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Integrity of Various Aspects of Sustainability

Abstract
In an era of rapid scientific and technological progress, the concept of sustainable development has become an important framework for addressing the multifaceted problems of resource scarcity, environmental degradation and social inequality. This article provides a comprehensive analysis of the evolution, principles and practical application of the concept of sustainable development, emphasising the interconnectedness of its three main dimensions: environmental, economic and social. The paper explores the integrity of the concept of sustainable development in different dimensions. The goal of the study is to provide a comprehensive analysis of the evolution, principles and practical application of the concept of sustainable development, emphasising the interconnectedness of environmental, social and economic aspects and their impact on sustainable development. The concept of sustainable development has evolved from early forestry practices to a broader encompassing of environmental, social and economic aspects. The concept gained prominence in the 20th century with the Club of Rome report and the Rio Earth Summit, leading to the widespread adoption of sustainable development as a guiding principle for global development. Central to sustainable development is the idea of meeting the needs of the present without compromising the ability of future generations to meet their own needs. The article identifies three traditional components of sustainable development: environmental, social and economic, and explores their interrelationship. Environmental sustainability focuses on the responsible use of natural resources and pollution management. Economic sustainability emphasises the importance of long-term economic stability and growth, while social sustainability addresses issues of equality, social justice, well-being and quality of life. The intersection of these pillars shows how integrated approaches can contribute to a resilient, equitable and livable environment. The publication highlights the role of sustainable development goals and standards in various areas. By harmonising environmental, economic and social goals, sustainable development offers a pathway to a resilient and prosperous global society. This holistic approach is essential to ensure the well-being of present and future generations in an increasingly interconnected world. The article emphasises the need for coordinated efforts at the local, national and global levels.

Keywords
sustainable development, three pillars, environmental development, social development, economic development

JEL: Q01, Q56, F64, O44

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1 Introduction

Currently, the world is facing the rapid development of science and technology. People's living standards are constantly rising, and social systems are focused on improving national welfare and social protection principles. The same situation is happening in other areas of human life. Such active development and constant progress places certain demands on resources. The traditional economic problem of resource scarcity is consistent with other issues traditionally associated with sustainable development: environmental problems related to various types of pollution, resource depletion, climate change, and so forth; social problems related to the need to change human perspective, priorities, and orientation towards well-being; and governance problems related to the need to manage the ever-increasing demand for resources to meet growing consumption habits. Long years of economic prosperity, policies aimed at improving living standards, traditional, unlimited desires and aspirations – all of this has contributed to the growing pressure of production and consumption on the environment and global resources. In response to humanity's demands and expectations for economic growth, the concepts

of sustainable development have emerged as a new framework for organising economic relations in the world. Humanity developed the concept of "wise use" of resources, which refers to the use of natural resources for the longest possible period of time, in the most beneficial way, and for the greatest number of people (Pinchot, 1998). The search was on for " a world system that would be sustainable without sudden and uncontrolled collapse and capable of meeting the basic material needs of all people" (Meadows et al., 1972).

2 Sustainability Concept Genesis

The word "sustainability" implies the ability to survive, at least for a considerable period of time. Humans cannot expect nature to provide them with unlimited abundance; rather, they should help and cooperate with nature. Humans must not go against nature, but treat it, understanding that there are limits to how much of natural resources can be used (Grober, 2007).

The technical language employed by the forestry industry served as the foundation for the concept. The term "sustained yield" has been extended, modified, and transferred semantically to become "sustainability" (Duerr, 1975). Britain was particularly concerned about a lack of timber because it was a resource used to build new ships, which in turn provided the kingdom's strength, power, and influence in its fight for dominance over the world. It is notable that the British Royal Navy, an organisation engaged in the competition for global dominance, was the first to propose ideas for a more sustainable utilisation of natural resources. In the first half of the 18th century, the concept of sustainable development as one of the principles of forest management was actively used in Denmark and Norway, and for forestry in Russia and France. A few decades later, the ideas of sustainability reached the United States; the "wise use" and "conservation model" pioneered by Theodore Roosevelt and Pinchot were an adaptation of the European concept of sustainability to the American way of life.

