

## Special characteristics of sustainable development models

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### Abstract

**Relevance.** *Insufficient elaboration of methodological foundations of sustainable development concept predetermines ambiguous conceptual-categorical framework and, consequently, imperfect methodological support for the possibilities of its realization.*

**Research aims** *to develop methodological provisions for sustainable development concept as regards the determination of relationships between the types of sustainability and approaches to their realization.*

**Methodology.** *The analysis of the ways and distinctive features of sustainable development concept formation. The development of the author's variant of systematizing the approaches to various types of sustainable development realization.*

**Results.** *The article considers certain moments of sustainable development concept formation and the special characteristics of approaches to its realization in different countries, the results of the sustainable development problem discussion at international conferences and summits, the evaluation of the degree of fulfilling the goals concerning switching to a new development model. Recommendations concerning sustainability types selection are systematized, the criterion of classification is substantiated – natural capital depletion and possibility of its substitution by physical (artificial) capital. Sustainability classification with a greater detailed elaboration is considered according to R. K. Turner. The article generalizes and analyses information characterizing methodological approaches to the realization of the main provisions of sustainability development concept: anthropocentrism, eco and biocentrism, their interrelation with scenario approaches – scientific and conservationist according to B. M. Mirkin and L. G. Naumova. The features of the approaches are revealed which are complementary to the common ones: noospheric and scenario-centrist. Author's version is proposed for the given notions integration, relation estimation between man- nature interaction character and scenarios of human development towards the creation of sustainable development society and their attitude towards the realization of different types of sustainable development.*

**Results.** *The obtained results, improving the methodology of sustainable development, ensure the elaboration of more solid methodological approaches to the realization of a new development model.*

**Key words:** *sustainable development; international cooperation; sustainability types; methodological approaches; realization.*

**Introduction.** The recognition of the need for transition to a new development way dates back to the 1970th. At the conference in Stockholm, the problems of social-economic development coordination with environmental protection were raised for the first time, and the guidelines of the ecocodevelopment concept were formulated which tolerates economic growth only within the limits of environmental restrictions. In the 1980th the concept smoothly transformed into the sustainable development concept, which is “the development that meet the needs of the present without compromising the ability of future generations to meet their own needs” [1, 2]. It is generally considered that the groundwork for sustainable development ideas formation was laid by the Russian scientist V. I. Vernadsky back in the beginning of the 20th century in his noosphere concept (or the sphere of mind), which provides for the harmonisation of

interaction between the society and the nature. This explains the selection of the first stage of sustainable development concept in the historical aspect interpretation of this concept in work [3].

It should be noted that certain provisions, which were reflected in sustainable development concept, as well as endeavors to form the models of social-economic development with the account of environmental restrictions were also reflected in the earlier period in a number of works by native and foreign scientists. In this way, D. L. Armand, defining the contents of "ecoacceptable use of natural resources" in his book "For us and For Our Children" [4], notes eternal value of natural wealth, popularizes the idea of fair intergenerational distribution of nature's gifts, formulates the idea of paid use of natural resources, and proves the need for environmental costs. Work [5] proves the need for transition to a stationary development model, where stable population, constant stock of goods or capital and their correlation ensure good living conditions for the population.

An important condition, substantiated by G. Daly [6], is the introduction of restrictions on economic growth associated with resources scarcity and depletion as well as with the limits of tolerable level of contamination. In future, working out provisions of his idea and analysing the concept of social-economic development, the author of the work notes that none of them speaks about restrictions on the dimensions of economy. To Iu. K. Efimov's progress can be ascribed the substantiation of ecological-economic unity of the problem of environmental protection and use, and the account of the ecological component in sustainable development concept, whereas V. A. Anuchin's contribution is the proof of social, but not only industrial, use of natural resources. It follows from above that sustainable development concept was not entirely new to the native scientists, because its provisions were close to the statements of the concept of nature resources rational use.

The term "sustainable development" appeared for the first time in 1980 in a document *World Conservation Strategy* published by the International Union for Conservation of Nature and Natural Resources. The term itself was then defined as "the integration of conservation (environmental protection) and development to ensure that modifications to the planet do indeed secure the survival and wellbeing of all people" [7, p. 6], and development combined with conservation was considered as the very type of biosphere management which may yield the greatest sustainable benefit to present generations while maintaining biosphere's potential to meet the needs and aspirations of future generations.

Among the major **specific objectives of the strategy** are the following:

- to maintain essential ecological processes and life-support systems, on which human survival and development depend;
- to preserve genetic diversity;
- to ensure the sustainable utilization of species and ecosystems.

