=== **MACROECONOMIC PROBLEMS** ===

Sustainable Development Goals for the Future of Russia

S. N. Bobylev* and S. V. Solovyeva

Moscow State University, Moscow, 119991 Russia
**e-mail: snbobylev@yandex.ru*
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Abstract—This paper reviews sustainable development goals adopted by the United Nations in 2015 and approved by all countries. The inclusion of the sustainability concept based on a balanced set of economic, social, and environmental factors in the strategic documents underpinning the long-term development of Russia is justified as part of a search for a new development model for the Russian economy.

Long-term goals of global development in the 21st century are presented in the conceptual documents of the United Nations (UN). Sustainable Development Goals for 2016–2030 were approved by all countries at the UN conference in September 2015 [1]. In December 2015, the UN adopted a program to combat climate change and its impacts beyond 2020, setting out greenhouse gas emissions and temperature change targets [2]. A strategy for the future of mankind based on the concept of sustainable development and the transition to a green economy was approved in June 2012 [3]. Russia has officially supported these development priorities and considered the related documents to be important in the long term.

An analysis of the UN Sustainable Development Goals and the possibility of adapting them to the Russian context as part of long-term policy-making has exposed certain differences in the interpretation of the sustainable development concept worldwide and in Russia. In Russia, this term is used in the present strategies and programs primarily in the context of sustainable economic growth, whereas globally sustainable development is understood as a more fundamental process associated with balanced economic, social, and environmental development. The latter interpretation was recorded in the documents issued by various international organizations and the development strategies of all developed countries following the adoption of Agenda 21 at the UN conference in 1992 [4], which recognized the limits of sustainable development at the expense of economic growth.

Sustainable Development Goals. The Sustainable Development Goals (SDGs) are the successor to the UN Millennium Development Goals (MDGs), which were effective in 2000–2015. The MDGs were officially recognized globally and nationally by many countries[1]. From a methodological and practical viewpoint, the MDG system oriented towards the solution of social, environmental, and economic problems was pragmatic and easy to use. All UN member states committed to achieving these goals and the related targets by 2015. Generally, important progress has been made by mankind towards MDGs [6].

Similar to the MDG approach, the SDG system relies methodologically on a set of goals, tasks, and indicators and has a three-tier configuration. Seventeen goals of this system encompass three pillars of sustainable development, i.e., social, economic, and environmental dimensions, as well as institutional aspects (Table 1). The SDGs take into account various system and structural barriers to sustainable development (inequality, poverty, ecological problems, structural institutional gaps, etc.). They also consider ways to overcome these barriers and ensure further progress. Unlike the MDGs, which were primarily focused on developing countries, the SDGs are designed for all countries in the world with certain variations [1]. Therefore, these goals provide an important step forward in securing a sustainable future for the globalized world.

Most of the goals are synergetic and complementary. Hence, the combined solution of several goals contributes to the achievement of other goals. For example, poverty alleviation (SDG 1) cannot be resolved without solving problems of food security (SDG 2), implementing effective macroeconomic policy for inclusive employment and decent work for all (SDG 8), reducing inequality (SDG 10), and combatting climate change and its impacts (SDG 13). In turn, the achievement of the afore-mentioned goals

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[1] In the UN Development Programme (UNDP), the authors contributed to adjusting the SDGs for Russia. One of the authors (S.N. Bobylev) led several research teams, which authored a series of dedicated UNDP reports on human development. The reports included key findings on SDGs for Russia (2005, 2007, 2010) [5].