The next stage in the conceptualisation process occurred in March 1972, when the Club of Rome introduced the term "sustainable" as a term for politics and economics in the report on the "Limits to Growth", presented by a group of scholars from the Massachusetts Institute of Technology. From this point onwards, the term "sustainability" became the standard term used by international organisations, and the concept of sustainability received new impetus and followers.

In 1974, "Science and Technology for Human Development" in Bucharest and the ecumenical "World Council of Churches" (WCC) discussed "a just and sustainable society" (Robra, 1994). The concept of sustainability receives one of its main pillars – the social one. It sets out the requirements for a global welfare society within the next generation.

In 1980, several powerful organisations published the "World Conservation Strategy" and, with the support of the UN Secretary-General, this declaration was simultaneously presented in 34 capitals around the world under the title "Living resource conservation for sustainable development" (Grober, 2003).

The Earth Summit in Rio de Janeiro in 1992 served as a platform for the global dissemination of the concept of sustainability. Since then, it has been seen as a strategy for saving the planet by maintaining a balance between the environment, society and the economy. The definition produced by the Brundtland Commission in 1987 became the universal definition of sustainability: "development that meets the needs of the present without compromising the ability of future generations to meet their own needs" (United Nations General Assembly, 1987).

This idea has taken on new meaning in the twenty-first century. It is now understood as the ability of human civilisation and the biosphere to endure, coexist and flourish together. Individuals alter the balance of the environment through their daily lives and their involvement in social, political and economic activities. It is reflected in how resources are used, where investments are made, how technology is developed and how institutions are changed. The goal of each of these elements is to increase the capacity to meet human needs and aspirations now and in the future (Global Footprints) (What is sustainability, Retrieved on 21.07.2023).

Environment, economy and society are the three traditional pillars that should be taken into account when talking about sustainability (EPA, 2015). These pillars can be considered from different perspectives, they include several components, and many of these components require serious study by scientists. For example, such components as cultural, technological and political domains are often considered to be the components of the sustainability concept (James, 2014; Magee et al., 2012). If the concepts of systems thinking are applied, their internal connection is considered to be particularly harmonious (Capra, 2015). It is possible to create a situation that is close to perfect, through an intuitive understanding of each component and its subcomponents, and the practical application of that understanding. It makes it possible to create the thriving ecosystems and environments that are essential for human survival, the economic environment that can support civilisation and provide a decent standard of living, and the social infrastructure that supports all these processes of creating favourable conditions for human development. Various industries, sub-industries, branches, sub-branches, organisations,

unions have been established to solve the problems posed by the sustainable economy.

The disciplines of Environmental Resource Management, Environmentally Friendly Chemical Engineering, and Environmental Protection all offer strategies for mitigating the adverse impacts of human activity. Green Chemistry, Earth Sciences, Environmental Science, Conservation Biology, and Green Computing provide insights into these issues. Academic disciplines that study human economies and natural ecosystems are collectively referred to as ecological economics (Bakari, 2017). Approaching a sustainable way of life involves social challenges in the legal sphere, changes in lifestyles, consumption patterns, transport flows, and so forth (Fawcett et al., 2012; Zhang & Babovic, 2012; Black & Cherrier, 2010). "The term 'sustainability' should be seen as humanity's goal of equilibrium (homeostasis) between humans and the ecosystem, while 'sustainable development' refers to a holistic approach and the time processes that lead us to the end point of sustainability." (Shaker, 2015)

Another way of describing sustainability is as a socio-ecological process characterised by the pursuit of a shared ideal. By definition, an ideal cannot be achieved in a specific time or space, but by following it consistently and creatively, the process creates a system that is sustainable (Wandemberg, 2015). According to ecological research, sustainability is achieved when species and the resources in their environment are in balance. In order to maintain this balance, the depletion of available resources must not exceed the rate at which natural resources are produced.

However, some authors interpret these terms as paradoxical, given that development is inherently unsustainable (Brown, 2015; Williams & Millington, 2004).

3 Three Pillars of Sustainable Development

Traditionally, there are three dimensions of sustainability, as shown in the diagram in Figure 1. However, many scholars discuss different dimensions of sustainability, such as political issues, culture (James & Magee, 2016; United Cities and Local Governments, 2019), religion or even future generations, which emphasises the long-term thinking associated with sustainability (Waite, 2013). There is also a view that sees resource use and financial sustainability as two additional pillars of sustainability (Dhakal & Oh, 2011).

