ECOLOGICAL CONSCIOUSNESS AND SUSTAINABLE DEVELOPMENT: BRIDGING ENVIRONMENTAL EDUCATION WITH GREEN ECONOMY PRACTICES

Vladimir Korotenko[1*], Osmon Togusakov[2]

[1]"ADAM" University, M. Gvardiya blvd. 55, 720010, Bishkek, Kyrgyzstan;*
ORCID ID: 0000-0001-5052-7749;

[2]National Academy of Science KR, Chui ave. 256-a, 720071, Bishkek, Kyrgyzstan;
ORCID ID: 0000-0003-3091-3911;

[*]Corresponding Author Vladimir Korotenko, e-mail: vladk77@gmail.com;

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ABSTRACT

This article explores the core discourses shaping the concept of sustainable development (SD), with an emphasis on its multidimensional nature. The study identifies seven key discursive axes: environmental, economic, social, political, prognostic, ethical, and developmental sustainability. The analysis highlights the pivotal role of ecological consciousness, advocating for the integration of environmental education to promote sustainable practices across various societal groups, including youth and professionals. A central argument is the need for a holistic approach that considers the biosocial unity of humans, balancing the natural and social dimensions of human existence. The study further examines the relationship between natural capital and development, endorsing a transition to a "green" economy focused on resource conservation and minimizing environmental impacts. The ethical dimension of SD, particularly the responsibility toward future generations, is emphasized as crucial for sustainable decision-making. The paper calls for further research on the efficacy of environmental education and the practical implementation of SD policies across different sectors and regions. Acknowledging the limitations of current data and the challenges of incorporating ethical principles into policy frameworks, the article provides a comprehensive philosophical and practical foundation for understanding sustainable development and addressing its future challenges.

Keywords: Environmental consciousness, Natural capital, Ecological ethics, Biosocial unity, Sustainability education, Political sustainability

INTRODUCTION

Sustainable development (SD) is often defined as a form of development that meets the needs of the present without compromising the ability of future generations to meet their own needs (Jenkins, 2009). This concept underscores the need for environmental consciousness, an essential factor for achieving long-term sustainability by fostering a deep awareness of the human-environment relationship. The dual nature of humanity—as both biological organisms and products of societal development—requires an integrated approach to sustainable development, acknowledging

the interconnectedness of natural ecosystems and human actions. As ecological crises escalate, there is growing recognition that individuals and societies must actively engage in environmentally responsible behaviors to preserve natural ecosystems and ensure human survival (Deloitte Insights, 2019; Hassan, 2002).

In recent years, the philosophical discourse on sustainable development has increasingly emphasized the ecological dimension of human existence, particularly the relationship between nature and society. Pioneers such as the Club of Rome have stressed that global ecological challenges, like climate change and resource depletion, require joint human efforts to address them (Hesle, 1994). The sustainability paradigm, as posited by Brundtland (1987), seeks a harmonious balance between environmental, economic, and social aspects of development. Moreover, the notion of natural capital—defined as the foundation for human and societal existence—is central to the model of SD, highlighting the critical role ecosystems play in sustaining life and regulating global processes (Shukurov, 2013; Gorshkov & Makarieva, 2001).

Despite significant progress in understanding the importance of sustainable development, gaps remain in fully grasping how human actions destabilize natural regulatory systems, leading to environmental degradation. There is limited knowledge about the long-term consequences of disrupting natural ecosystems, and current philosophical frameworks often lack practical approaches to integrating ecological consciousness across various sectors of society. This study is necessary to bridge these gaps by exploring how environmental consciousness can be more actively promoted among diverse societal groups and embedded within decision-making processes. Addressing these challenges is crucial for ensuring that human activities today do not lead to irreversible environmental damage.

The aim of this study is to analyze the critical role of ecological consciousness in promoting sustainable development and explore ways to integrate environmental awareness into social, political, and economic decision-making. By examining how sustainable practices can be fostered across various sectors, this study seeks to contribute to the ongoing discourse on environmental responsibility and propose strategies for incorporating sustainability into education, governance, and daily life. Ultimately, this research highlights the urgent need for a comprehensive, interdisciplinary approach to SD that includes both philosophical reflection and practical application.