**Methodology** is based on the analysis and generalization of methodological approaches to sustainable development concept basic provisions realization and systematization of approaches to the realization of difference types of sustainable development.

In 1987 main provisions of sustainable development were raised in the *UN Report of the World Commission on Environment and Development: Our Common Future*; meanwhile, if earlier at Stockholm Conference the globality of environmental problem was emphasized together with the need to interconnect social-economic development and environmental protection, then the Report was aimed at simultaneous examination of three problems – ecological, economic, and social. Sustainable development provided for the economic growth with the account of pressing social problems resolution and friendly environment conservation to meet the needs of the future generations [8, 9].

Reporting the characteristics of sustainable development, scientists point out that in Rio the concept acquired new political and social-economic, but not only ecological, concern. New development path was supported by the representatives from 178 countries at the conference in Rio de Janeiro in 1992.

The conference resulted in accepting five important international conventions, Agenda 21 being definitely the most important. It was considered as a course of action for sustainable development national strategies development. It's natural that the priorities were not the same for different countries as well as the mechanisms of strategies realization. In this way, Canada was the first to launch the plan of action to develop national strategies of sustainable development [10]. Ecological problems have long become public priority in this country, that is why Canada successfully realizes the program determined by *Agenda 21*. In 1993 a very important document was issued there, aimed at consensus-building at environmental protection problems resolution; the document reflects the guiding principles and expands opportunities for public participation in decision-making concerning certain tasks of ensuring sustainable development in various sectors of the country's economy and regions through the organization of the Round Tables. Solution to institutional problems of transition to a new development model, based on consensus-building and wide public involvement, accepted in Canada were approved by the whole world community, which testifies to its leading role in environmental governance.

In the USA, organization of sustainable development regulation at a regional level deserves special mention. Implementing the worked out strategy of sustainable development, the government has high hopes for "a team work of educated and trained people driven by the sense of personal responsibility" [11, p. 54]. In the author's opinion, the means of human capital assets mobilization, used to provide sustainable development, can be considered as the source of constructive ideas for the selection of the means of transition to a new development model.

In Russia, transition to sustainable development provides for a stage-by-stage approach and goal-orientation at every stage (*The Concept of Russian Federation Transition to Sustainable Development, approved by the Decree of the President of 1 April 1996*). The first stage provides for the solution of the first-priority problems associated with overcoming crises in the social-economic sphere and creating proper regulatory and legal framework for industrial ecologization. The second stage provides for the realization of a number of sustainable development elements within the limits of social-economic development process ecologization in Russia, biosphere conservation and restoration with the restriction of the nature resource intensity of industry and orientation toward sensible requirements of the future generations. At the third stage, the resolution of the problem is forecasted concerning the harmonisation of the development of the society, biosphere, and economy mainly by means of improving workers' qualification and moral values.

**Results.** It would seem that the only thing left was to realize the strategies and the outlined plans of action. However, the conference of 1997 in New York (*Rio + 5*) stated the default of obligations and the absence of positive results in the conflict resolution between the development of civilization and the nature. The relevance of problems connected with environmental protection, economic inequality, and a range of social problems, continued to increase. At the Millennium Summit, held in New-York in 2000, in the Millennium Declaration the Millennium Development Goals were formulated for the period up to 2015, the basic part concerning social problems: poverty eradication and mortality reduction, fight against HIV/AIDS, etc [12]. Only one objective was ecological.

The results of transition to sustainable development were summed up in 2002 in Johannesburg (RSA) at the World Summit on Sustainable Development and turned out

**Approaches to the realization of various types of sustainable development [2, 20, 21]  
Подходы к реализации различных типов устойчивого развития [2, 20, 21]**

Scenarios	Man-nature relationship	Indicator				Sustainability type	Indicator	
		Population limit (people)	Change in the value of global energy demand	Biodiversity conservation	The share of Protected Areas on the planet		Economic growth	Natural capital interchangeability
Scientific	Anthropocentrism	30–50 bln	Increase by 10 and more times	Conservation of 50–70 %	Less than 10 %	Very weak sustainability	Infinite economic growth	Complete interchangeability
Centrist	Centrism	8–11 bln	Increase by 2–3 times	Conservation of the major part	33 %	Weak sustainability	Permissible economic growth with population carrying capacity restriction	Partial interchangeability
Conservationist	Ecocentrism	0,5–1,5 bln	Decrease by 6–10 times	Absolute conservation	70 %	Strong sustainability	Permissible economic growth with critical capital conservation	Limited reduction of natural capital with its revenue investment into substitutions
						Very strong sustainability	Zero economic growth	Natural capital irreplacability

to be disappointing again: the destruction of nature on the planet continued under total international acceptance of the need to abandon the existing development model. According to V. I. Danilov-Danilian, “summit in Johannesburg turned out to be nothing but a colossal party... not a single significant solution was proposed, not a single new idea” [13, p. 54]. Significant change in the realization of sustainable development concept was not noted at the conference in Rio de Janeiro (2012) as well. In all relevance of transition to a new development model, the results of a twenty years period for the majority of countries turned out to be negative.