This diagram shows the interaction between the "three pillars of sustainability", according to which environmental pressures affect society and the economy (Scott Cato, 2009).

This strategy is in line with the Sustainable Development Goals (SDGs) set by the World Summit on Social Development in 2005 (United Nations General Assembly, 2005), which reflect objectives in the areas of economic, social and environmental development. Three overlapping ellipses illustrate that the three pillars of sustainability can be mutually supportive rather than contradictory (see Figure 2).

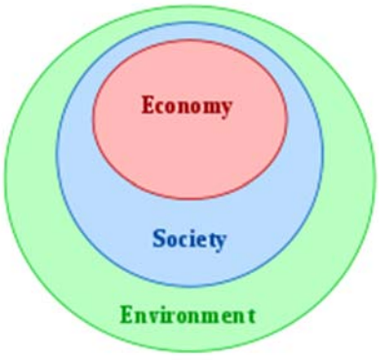

FIGURE 1 Diagram of the three pillars of sustainable development

Source: generated by the authors on the basis of (Scott Cato, 2009)

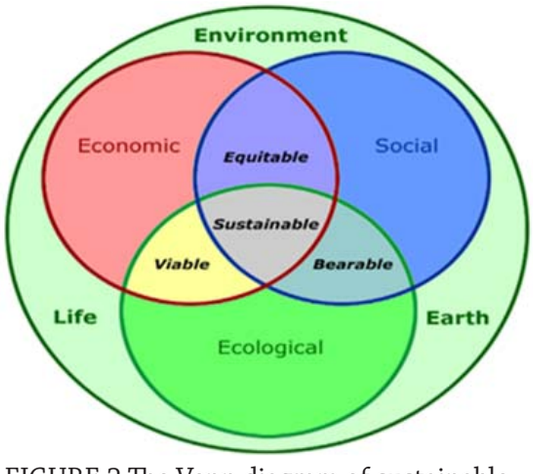

FIGURE 2 The Venn diagram of sustainable development: at the intersection of three pillars

Source: generated by the authors on the basis of (Adams, 2006)

It is essential to understand each of these three pillars in order to understand how they work together. Since the three pillars are interdependent and none of them can exist in the long term without the others, it is impossible to determine which is the most urgent or vital (Morelli, 2011). Depending on the position of the researcher, urgency is taken into account. The economic pillar is prioritised by the author, while the other pillars are still important.

In general, ***economic sustainability*** is defined as the ability of an economy to maintain a given level of economic output over an extended period of time. Nowadays, GDP is used to measure the nation's economic performance. However, there is another way of looking at a country's economic performance:

by looking at the country's poverty rate and related indicators. Therefore, sustainability can also be viewed from this perspective, which makes the inclusion of the social component logical. Irrespective of this, economic sustainability requires that the business or economy grows steadily over time through appropriate resource allocation, which enables efficiency, the required rate of profit or growth, capital preservation and other factors. A very important factor is the approach to financial operations for contemporary steady growth based on technologies (Cernisevs et al., 2023(a); Katalkina & Saksonova, 2021; Cernisevs et al., 2023(b)). These elements are necessary for the smooth operation of any economic entity, be it a company or the country's economy as a whole. It enables that economic entity to plan for long-term growth. Undoubtedly, this is only possible under the conditions of a socially responsible business and economy. Otherwise, society would not allow the long-term development of such an economic entity. It will have to deal with social crises, the risk of poverty, which translates into the risk of low purchasing power of the population, high levels of social and economic exclusion, which reduces the share of operations, and so on (in the case of the national economy). If an individual company ignores social responsibility, it can face fines, problems with local, state and federal laws, and other consequences. Eventually, all economic entities come to understand the value of social responsibility and strive to align themselves with the prevailing consensus on the matter.

Another scenario relates to the ecological or environmental aspect. Long-term plans and strategies are in place for the national economy, and it is usually clear how important it is to protect the environment and use resources efficiently. As a result, nations typically plan their economic development with an environmental component in mind and implement measures to preserve resources for future generations. When it comes to business, the situation is very different. The economic activities of any company must be both efficient and sustainable. It also requires efficient use of resources in the short term. Since strategic efficiency in the current environment typically means reduced efficiency, companies can only adopt a strategic stance on resource use and the environmental situation in response to government pressure, or vice versa. When companies resist the environmental strategy developed by the government, they are usually subject to repressive measures. This pressure could take the form of fines, regulations on waste, cleaning and treatment facilities, or even a change in product range if it is not environmentally friendly enough. Possible incentives could include reduced tax rates or extended business licences, provided the company complies with the country's overall environmental policy. Hence, the environmental component differs according to the type of economic unit.