MATERIALS AND METHODS

This study adopts a philosophical and interdisciplinary approach to analyze the key discourses surrounding sustainable development (SD) and ecological consciousness. The primary method used is a philosophical analysis of existing theoretical frameworks, focusing on the ecological, economic, and social dimensions of SD. Drawing on works from prominent scholars and reports, such as those from the Club of Rome, and integrating key ideas from V. Gorshkov, A. Makarieva (2001), and G. H. Brundtland (1987), this research explores the critical role of ecological awareness in shaping sustainable development strategies.

The study systematically analyzes SD through five key discursive axes, emphasizing the interaction between human society and nature. These include the relationship between environmental sustainability and natural capital, economic sustainability in the context of a "green" economy, social and institutional sustainability, and the ethical responsibility of current generations toward future generations. This approach aims to offer a comprehensive understanding of how sustainable development frameworks can be restructured and expanded through ecological consciousness.

In addition, this research incorporates interdisciplinary insights from environmental science, sociology, and psychology to further understand the impact of human actions on natural ecosystems and to propose practical strategies for integrating sustainability into decision-making processes across various sectors, including governance and education.

The method also involves a detailed literature review, synthesizing knowledge from historical and contemporary sources to form a holistic view of SD. Through this methodology, the study addresses gaps in current understanding and provides a framework for enhancing ecological consciousness and promoting sustainable practices at both local and global levels.

RESULTS AND DISCUSSION

The relationship between humanity and nature has been a subject of philosophical discourse since antiquity, considered by thinkers such as Aristotle, Hippocrates, Plato, and Lao Tzu. The concept of sustainable development (SD) emerged from these discussions, with significant ideas formulated in the 18th century, particularly in Malthus's An Essay on the Principle of Population (1993), which addressed the tension between population growth and finite natural resources.

The reports by the Club of Rome, initiated by studies from J. Forester, D. Meadows, N. Messarovich, and E. Pestel, played a pivotal role in framing the ecological dimension of politics (Meadows, Meadows, Randers, 1994). Key approaches to the interaction between nature and society have also been expressed by A. Peccei, Yu. Odum, I. Randers, P. Riker, B. Schneider, E. Laszlo, and U. Beck. These reports emphasized the importance of addressing the fundamental problems of humanity's interaction with nature and have influenced numerous schools of thought focused on resolving global challenges. As V. Hesle (1994) noted, the ecological crisis should be seen as a common enemy of humanity, requiring joint efforts to overcome.

Sustainable development is defined by the UN Commission, led by G.H. Brundtland (1987), as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs" (p. 10). This concept represents a shift from previous models of economic development, which prioritized growth at the expense of social and environmental well-being. SD stresses the need for balancing environmental, social, and economic considerations to ensure long-term, sustainable growth (The Foundation for Regional Social Programs "Our Future"; the National Research University Higher School of Economics, 2020).
An important element of SD is its connection to the axiological foundations of discourse. As proposed by Parker (1992), SD can be understood as a system of intersecting discourses, which involve the production, distribution, and reception of practices and ideas. Several discursive axes structure the SD concept, the first of which focuses on the dichotomy between destruction (non-life) and life. Environmental sustainability, the key axis, emphasizes the preservation and restoration of ecosystems, as well as reducing the negative impacts of human activity on the environment. As a social discourse, SD also emphasizes the need to preserve natural resources and biodiversity.
According to Prof. E.J. Shukurov (2013), life on Earth is an atypical phenomenon in the cosmos, sustained through a complex mechanism developed over millions of years. Natural ecosystems are the only systems capable of sustaining life on Earth by regulating the gas composition of the atmosphere, stabilizing the climate, and cycling water and minerals. These ecosystems are critical for maintaining life, and their disruption threatens the foundation upon which sustainable development is built (p. 42).

