented in the common database and subject to comparison without further use of the primary source material, for example, at the web-sites of the statistical departments of any given country. An example of such best practices in the area of the green economy achievements assessment may, in our opinion, be the Green Growth Knowledge Platform. It is this database that had provided us with the data to make comparison by such two green growth indicators as the CO<sub>2</sub> emissions per capita (metric tons) and the Carbon productivity (in US\$ per ton of CO<sub>2</sub>e), having calculated the average values for each commonwealth.

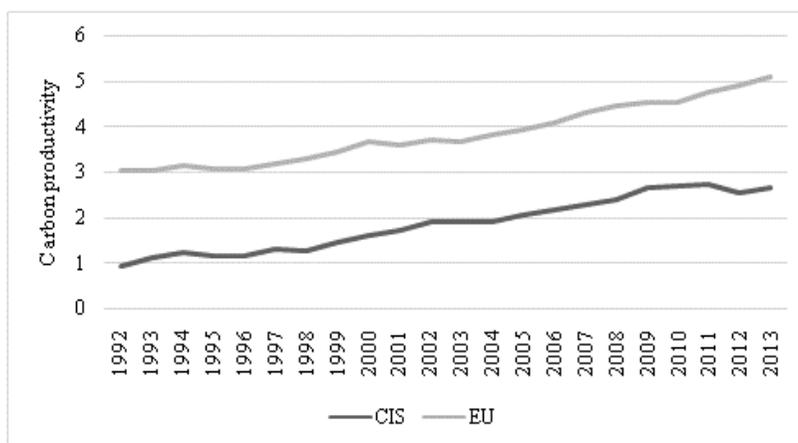
**Figure 2.** Comparative analysis of the average value of CO<sub>2</sub> emissions per capita in the EU and the CIS for the period from 1992 to 2013.



Both indicators such as CO<sub>2</sub> emissions per capita and Carbon productivity are included in almost all the current statistical assessments of the green economy

achievements. The analysis period is from 1992 to 2013 because of availability of open data in the Russian Federation and some CUS countries, meanwhile the EU surveys date back to 1990. The data for the stated period are complete in terms of coverage of all the counties. Graphic representation of CO<sub>2</sub> emissions per capita shows a specific lapse in the 2008 recession year both in the CIS and in the EU countries. The interesting period is the one following the recession, when average CO<sub>2</sub> emission values per capita in both commonwealths started to approach each other: they grew in the CIS, thus rather reflecting the general economic recovery, and dropped in the EU evidencing implementation of the green economy and sustainable development initiatives. The three CIS countries leading in CO<sub>2</sub> emissions per capita in terms of average values for the period under analysis are Kazakhstan (11.617), Russian Federation (11.47) and Turkmenistan (9.52). The similar three EU leaders are Luxembourg (21.6), Estonia (12.67) and Czech Republic (11.55).

**Figure 3.** Comparative analysis of the average value of carbon productivity in the EU and the CIS for the period from 1992 to 2013.



Analysis of the average value of carbon productivity in the EU and the CIS (Figure 3) shows the trends which rather similar in nature for the environmental situation development in both commonwealths, however, the disparity across the whole survey has been fluctuating around 2 with the recovery trend since 2012. Russia remains a very important trade partner of the EU, especially in the area of energy supply: the biggest section of the total import of the 27 EU countries from Russia constitutes oil and gas.

Moreover, some EU countries are overly dependent on the Russian coal. Crude energy production in the CIS grows progressively. Only in 2008-2009 a major setback was witnessed which, however, did not affect crude oil. In the CIS unlike the EU the manufacturing industry remains the principal ultimate power consumer.

#### 4. Conclusions

The new 17 goals and 169 targets of sustainable development adopted in 2016 not only prove viability of the points of this concept but also count in favour of the selected tools for analysis and representation, both implicit and explicit, of the achievements of different countries in this area. From this perspective green economy as a transitional phase to sustainable development, and therefore part of the very concept of sustainable development, needs further theoretical and methodological development. The above arguments and research results obtained make it possible to identify the most urgent aspects of this development:

*1. Methodological aspect:* The goals and targets mapped out in the concept of sustainable development allow us to standardize the goals and targets of green economy which, on the one hand, will provide participants in the economic process with current development benchmarks, and on the other hand, will not restrict opportunities for development of its theoretical foundation and legal basis. The essential component of the methodology is harmonization of interests of different countries in view of apparent development peculiarities of each of them on the basis of international agreements. One of these agreements may be the standard of representation of achieved goals and targets of green economy similar to national accounting at national level or integrated reporting standards on the enterprise and organization level (Mekhantseva, 2017).

*2. Data disclosure aspect:* The concept of sustainable development with its goals and targets being developed for countries – on the macro level – have rather quickly got spread at enterprises – on the micro level – which resulted in widespread application of the public accountability standard in the area of sustainable development. Moreover, during generation of the open data on the achievements in sustainable development it is possible to carry out an analysis on the macro and micro level, and for aggregated areas with their number fluctuating and the country grouping within them not always matching. However, economic unions of the countries representing a more relevant analysis section stay on the sidelines. It is the possibility of comparison by economic unions on the same platform of comparable data that may give a new impetus to the “green economy” development. The format and exhaustibility of representation of the “green economy” achievements on the open information platforms of the economic unions may vary, which will obviously ensure divergent nature of the said concept development in general. For example, the best practices of data disclosure on sustainable development and green economy for the CIS countries may be reports on human development and sustainable development since 1995 for Russia, Kazakhstan, Republic of Moldova, and Kyrgyzstan.

*3. Statistical aspect:* Adoption of the new sustainable development goals calls for transition to the new set of statistical factors. Meanwhile the Global Compact have

not yet issued reports on the possibility of fulfillment of the new goals and have not yet launched the project for aggregation of initial statistical countrywise data. And here the obvious development line is continuing maintenance of the open statistical database for the green economy indicators with the option of their grouping by branches, countries, economic unions, and regions. Graphic representation of the indicators on the map of the world will ensure further promotion of the green economy as it is, while ratings will help find the best practice in fulfillment of its goals. It is the green economy with its indicators that is now capable of ensuring smooth, comparable, and statistically complete transition from monitoring of the sustainable development goals for the period up to 2015 and for the following period up to 2030. The list of growth areas herewith mapped out for green economy is not by all means complete. In fact, these areas have been emphasized by us as the most up-to-date and feasible and which therefore call for special attention from both government officials and business community representatives.

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