Living within the framework of long-term resource efficiency rather than short-term profitability is a prerequisite for ***environmental sustainability***. It indicates that the nation's natural resources are all being used at a rate that is sustainable. It requires taking into account factors such as the abundance or scarcity of resources available to the business or national economy, the damage done to the environment when those resources are extracted, the potential for material reuse, and so on. Herman Daly, one of the early proponents of environmental sustainability, approached the issue from the perspective of conserving natural capital in his research, which provides some of the best explanations of environmental sustainability. According to him, a sustainable yield is one that is appropriate for renewable resources, meaning that the rate of harvesting should not exceed the rate of regeneration. This is a remarkable revision of 17th century ideas, as illustrated by Carl von Carlowitz's work on forestry (Daly, 1990). He then discusses environmentally sound waste management, which reduces pollution and ensures that the rate at which businesses produce waste does not exceed the environment's ability to absorb it. He also addresses non-renewable resources and how the depletion of these resources should prompt the development of renewable alternatives. As this list has gained widespread acceptance, ***environmental sustainability*** can be defined as the continuous rate of pollution generation, depletion of non-renewable resources, and extraction of renewable resources.

This reopens the previously discussed contradiction: something is not sustainable if it cannot be carried out indefinitely. Simultaneously, the expansion of resource-related employment is necessary for economic development, which severely damages the environment. Daly (1990) omits any discussion of the standard of living that a sustainable system can provide in his description of a sustainable environment. The issues of waste management (Popova & Sproge, 2021), ecological services within urban areas (Cernisevs & Popova, 2023 (a)), and new types of production (Cernisevs & Popova, 2023 (b); Saksonova & Kantāne, 2016) are also pertinent to this discussion. Consequently, the three pillars of the sustainability system – a clean, healthy environment, a satisfactory level of economic well-being, and a robust level of social fulfilment – are the only factors that allow for the support of a high-quality life. It is, however, impossible to be sustainable and achieve economic growth simultaneously, at least for the next 50 years or so.

In light of this, it is important to discuss how the ellipses representing environmental sustainability and economic and social sustainability intersect.

4 Interrelation of Pillars

The convergence of social and environmental sustainability opens up new paths for the development of society (Figure 3).

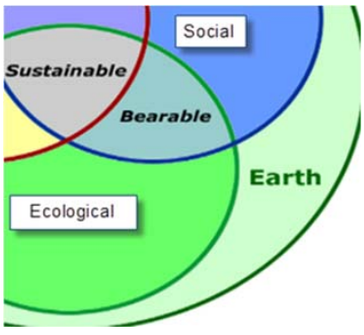

FIGURE 3 Intersection of social and environmental circles that create a favourable environment and promote sustainability
Source: generated by the authors

The adoption and integration of key environmental and social principles and considerations into decision-making processes is at the heart of this intersection of the social and environmental spheres. Through effective management, the implementation of sound policies and practices, and the development of projects in areas such as sustainable energy, public transport, waste management and water supply, the population can be drastically changed. Furthermore, and this is a unique feature, this nexus is beneficial to all categories of stakeholders. A safe, clean environment, clean water and the ability to breathe clean air are provided to all strata of society; the government is given the means to influence public opinion and promote particular interests; ecology is given a huge boost for environmental protection due to the prevalence of "green thinking" in society.

The intersection with economic sustainability requires more detailed consideration (Figure 4).

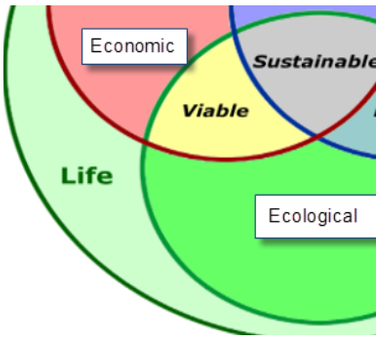

FIGURE 4 Intersection of economic and environmental spheres that create a livable environment and promote sustainability
Source: generated by the authors

On the one hand, it is clear that humanity must reject rapid economic growth in order to survive in the current circumstances; on the other hand, economic growth is the ultimate goal of any nation, as it represents not only an aspiration but also an increase in the standard of living of its citizens. Combining these two requirements requires the search for new tools and capabilities. One example of such tools is the circular economy. Given the current situation, it seems that a circular economy – a new approach to the economy – holds the key to achieving these seemingly incompatible goals. The circular economy integrates the production process into a full cycle of recycling, reuse and re-production, enabling economic growth while being extremely environmentally friendly.