The second key discursive axis concerns the concept of "sustainability," which is grounded in the recognition that human civilization, as it has evolved over the past 200-250 years, has exceeded sustainable limits. Modern civilization, built on a consumption-driven economy, undermines the fundamental requirements for sustaining life, thereby endangering the lives of future generations. This realization forms a crucial prerequisite for the entire concept of sustainable development. The SD model integrates three essential spheres: the economy, social relationships, and natural capital. Natural capital occupies a fundamental position, as it serves as the foundation for the social and economic spheres of society. The organization and functioning of these spheres depend on the use of natural ecosystem resources.

An important element of the sustainable development model is the understanding that if the foundation (natural capital) is destroyed, the upper structures—economic and social systems—will also collapse. Natural ecosystems provide the necessary habitat for living organisms and the conditions required for sustainable development. Without natural capital, the continued existence of human society becomes impossible.

This model of sustainable development can be represented as a truncated pyramid, where natural ecosystems form the foundation. The interconnected mechanisms within these ecosystems regulate the planet’s balance, preventing extreme temperature fluctuations, controlling atmospheric gas composition, and maintaining stable environmental conditions essential for life. As theorists of biotic regulation, such as Gorshkov and Makarieva (2001), have explained, life itself creates the conditions for life. Stable conditions, including the regulation of Earth’s surface

temperature, are maintained by undisturbed flora, fauna, and the Earth's biota (Makarieva et al., 2010). Similarly, Vernadsky's work on biogeochemical cycles emphasized the role of biological regulation in maintaining Earth's atmosphere in a state of equilibrium, which prevents both overheating and overcooling.

Research has demonstrated that ecosystems create and sustain a human environment by compensating for environmental disturbances, as long as those disturbances remain within certain thresholds. However, human economic activities often disrupt these natural systems, weakening their regulatory capacity on both local and global scales. As Girenok (1994) argues, the technological exploitation of natural resources compromises the biosphere's integrity and jeopardizes the conditions that have allowed human civilization to thrive. Disturbed ecosystems, and artificial systems such as fields, pastures, and exploited forests, cannot perform biotic regulation; instead, they destabilize the environment and exhaust the stability reserves of natural systems. This understanding of nature's regulatory properties challenges the earlier belief that life develops where conditions are already favorable. Instead, life actively regulates and maintains these favorable conditions (Harrison, 1996). The loss of biodiversity leads to the irreversible degradation of the biosphere's ability to perform its vital functions, which include climate regulation, water management, disaster mitigation, soil formation, and the cycling of essential chemical elements. Without this foundation, societal systems will not merely collapse like an economic failure but may cause a breakdown in the life-support systems of the planet.

Natural ecosystems, when intact, can respond flexibly to climate fluctuations, mitigating extreme changes and reducing negative impacts. Sustainable development, therefore, must focus on preserving the mechanisms of life, which are embedded in the functionality of natural ecosystems. The paradigm of sustainable development hinges on the intersection of political, ecological, and economic considerations, all of which must receive equal attention for a balanced, long-term approach to sustainability.

The third key discursive axis in the construction of the concept of sustainable development (SD) is the pursuit of justice, equality, and well-being for all members of society, recognizing that this is inherently a political process. This axis encompasses several forms of sustainability: institutional sustainability, which refers to the establishment of effective management systems, legislation, and policies that support sustainable development; and social sustainability, which involves ensuring social justice, equal opportunities, and reducing inequality and poverty (Sachs, 2015). Alongside the efforts of scientists and experts, governments and politicians play a critical role as the primary drivers of SD initiatives.

In 1992, the majority of governments worldwide formally embraced the ideology of sustainable development. This shift underscored the need for political will to create a supportive environment for SD. The 20th century is significant not only for scientific and technological advancements but also for the growing global awareness of development limits. In 1972, the United Nations Conference on Environment and Development in Stockholm brought together world leaders to address environmental challenges. Twenty years later, in 1992, the First World Earth Summit in Rio de Janeiro convened heads of state, world leaders, and economic experts. For the first time, global leaders collectively acknowledged the existence of an environmental crisis and the urgent need to develop mechanisms for addressing it. This led to the formal adoption of sustainable development as a global paradigm (United Nations "Conference on Environment and Development" (UNCED), 1992).