Table 1. Share of social, environmental, and economic factors in the SDGs, %*

Sustainable development goals	Factor			
	Social	Environmental	Economic	Primary
1. End poverty in all its forms everywhere	60	13	27	Social
2. End hunger, achieve food security and improved nutrition and promote sustainable agriculture	60	27	13	Social
3. Ensure healthy lives and promote wellbeing for all at all ages	96	4	0	Social
4. Ensure inclusive and quality education for all and promote life-long learning	81	5	14	Social
5. Achieve gender equality and empower all women and girls	100	0	0	Social
6. Ensure access to water and sanitation for all	44	44	11	Social Environmental
7. Ensure access to affordable, reliable, sustainable, and modern energy for all	22	44	33	Environmental
8. Promote inclusive and sustainable economic growth, employment, and decent work for all	37	10	53	Environmental
9. Build resilient infrastructure, promote inclusive and sustainable industrialization, and foster innovation	13	20	67	Economic
10. Reduce income inequality within and among countries	67	0	33	Social
11. Make cities and human settlements inclusive, safe, resilient, and sustainable	62	33	5	Social
12. Ensure sustainable consumption and production patterns	21	58	21	Environmental
13. Take urgent action to combat climate change and its impacts by regulating emissions and promoting developments in renewable energy	56	44	0	Social Environmental
14. Conserve and sustainably use the oceans, seas and marine resources for sustainable development	5	67	29	Environmental
15. Protect, restore, and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, halt and reverse land degradation, and halt biodiversity loss	22	67	11	Environmental
16. Promote peaceful and inclusive societies for sustainable development; provide access to justice for all; and build effective, accountable, and inclusive institutions at all levels	93	0	7	Social
17. Strengthen the means of implementing and revitalizing global partnership for sustainable development	93	0	7	Social

* Compiled by authors based on [7].

contributes to ensuring health lives and wellbeing for all (SDG 3). At the same time, the goals may also be subject to internal conflicts. For example, the expansion of agricultural land to end hunger (SDG 2) can negatively affect ecosystems and biodiversity (SDG 15) and also lead to the pollution of water resources (SDG 6), thus challenging food security.

Ideally, SDGs must be balanced economically, socially, and environmentally. The German Council for Sustainable Development conducted the analysis of the SDGs and calculated the average share of all three factors for each goal in order to evaluate how balanced the SDGs are [7]. A goal is considered balanced if the share of each factor equals one-third (33.3%);

however, experts believe that each goal has a primary focus.

The authors analyzed the compliance of the SDGs with the development goals of Russia. The country's social and economic strategy until 2020 (hereinafter, Strategy-2020) [8] generally encompasses all three dimensions of sustainable development. However, several SDGs that are primarily focused on the environment are not reflected in Strategy-2020. For example, SDGs 12−15 are not reflected in the areas of activity outlined in Strategy-2020 (Table 2). Therefore, it is important to somehow include the maximum possible number of SDGs and the related targets and indicators in long-term documents designed to steer-

Table 2. Strategy-2020 of Russia and the SDGs*

Strategy-2020 Priorities, areas, and tasks	Sustainable Development Goals (SDG)																
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
New model of economic growth								X									
New social policy. Human capital development	X	X		X													
Vocational education				X													
New primary and secondary education																	
Reduction in inequality and poverty alleviation	X				X					X							
Health policy			X														
State housing policy			X						X	X	X						
Territorial cohesion									X		X	X					
Development of heat and electric power							X										
Information cohesion										X						X	
Development of social institutions																X	
International status of Russia																	X

* Compiled by authors based on [8].

ing Russia's development. In particular, in the context of the national strategic development design in Strategy 2030, it is appropriate to align the SDGs, priorities, and the target areas of the country's long-term development and harmonize the respective indicators for SDG and the Strategy of Russia.

The final stage of SDG development consists of designing indicators applied to measuring and verifying the initial goals and tasks. These indicators can be grouped into three (economic, environmental, and social) sets that reflect the progress of each country and the whole world towards the SDGs.

Currently, an interagency and expert group of the United Nations Statistics Division (IAEG-SDGs) has been tasked to develop the SDG indicators and support their implementation. Following the IAEG-SDG consultations in November 4–7, 2015 [9], 159 indicators were approved by the expert community; 65 indicators are still subject to conceptual and methodological issues.