The ability of a society or any social system to maintain a high level of social well-being over time is known as ***social sustainability***. The goal of society, which is (or should be) to maximise the quality of life of the population, should be taken into account when defining this level. The intersection of social and environmental domains has already been discussed. It is also important to consider where the social and economic spheres intersect (Figure 5).

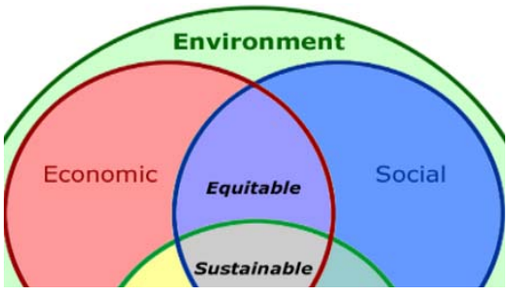

FIGURE 5 Intersection of economic and social spheres that create a fair environment and promote sustainable development
Source: generated by the authors

It is through this intersection that people can create an environment in which they feel both social and economic justice. Although living standards play an important role, they do not dictate how people engage or participate in social interactions (Popova & Popovs, 2022). At the same time, these social tools are used to raise the living standards of the population.

Achieving social sustainability ensures the long-term maintenance of the social well-being of a nation, organisation or community. The aim is to improve the physical, social and economic well-being of all people and groups – especially the socially and economically disadvantaged – in an equitable and sustainable manner. Participation, gender and development, social protection and risk management are the social dimensions of these processes. The objectives include reducing poverty, inequality

and vulnerability among the impoverished and marginalised by strengthening institutions to promote equity and inclusiveness in access to opportunities, resources and services; increasing people's capacity to participate in social, economic and political life (Popova & Popovs, 2023); and helping people to cope with unexpected and sudden as well as long-term risks. However, finding universal benchmarks for all nations is challenging because they differ greatly in terms of economic development, culture, customs, religion and other factors. The main challenge is to determine the universal definition of a high quality of life and the means to achieve it. There is a general consensus that differs across political parties, nations, cultures, religions, social classes, activist organisations and other areas. This means that ***social sustainability*** cannot be precisely defined in a way that can be implemented. As a result, it is the weakest pillar overall. In any case, some concepts are shared by all: a clean environment, a certain level of financial security, a low poverty rate, availability of clean water, and so on. However, each nation chooses its "list of preferences" and then carries out the tasks assigned to it. Current circumstances demand that all nations work together to find economic and environmental solutions while pursuing sustainable social development. While each nation recognises and fulfils this requirement in its own way, there is a general trend and international organisations are working hard to systematise this movement and provide a common framework for it.

In addition, governments at all levels around the world, as well as academics and researchers, consider the concept of sustainable development to be urgent.

The idea is that sustainable development requires a balance between local and global efforts, with an emphasis on meeting human needs without destroying or degrading the environment (Kates et al., 2005; International Institute for Sustainable Development, 2009; Redclift, 2006).

These three pillars have served as the basis for numerous systems of sustainability standards and certification in recent years, such as in the food industry (Manning et al., 2011; Reinecke et al., 2012), forestry and agriculture (SAI Platform, 2012; Alvarez, 2015).

6 Conclusions

The genesis of the concepts of sustainability and sustainable development shows how inevitably these ideas will become the leading ones and change national economic development, priorities of the population, attitudes towards resources, society, the environment, etc. The new way of thinking gives rise to new social norms, principles of business and economic organisation, laws and rules governing society, and a new understanding of environmental trends.

The article presents the components of sustainable development and describes the areas where they intersect. Each activity requires a carefully developed plan, which can only be implemented if there is an accurate forecast of the progress of the activity and expected results, as well as comprehensive information about the location of the activity.

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