Twenty years after the Rio Summit, the RIO + 20 Summit was held, attracting 45,000 participants from 193 countries. The adoption of the Sustainable Development Strategy at this summit represented a significant reorientation of existing state policies across multiple sectors, including social and economic development, social justice, environmental management, environmental security, and sustainable resource use. These policies reflect a comprehensive approach to sustainability, incorporating measures that address both social and environmental priorities while fostering long-term economic growth. The fourth key discursive axis is economic sustainability, which focuses on the development of a "green" economy, the rational use of resources, and the maintenance of long-term economic growth (Orekhova, 2017). Achieving this requires an interdisciplinary and systematic approach, grounded in the principles of resource conservation and minimizing negative environmental impacts. Within this framework, it is essential to integrate environmental safety measures across all areas of production. This approach necessitates the introduction of new educational content aimed at fostering a worldview rooted in the concepts of sustainable development. Such education will equip individuals with the ability to promote and organize environmentally friendly activities.

The primary goal of the education system, in alignment with these tasks, should be to effectively use internal and external resources to develop the personal and professional competencies needed for sustainable development. This will ensure that both the state and society are provided with the skilled personnel required for the transition to a "green" economy.

Another fundamental axis in the concept of sustainable development (SD) is the discourse on development, which constitutes the fifth key axis. This discourse emphasizes that development is not static; it can be redefined and built on new foundations. The core of this discourse lies in exploring the interrelationship between nature and various aspects of human existence, including human relationships with nature, civilization, society, and culture.
A holistic view of development is essential. Sustainable development requires a comprehensive, systematic approach that rethinks traditional concepts of progress and development. It necessitates moving beyond narrow, quantitative measures of progress and embracing a broader, more critical perspective that integrates environmental, social, and cultural dimensions.

This is of fundamental importance. It is often challenging to fully explain the doctrine of dialectics, which attempts to maintain balance through contradictions. In this regard, the logic of development aligns with the principles of German philosophy. Marxism, for instance, developed a theory of activity but overlooked key mechanisms of economic development. While Marxism advanced the understanding of political development, it failed to recognize that the foundation of development lies in natural capital. This omission highlighted the need for a new concept—eco-development, which sees natural capital as the basis of all development.
Historically, nature has been taken for granted. However, the 20th century has made it clear that this perspective is unprecedentedly dangerous (World Summit on Sustainable Development, 2002). If humanity continues to destroy more than 60% of natural ecosystems, neither economic, political, nor social development will be able to sustain life. The very existence of life is at risk. Natural capital, therefore, forms a crucial component of the SD discourse. We must recognize that we are dealing with processes that extend beyond the lifespan of any one individual or even multiple generations.

This leads to the sixth key axis of discourse—prognostic discourse. Futurological forecasts often show that changes in reality are far more significant and specific than predicted. These changes define the trends and bifurcations in the ontology of development. For instance, the evolution of information systems, robotics, biology, and medicine, along with safety practices, are likely constants. However, variables such as traditional power systems, political structures, and social dynamics remain uncertain.

Understanding the influence of national identity, cultural preservation, and political frameworks on these variables is critical. In some societies, resistance to innovation will dominate, driven by efforts to preserve identity. A historical example of this is the Taoist-Confucian philosophical movement in Eastern societies. Additionally, future development and survival will depend on practices that ensure the reproduction of life on Earth while mitigating environmental risks and fostering tolerance among various ideologies and worldviews (see Huntington, Fukuyama, Toffler, Bestuzhev-Lada, etc.).

As resources deplete and life-support systems collapse, the pressing question becomes: how can we sustain life for future generations? This raises the phenomenon of the "collision of the future," where political strategies to "control" the future may clash with scientific realities and public perceptions. A key challenge will be determining how political and scientific forecasts can align, and which managerial decisions will adequately address the reality of future challenges.