The selection of indicators was highly important for achieving the preceding MDGs. However, this task was not fully implemented because of the significant time lag associated with data collection and processing. The accumulation of data for three years and longer failed to support the real time management of the MDGs. Furthermore, the quality of data provided by national statistical systems and household polls was quite low. The collaboration between the involved international organizations and national statistical services was fair and insufficient to ensure the implementation of the MDGs. Therefore, the achievement of the ambitious goals formulated for the SDGs requires proper investment in national statistical systems and household polls in order to satisfy the quantitative and qualitative requirements to datasets.

Basic and aggregate indicators of sustainability. At present, two major approaches to the design of sustainable development indicators are pursued worldwide: design of a system of indicators and aggregation of an integral indicator (index). This work has intensified given the limited use of a GDP indicator to assess the sustainability of long-term socioeconomic processes [10–12]. Developments in the 2000s in Russia illustrate this situation. The rapid growth of the country's GDP, stimulated by growing prices for energy resources and the depletion of natural capital, was followed by its sharp decline. Therefore, it appears more appropriate to use a set of indicators that better capture social and environmental effects in the medium term. At present, the *UN Human Development Index and the Adjusted Net Savings of the World Bank represent more sustainable indicators* applied worldwide.

Given a significant number of indicators required for monitoring SDGs, experts often distinguish between basic and next-level indicators that reflect specific features of individual countries and groups of countries and offer alternatives for selection and use. Basic indicators must be valid for both developed and developing countries that are reliable and available for collection and processing on a yearly basis. They must also allow disaggregation by territory, income, age, gender, and other variables in order to ensure dynamic monitoring.

One type of SDG basic indicators was proposed in 2016 for calculating the Preliminary Sustainable Development Goal Index [13]. A total of 38 indicators was identified as the most relevant and statistically

Table 3. Basic indicators for the social and economic SDGs

SDG	Indicator	Area		
		green	yellow	red
2	Cereal yields (t/ha)	>2.5	1.5 <= value <= 2.5	<1.5
	Obesity, proportion of adult population	<10	10 <= value <=25	>25
3	Healthy life expectancy, years	>65	60 <= value <= 65	<60
	Number of health workers per 1000 population	>3	1 <= value <= 3	<1
	Subjective wellbeing (average points)	>6	5 <= value <= 6	<5
4	Expected duration of education, years	>15	12 <= value <= 15	<12
	Proportion of higher education graduates among 25−64 old population	>25	15 <= value <= 25	<15
	International student evaluation program, average points	>493	400 <= value <= 493	<400
7	Renewables and nuclear energy, proportion of total energy consumption	>30	15 <= value <= 30	<15
8	Unemployment, proportion of total workforce	<5	5 <= value <= 10	>10
	GDP growth fluctuation	>2	1 <= value <= 2	<1
9	Proportion of population covered by a mobile network per 100 population	>75	50 <= value <= 75	<50
	Proportion of population with access to the Internet	>80	50 <= value <= 80	<50
	Research and development expenditure as a proportion of GDP	>1.5	0.5 <= value <= 1.5	<0.5
10	Index Gini	<35	35 <= value <= 45	>45

Source: [13].

available in most countries of the world and used to calculate the integral Index for 147 countries of 193 UN member states. *Basic SDG indicators* included the number of poor people, level of mortality, life expectancy at birth, cereal yields, welfare, literacy, etc. A total of 147 countries were ranked by the SDG Index. The top five countries include Sweden, Denmark, Norway, Finland, and Iceland. Congo, Chad, Niger, Haiti, and Sierra Leone were assigned the five lowest ranks. Russia was part of the top third of countries worldwide by this SDG indicator.

Another tool for analyzing sustainable development is proposed by "The State of the World Dashboard," which was designed by a UN expert group [14]. This tool aims to combine accumulated and new data and to ensure open access to the information and visualization of SDG development, as well as to engage the scientific community, nonprofit organizations, and all UN divisions in the related work. The dashboard allows one to integrate various sources of information, including qualitative and quantitative data, as well as people's perceptions of certain phenomena and poll results.

