From Three-Factors Model of Sustainability to the Integrated Model of Sustainability

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SUMMARY

In addition to the three classical dimensions of sustainability, environmental, social and economic other aspects have emerged in recent years in both literature and practice such as culture, human capital, technology, industry and business, politics and good governance, and peace. Therefore, the aim of this paper is to present these factors as well as multidimensional models of sustainability, which fit perfectly with the classical model of sustainability, they merely complement and fine-tune it. Ultimately, this study synthesises and integrates these into an eight-factor model of sustainability. Finally, it sets out a further line of research, focusing on how these dimensions affect the understanding and implementation of corporate sustainability.

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INTRODUCTION

One of the most used terms of the 21st century is sustainable development, or sustainability, which became known worldwide in 1981 following the work of Lester R. Brown, who, in his study of the development of a sustainable society, concluded that population growth can only be sustained while preserving the natural environment, taking into account both quantitative and qualitative aspects (Faragó, 2002).

A few years later, in 1983, the UN World Commission on Environment and Development commissioned the then Prime Minister of Norway, Mrs Gro Harlem Brundtland, to develop a programme to address the global environmental crisis. In 1987, the International Commission published a report entitled 'Our Common Future', which defined the concept of sustainable development (harmonious development) and laid down principles to ensure that future generations can continue to enjoy the Earth's current resources and opportunities (Faragó, 2002). The report identified the need to mainstream these three dimensions (environmental, social and economic) into local, national and global development strategies.

This theme was the central theme of the World Conference on Environment and Development held in Rio de Janeiro in 1992, where Agenda 21 was drawn up, which contains twenty-seven principles for sustainable development and serves as a guide for the challenges of the 21st century. It emphasises that the whole economy (production, consumption, population policy) must be subordinated to these requirements, but that individual countries must assume common but differentiated responsibilities (UN, 1992).

LITERATURE REVIEW

Sustainable development or sustainability can be determined at global, macro (Earth-wide), meso (regional, national), micro (organisational) and individual levels. This paper will focus on the broader interpretations. The international literature uses the following best-known approaches to define sustainable development. In the words of the Brundtland Commission (Brundtland, 1987, 41 p.):

'Sustainable development is development that meets the needs of the present without compromising the

ability of future generations to meet their own needs. It contains within it two key concepts:

- the concept of 'needs', in particular the essential needs of the world's poor, to which overriding priority should be given; and
- the idea of limitations imposed by the state of technology and social organization on the environment's ability to meet present and future needs'.

The concept of sustainable economic, ecological and social development is understood as a unity. The essence of this formulation is that what is a gift and an opportunity for us today should be left to future generations, so that future generations are not worse off than we are now. According to this view, sustainable development means a harmony of economic, environmental and social values, with equal emphasis on securing economic performance, preserving the state of the natural environment and maintaining social norms, needs and solidarity. However, the purpose and extent of development are not specified.

Dimensions of sustainability

In the following, I will look beyond the classical dimensions of sustainability to consider additional aspects that have been integrated into the standard model of sustainability in the literature and/or in practice.

Classical sustainability ─ environmental, social and economic sustainability

Sustainability generally has three main pillars, which are the following:

1. *Environmental/ecological sustainability* that aims at preserving the natural environment and biodiversity, combat climate change and reduce environmental damage. These include reducing greenhouse gas emissions, increasing water and energy efficiency, preserving forests, protecting natural habitats, and promoting recycling.
2. *Social sustainability***:** to meet people's current and future needs, the social dimension focuses on people's well-being, health, education, equal opportunities, and social equality, including ensuring decent work and wages, reducing social exclusion and poverty, improving access to health care and raising the quality of education.
3. *Economic sustainability* which aims at promoting economic growth, innovation, efficient use of resources, economic stability, and social well-being in the long term. This includes assessing economic development from a sustainability perspective, efficient use of resources, green economic practices and improving quality of life.

The relationship between these three factors is interpreted in three ways. One is when it is likened to a three-column tympanum (with three pillars), saying that if any factor is broken, the balance, the sustainability is upset. The other is when they are three equally important aspects, their common intersection representing overall sustainability. The third is to present the three systems in a hierarchy, it is called strong sustainability. Mozsgai (2011) puts it this way: the society is part (subsystem) of natural environment, and the economy is a subsystem of society, and not vice versa. This is because the present state of affairs is unsustainable under these conditions, and only if we follow the original order of the world, i.e. the economic subsystem is responsible for meeting the needs of society (the economy grows in size as society grows in size and needs). The satisfaction of social needs and demands is limited by the carrying capacity of the environment (the quantity and quality of the natural resources available) (Mozsgai, 2011, 8 p.). Or as Bulla (2013, 63 p.) puts it: - 'the goal of development is social well-being, - one of the means of achieving it is the economy, - and the limit is the carrying capacity of environmental resources.'