The seventh key axis is the ethical discourse, which emphasizes the development of a responsible attitude toward nature and future generations, grounded in a set of moral principles aimed at ensuring the long-term well-being of both humanity and the environment. This discourse focuses on values and meanings. Transitioning to sustainable development requires a rethinking of traditional values and the formation of a new value system based on environmental ethics, responsibility, and concern for the future (Engel, 2002, Nekhoda, Radchikova, Tyuleneva, 2018). The ethics of responsibility toward future generations highlights issues of justice and accountability, necessitating a revision of conventional ethical approaches.

Key philosophical concerns include axiological issues, which call for a reassessment of value orientations toward environmental ethics and intergenerational responsibility (Holly, 2006). This raises fundamental questions: What obligations do present generations have to future generations in terms of resource use and environmental impact? Moreover, how can human rights and well-being be respected while improving the quality of life within a sustainable development framework?

Decision-making related to sustainable development must be transparent and involve all stakeholders. Cultural sustainability - preserving cultural diversity, traditions, and values—is equally critical. Ethical use of technology and innovation is another central question: how can these be employed responsibly to support sustainable development? If there is a risk of serious or irreversible environmental damage, precautionary measures must be taken, even if causal relationships are not fully proven. This ethical discourse should form the foundation of all sustainable development strategies, policies, and practices at every level - from local to global. Only through this approach can truly fair and responsible development be achieved, balanced with the needs of the planet and future generations.

From a philosophical perspective, engaging with these key discourses requires a profound rethinking of the fundamental values and worldviews that shape modern society. This involves reflecting on questions such as: What is humanity's role in nature, and what responsibilities do we hold for preserving the environment? How can a fair distribution of benefits and opportunities be ensured? What values should underpin a green economy? And how can we cultivate an ethic of responsibility toward future generations?

CONCLUSION

- In conclusion, one of the most essential components of sustainable development is the promotion of environmental consciousness through education. Raising awareness about environmental responsibility among the general population, particularly among children, youth, and professionals such as managers, designers, and thought leaders, is critical for fostering sustainable practices. Ecological consciousness is intrinsically linked to the broader ecological context, encompassing both the natural environment—living and non-living—and the human impact on it, along with the will to protect and preserve it. The biosocial nature of humanity reflects this dual reality: on the one hand, humans are biological organisms whose survival depends on specific environmental parameters such as temperature, humidity, and atmospheric composition. On the other hand, humans are products of societal development, with their existence shaped by social and cultural factors.
- Neglecting either aspect of this biosocial unity risks catastrophic consequences for human existence. A comprehensive understanding of the systemic laws governing life has drawn the attention not only of environmental specialists but also of professionals from various fields and institutions worldwide, as emphasized by the Club of Rome. This interaction between different spheres of knowledge highlights the complexity of the relationship between humans and the natural world, which exists in an intermediary space between the physical and social realms. While general psychological frameworks can sometimes explain human-environment interactions, a more nuanced analysis often requires insights from social psychology, sociology, and philosophy.
- Sustainability must become a fundamental criterion in decision-making processes, ensuring that every action today is understood in terms of its long-term impact. Developing a common language that emphasizes the interconnectedness of present and future actions is essential for creating a sustainable future for generations to come.
- While the study contributes significantly to understanding the multidimensional nature of sustainable development, several limitations and areas for future research should be addressed. First, there is a need for empirical studies that investigate the effectiveness of environmental education initiatives across diverse cultural and socio-economic contexts. Future research could explore how different educational strategies influence ecological consciousness and behavioral change, particularly among younger generations.
- Additionally, the complex interplay between economic growth and environmental sustainability continues to pose challenges. Future studies should examine the practical implementation of the "green economy" model in various regions and sectors, identifying the barriers to its widespread adoption and how these can be overcome. Interdisciplinary research that integrates insights from economics, sociology, and environmental science will be essential in addressing these challenges.

- Lastly, while this study highlights the ethical dimensions of sustainability, further research is needed to explore how ethical frameworks can be operationalized in policy-making and governance. Examining how global institutions and governments can integrate ethical considerations into concrete, actionable policies would provide valuable guidance for future development strategies. However, limitations in available data and the variability of regional policies present significant challenges for conducting comprehensive cross-national studies, which future researchers must navigate carefully.

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