The quantitative thresholds for indicator values are calculated based on expert assessments. Green, red, and yellow are used to mark the zones with positive, negative, and intermediate values, respectively. Thus, the three-color dashboard provides an illustrative description and highlights the most important areas of activity. For example, the achievement of Goal 7, i.e., "Ensure access to affordable, reliable, sustainable, and modern energy for all," is estimated to be positive if the share of renewables and nuclear energy accounts for more than 30% of the total energy consumption. Similarly, it is considered to be negative if this share is less than 15% of the total energy consumption.

In the context of a crisis, the economic and socioeconomic goals and indicators have special importance for Russia (SDGs 2, 3, 4, 7, 8, 9, 10). The thresholds for positive, negative, and intermediate values highlighted in green, red, and yellow, respectively, are calculated for each indicator (Table 3).

Table 4. SDG country dashboard*

Country	SDG2	SDG3	SDG4	SDG7	SDG8	SDG9	SDG10
Canada	***	***	***	**	**	***	***
Germany	***	***	***	*	**	***	***
Norway	***	***	***	***	***	***	***
United States	***	***	***	*	**	***	**
Russia	**	**	**	*	**	**	**

  * Red area.
 ** Yellow area.
*** Green area.

Based on a range of indicator values that correspond to the goals provided in Table 4, we designed a social and economic SDGs dashboard for several countries. Using the World Bank data [15], we created a comparative socioeconomic description of seven SDGs for five countries, including Russia (Table 4) [15]. Russia is placed in the intermediate (yellow) zone based on six SDGs (2, 3, 4, 8, 9, 10) and in the negative (red) zone based on the indicator corresponding to Goal 7, which is associated with the share of renewables and nuclear energy in total energy consumption. Germany and the United States are part also of the red zone based on Goal 7. The most sustainable development can be observed in Norway, which is included in the green zone according to the country's values of all seven socioeconomic SDGs.

Following the adoption of the SDG development agenda by the international community, it is necessary to upscale information and ensure availability of data for planning and monitoring purposes. Use of new technology leads to a fundamentally new volume of information, degree of data detail, and speed of data collection and transmission, which are characteristic of data revolution.

Goals and indicators of sustainable development in Russia. To abandon a commodity export-based model and switch to a new development paradigm of the Russian economy, it is necessary to include the concept of sustainability based on a balanced set of economic, social and environmental factors in the strategic documents that underpin the country's long-term development. At least two strategic documents must be put in place in any form or modification, i.e., Strategy for Sustainable Development of Russia and the country's Sustainable Development Goals through 2030. Other countries in the world must also develop these documents, the former of which is in line with the UN resolutions as of 2002, while the latter is based on the UN resolutions as of 2015.

We believe it is relevant to start with the definition of the sustainable development goals for Russia. Any strategy, concept, or program involves a set of clearly identified goals and objectives reflected in quantitative targets, which enables monitoring and management of the progress towards these goals in the medium and long run. In this context, the experience of adapting UN SDGs can be used for Russia.

Based on the Russian official statistics, basic sustainable development indicators that reflect the economic, social, and environmental aspects of sustainability can be identified for Russia (Table 5). Only 14 such indicators have been selected. However, this list can be significantly expanded and adapted to the medium and long-term goals and objectives, as well as adjusted to the forward-looking nature of the document. In this case, the choice of methodology is important. Indicators are tied to the goals. A specific indicator can correspond to several goals depending on the focus of the goals (second column of Table 5). For example, energy efficiency can be an important indicator to ensure access to sustainable energy (SDG 7), promote economic growth (SDG 8), support sustainable consumption and production patterns (SDG 12), and combat climate change (SDG 13).

Table 5 shows the Integrated (aggregate) Sustainability Index (ISU), which was designed by the authors in 2011 [16]. The development of the ISU and the design approach are similar to those applied for highly aggregated indices that are currently used worldwide to reflect the main aspects of sustainability. The proposed index integrates basic economic, social, and environmental indicators. The ISU summarizes the indicator values, so as the contribution of each indicator is taken into account. The use of this index makes it possible to compare the economic growth and social and environmental factors, as well as to evaluate the outcomes of socioeconomic and environmental policies.