In quest of new and more effective mechanisms, the conference in *Rio + 20* concentrated greatly on “green economy” which increases human well-being and ensures social justice under significant reduction of environmental risk [14]. Main provisions of “green economy” model were reflected in the outcome document (*Outcome document of the conference Rio + 20. The Future We Want. Rio de Janeiro, 2012. Available from: <http://daccess-dds-ny.un.org/doc/UNDOC/GEN/N11/476/12/PDF/N1147612.pdf?OpenElement>*). Summation of accomplishing the Millennium Development Goals revealed the insignificance of the results achieved in fight against poverty, hunger, and imminent ecological crisis [15]. Population growth is recorded, increase in the scale of consumption and, consequently, more intense impact on the environment. Needles to speak about sustainable development as soon as all remained the same. The United Nations Summit for the adoption of the post-2015 development agenda and approval of Sustainable Development Goals for the period up to 2030 was held in New-York in September, 2015. New goals proved to be broader (17 goals instead of 7 goals reflected in Millennium Development Goals) with emphasis on the ecological component. Failures in sustainable development concept realization to some extent predetermined the appearance of various approaches to this problem resolution and several sustainability types selection.

Two sustainability types are commonly considered: strong sustainability and weak sustainability, formation of which conditions the consequences of man-induced impact on the natural capital [16]. Natural capital in this case is understood as the total of assets providing natural resources and environmental services for humans [17].

The concept of weak sustainability provides for the possibility to replace natural capital by physical (artificial) capital “while maintaining the total value of aggregated reserve of all types of capital” [17, p. 40], which reduces the influence of the factor of natural reserves scarcity on social-economic development. Economic growth is tolerated with the account of consumer demands change and the introduction of “green” evaluation of economic indicators.

The concept of strong sustainability only permits minimal substitution of natural (inartificial) capital and orientation toward the stabilization and reduction of population and, correspondingly, consumer demand and economy size reduction. As regards the substantiation of critical natural capital concept, which should be conserved under any variants of economic development, the opinions of researchers also differ. Some think that critical natural capital should include nature’s gifts which cannot be substituted by the artificial ones: ozone layer, rare types of plants and animals, etc.

Others focus on the extent of natural ecosystems allowing to maintain the mechanism of biotic regulations on the planet. The coordination of the given points of view is probably required to work out the definition of critical natural capital.

A doubtless advantage of the classification of ecological-economic development types, worked out by the author of [18], is the versatile characteristic of sustainability according to economy’s environmental friendliness, management strategy, and ethics. In R. K. Turner’s classification, sustainability is differentiated according to four levels [19]. Worked out in the beginning of the 1990th, it’s popular among foreign researchers. According to R. K. Turner, for very weak sustainability verging upon technogenic

economy, natural and artificial capital are considered to be interchangeable, natural resources exploitation is permitted resting hopes concerning environmental conservation in technical progress. Under weak sustainability, ecological restrictions are introduced on economic growth; the conservation of critical limit of natural capital is demanded. Strong sustainability is aimed at maximum conservation of natural resources. Natural and artificial capitals are considered as complementing each other. Moderate economic growth is permitted with the use of environmentally friendly technologies. And, finally, very strong sustainability, according to [1], does not allow economic growth, i. e. zero growth of population, economy, and "extreme conservation of natural capital".

Specific character of sustainability types also requires various approaches to sustainable development concept realization. In the present time, the presence of anthropocentric and ecocentric (biocentric) approaches is commonly acceptable. As soon as sustainability types are classified according to the level of natural capital depletion (consequences of man-induced impacts), the substantiation of approaches to their realization is based on the criterion of economic growth (man-induced impact). Main provisions of anthropocentric approach are much close to basic provisions of scientific scenario of transition to sustainable development [20], which admits the might of science, scientific and technical progress, and believes it possible for a man armed with knowledge to solve any problem. Followers of this approach admit the possibility of population growth and economic growth. They perceive nature as an infinite source of natural gifts, endow it with the capability of adapting to man's activity and set their hopes on the possibility on human control over the biosphere. While cornucopian supporters (the supporters of technocritical development model) admit the possibility of infinite economic growth, the majority of anthropocentrists admit economic growth only within the limits of ecological restrictions (environmental protection model). In general, the considered approach and scenario are aimed on subduing the nature, perception of nature as a utilization target, i. e. dichotomy of social world and natural world. Extreme form of anthropocentrism is concept "World without nature", according to which the biosphere can be replaced by technosphere with human regulation of all processes within it.