Balancing and combining these dimensions is essential to achieve full sustainability. It is in the interaction and balance between society, economy and environment that the potential for a sustainable future lies.

However, some approaches also mention additional pillars such as cultural sustainability, human sustainability, political sustainability, technological sustainability and corporate sustainability.

Cultural sustainability

Since the beginning of the century, various parts of society, from international institutions to academia such as UNESCO, the World Summit on Sustainable Development and many researchers, have begun to question the validity of the current definition of sustainable development. They have argued that economic growth, social equality and environmental protection no longer reflect the complexity of contemporary society and have suggested that policies for sustainable development should be complemented by a cultural dimension. The Executive Office of the United Cities and Local Governments (UCLG) supported the application of the fourth pillar and endorsed the policy statement 'Culture as the fourth pillar of sustainable development' on 17 November 2010, in the context of the World Summit of Local and Regional Leaders in Mexico City (UCLG, 2010).

The document does not consider culture as a 'fourth' pillar or dimension in a hierarchical system, but rather as an advocacy document that promotes culture as a specific pillar or dimension of sustainable development, fully interlinked with the other three pillars, compatible with all of them and equally important.

This new approach addresses the relationship between culture and sustainability in two dimensions. Firstly, strengthening and developing the cultural sector itself, such as heritage protection, art, cultural tourism, and secondly, ensuring that culture is given its rightful place in all public policies, particularly those related to the education, the economy, the science, the communication, the environment, the social cohesion and the international cooperation. In other words, creativity, knowledge, diversity and beauty are fundamental values closely linked to human development and freedoms (UCLG, 2010).

Throsby (2010) identifies five key sustainability principles as part of cultural sustainability, which originally support sustainable management of natural resources, but which are also applicable to cultural heritage management because of their similarities. After all, if the protection of natural resources is central to environmental sustainability, then the protection of cultural assets should be given the same priority for cultural sustainability, i.e. it is suggested that similar principles should be applied to cultural heritage management. Thus, these are:

- ensuring equality of access to cultural resources for present and future generations;
- promoting cultural diversity;
- applying the precautionary principle in the management of cultural heritage to prevent irreversible damage or loss;
- the need to raise awareness of the interconnectedness of cultural, economic, social and environmental systems and
- to take into account the impact of the cultural heritage management decisions on other sustainability aspects (Throsby, 2010).

Cultural sustainability is about protecting and maintaining the world's cultural heritage (tangible and intangible). It is about ensuring that future generations can be brought up on the same traditions as those of today (Simon, 2023).

In this way, culture has been included in the sustainable development model (Loach et al., 2017), (Sabatini, 2019), (Pop et al., 2019), suggesting that all sustainability-related decision-making should take cultural sustainability into account. Ultimately, culture shapes the way we think and defines the values we believe in, thus shaping what we mean by development, but it also determines how we behave in the world. In other words, it is through culture that we learn about economic, social and environmental issues and develop our ideas about how society should address them (Duxbury & Jeannotte, 2011).

Although cultural sustainability was originally considered by many to be a component of social sustainability, arguing that culture is essential for a sustainable society, it is now often seen as a separate factor of equal importance to the three classical sustainability aspects. In my opinion, it is also the most correct way to represent it as a fundamental element of sustainability, which permeates all sustainability aspects.

Human sustainability

Some research (Gretchen et al., 2012) identifies social sustainability as human sustainability. The term human sustainability is also used in the literature to complement the classical sustainability dimensions. In this approach, social sustainability is split into human and social sustainability, with cultural sustainability sometimes being understood as part of the latter (Ortúzar, 2019). Thus, sustainability is divided into four distinct areas: human, social, economic and environmental. The four pillars offer an alternative perspective on sustainable development, with a greater emphasis on the human factor. Human sustainability specifically focuses on the importance of human capital. Representatives of this 'school of thought' Simon (2023) and Suri (2023) interpret social and human sustainability as follows.