The ISU dynamics differs from the evolution of GDP over the last 15 years. The direct inclusion of social and environmental factors in the ISU assessment allows the GDP fluctuations to be smoothed. Nevertheless, given the recent growing turbulence of

Table 5. Sustainable development indicators for the Russian Federation in 2000−2014

Indicator	SDG	2000	2005	2010	2011	2012	2014
1. Proportion of investments in fixed assets compared to previous year	7, 8, 9, 12	117.4	110.2	106.3	110.8	106.6	97.3
2. Depreciation of fixed assets, %	7, 8, 9, 12	42.4	43.6	47.1	47.9	47.7	49.4
3. Energy efficiency, USD 2005 PPP/kg in oil equivalent	7, 8, 12, 13	2	2.6	2.9	2.9	2.9	n.d.
4. Life expectancy, years	1, 2, 3, 6, 12	65.34	65.37	68.94	69.83	70.24	70.93
5. Proportion of unemployed compared to previous year	1, 8, 10	81.6	92.5	88.2	88.8	83.9	94.0
6. Proportion of inhabitants with an income below the subsistence level compared to previous years	1, 8, 10	84.9	88.5	96.2	101.1	87.2	103.9
7. Living area in square meter per person, apt. m per person.	11	19.2	20.8	22.6	23	23.4	23.7
8. Air pollution by stationary and mobile sources, mln tons	3, 7, 9, 11, 13	32.3	35.8	32.4	32.6	32.5	31.3
9. Release of contaminated wastewater into the water basin, bn. cu. m.	3, 6, 11, 12	20.3	17.7	16.5	16	15.7	14.8
10. Greenhouse gas emissions, mln tons of CO2, excluding land use and land use and forestry change	7, 8, 9, 11, 12, 13	2047	2129	2217.3	2320.8	2295	n.d.
11. Accumulation of production and consumption waste, mln tons	3, 11, 12	n.d.	3036	3735	4303	5008	5168
12. Expenditure on research and development as a proportion of GDP	7, 8, 9, 12	1.05	1.07	1.13	1.09	1.12	1.19
13. Number of research and development staff per 1000 people	7, 8, 9, 12	887.7	813.2	736.5	735.3	726.3	732.3
14. Proportion of GDP compared to previous year	8, 12	110	106.4	104.5	104.3	103.4	100.6
Proportion of Integral Index of Sustainability compared to previous year		105.4	101.5	99.7	100.4	102.2	100.8

Source: [15, 17, 18].

the crisis processes, the dynamics of the integral index is characterized by low growth and volatility.

* * *

Today, the long-term objectives of human development have been defined for the 21st century. The Sustainable Development Goals proposed by the United Nations in 2015 to set objectives and targets for 2016–2030 and approved by all countries hold a special status among such global objectives.

To abandon a commodity export-based model and switch to a new development paradigm of the Russian economy, it is necessary to include the concept of sustainability based on a balanced set of economic, social and environmental components in the strategic documents underpinning the country's long-term development. The existing strategic documents in Russia lack

such a balance, which casts doubt on the effectiveness of their implementation. Therefore, the long-term development documents designed in Russia must include the maximum possible number of the SDGs and the related targets and indicators. In particular, in the context of the national strategic development design in Strategy 2030, it is appropriate to align the SDGs, priorities, and the target areas of the country's long-term development and harmonize the respective indicators for the SDGs and Strategy of Russia.

From the standpoint of the balanced development of the country and the new model of growth, it is appropriate to develop two strategic documents in some form or modification, i.e., Strategy for Sustainable Development of Russia and the Sustainable Development Goals for Russia up to 2030.

Sustainable development can be measured based on the proposed Integral Sustainability Index, which

aggregates basic economic, social, and environmental indicators into a single quantitative index. These indicators are linked to the SDGs. Several SDGs may correspond to a specific index depending on their focus.

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