Ecocentric (biocentric) approach perceives a human as one biological type being subject to the laws of biosphere, and is at the opposite pole as compared to the anthropocentric approach, in the same way that conservationist scenario is opposite to the scientific one. The supporters of this approach give priority to natural systems, admit minimal growth of economy with its restriction according to ecological requirements, minimal reduction of natural capital and its rebalancing with industrial one. The main idea of ecocentrists is the need to conserve the mechanism of biotic regulation. Among researches supporting the given approach, the following names can be mentioned: V. G. Gorshkov, K. S. Losev, V. I. Danilov-Danilian, K. Ia. Kondratiev, T. A. Akimova, V. V. Khaskin, etc. Within conservationist scenario, the issue is raised about the reduction of population and, consequently, reduction of biotic production consumption (meeting the "one percent" principle), restoration of disturbed lands and increasing the area of natural undisturbed terrestrial ecosystems. The extreme form of ecocentrism is concept "Back to nature" aimed at the conservation of natural capital without any substitution, demands reduction, ecosystems destruction prohibition (ideology of reserve management and study).

In work [21, p. 189] these approaches are supplemented by the noospheric, which provides for the biosphere rehandling by the scientific thought into a new condition, noosphere, with man's perception of the nature as "the supreme value of social existence". Attitude toward the existence of this approach is rather ambiguous, a number of researchers consider the concept of noosphere as "a sphere of mind, the supreme stage of biospheric development" to be utopian [22]. Centrist scenario is more

acceptable [20] together with the approach to sustainable development, based on the theory of central order by V. Geizenberg, which provides for society and ecosystems harmonious development. The scenario of centrism is based on the principle of ecological development including a range of elements of scientific and conservationist scenarios and provides for the achievement of their goals balance. The table proposes the author's variant of compatibility of sustainability types under consideration and their realization approaches.

**Summary.** Data presented in the table under consideration testify to interconnection between the approaches and scenarios of strategies realization for various sustainability types. Research and results can be considered as the development of methodological provisions of sustainable development concept, which can serve as a basis for the development of methodological approaches to the realization of models of various types of sustainable development.

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## Специфические особенности моделей устойчивого развития

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### Реферат

**Актуальность.** Недостаточная проработка методологических основ концепции устойчивого развития предопределяет неоднозначность понятийно-категорийного аппарата и, соответственно, несовершенство методического обеспечения возможностей ее реализации.

**Цель исследования.** Развитие методологических положений концепции устойчивого развития в части установления взаимосвязей между типами устойчивости и подходами к их реализации.

**Методология.** Анализ путей и особенностей становления концепции устойчивого развития. Разработка авторского варианта систематизации подходов к реализации разных типов устойчивого развития.

**Результаты.** В статье рассматриваются отдельные моменты становления концепции устойчивого развития и особенности подходов к ее реализации в разных странах, результаты обсуждения проблемы устойчивого развития на международных конференциях и саммитах, оценки выполнения поставленных целей, касающихся перехода на новую модель развития. Систематизированы рекомендации по выделению типов устойчивости, обоснован критерий классификации – источник природного капитала и возможность его замещения материальным (искусственным). Рассматривается классификация устойчивости с большей детализацией по Р. К. Тернеру. Обобщен и проанализирован материал, характеризующий методические подходы к реализации основных положений концепции устойчивого развития: антропоцентризм и эко- или биоцентризм и их взаимосвязь со сценарными подходами – сциентистским и консервационистским по Б. М. Миркину и Л. Г. Наумовой. Раскрываются особенности подходов, дополняющих общеизвестные: ноосферный и сценарный центристский. Предложена авторская трактовка объединения данных понятий, установления взаимосвязи между характером взаимодействия человека с природой со сценариями развития человечества в направлении создания общества устойчивого развития и их отношения к реализации различных типов устойчивого развития.

**Выводы.** Полученные результаты, совершенствующие методологию устойчивого развития, обеспечивают разработку наиболее обоснованных методических подходов к реализации новой модели развития.

**Ключевые слова:** устойчивое развитие; международное сотрудничество; типы устойчивости; методические подходы; реализация.

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