- *Social sustainability* aims to ensure the well-being of society, the improvement and cohesion of social relations, peace, equality and development. In a broader sense, social sustainability encompasses the world we live in, including communities and cultures. In other words, culture is seen as part of social sustainability (Ortúzar, 2019). The social pillar of sustainable development supports the creation and development of thriving communities with prosperous social relations and increased economic opportunities, while respecting the environment.
- *Human sustainability* is at the heart of promoting the well-being of society and improving the quality of human life. Human sustainability aims to maintain and develop human capital in society. 'Human sustainability includes access to food, water, health care, education, justice, decent working conditions, skills development and respect for human rights in general' (Simon, 2023). Sustainability is the ultimate goal. But this cannot be achieved without efforts and strategies to conserve resources and improve the quality of human life. This is where human sustainability comes in. Human sustainability ensures that human life is not only preserved but also improved. So human sustainability is about maintaining and

improving human resources, human capital and culture within society.

This is why, as Suri (2023) puts it, 'investing in human capital is an essential element of sustainable development, as it promotes economic growth, social development and environmental sustainability'. In other words, a key element of the development strategy of countries, nations, regional and local governments is to support education and health. In addition to the economic benefits, education and skills development provide people with access to better job opportunities, thereby improving living standards and reducing poverty and inequality.

Simon (2023) mentions cultural sustainability in addition to human sustainability in her understanding of sustainability, while others identify other dimensions or dimensions in addition to human sustainability, in addition to the classical pillars. One such example is politics.

Political (institutional-governance) sustainability

In their study, Burford et al. (2013) include political and institutional factors among the pillars of sustainability. Political-institutional-governance factors can be classically understood as part of economic sustainability but have recently been highlighted as a separate dimension due to their importance. The use of the institutional-policy dimension as the fourth pillar of sustainability (Pfahl, 2005; Spangenberg, 2002) has become widely accepted within the European Commission and the United Nations, as the Committee on Sustainable Development (CSD) has incorporated institutional indicators into the 1995 indicator framework used to assess the implementation of Agenda 21 (UN, 2001).

Political sustainability means that institutions and governance systems must work properly to achieve sustainability goals. This includes effective and transparent decision-making processes, efficient and equitable allocation of resources, and the development and maintenance of appropriate legal and regulatory frameworks that contribute to environmental protection, social justice and other sustainability goals. Policy processes and decision-making should involve different stakeholders and social groups. Political sustainability balances the reconciliation of different interests and the needs of present and future generations, and aims to ensure that policy and governance move towards sustainable development. This 'pillar' is therefore important because policy and governance fundamentally determine how we use and manage social and natural resources.

However, it should be made clear that the political dimension of sustainability and governance, although strongly interlinked and overlapping, are not the same. Governance is a broader concept that encompasses the political system, institutions, legal frameworks, decision-making processes and the ways in which a country or regional entity, such as a city, is governed. The political dimension of sustainability, however, is a specific aspect of governance that aims to ensure that the political system and government institutions follow sustainability goals and principles and apply them to the sustainable development of society and the environment. Political systems and institutions create rules, laws and policies that promote sustainability. For example, governments should develop sustainability strategies, promote environmentally friendly measures, encourage the use of renewable energy sources and participate in global efforts to combat climate change. So governance is the toolkit we use to achieve sustainability goals, and it involves coordinating political, economic, social and environmental factors to achieve balance and sustainability. The political dimension of sustainability is therefore part of governance and aims to ensure that policy systems, institutions and decision-making processes are responsive to the needs and interests of present and future generations.

While some research treats politics and local governance separately in the interpretation of sustainability (Zen et al., 2012), others (Burford et al., 2013; Ortúzar, 2019) include good governance in the fourth pillar, the political-institutional dimension. Burford et al. (2013) not only consider politics and governance as pillars of sustainability, but also identify culture as a separate dimension, as mentioned earlier, to create a five-dimensional model of sustainability.

Technological sustainability

Although the standard concept of sustainability includes three main dimensions, nowadays other dimensions are added, including technological sustainability. Technological sustainability is also considered by most approaches as part of the economic pillar, but today technology has an impact on all three classical pillars, with Raihan & Tuspekova (2022) and Lopolito et al. (2022) identifying it as a separate factor.

This is because technology supports environmental sustainability in different ways by promoting sustainable resource use, supporting the development and deployment of environmentally friendly technologies, and the more efficient use of renewable resources such as solar, wind, hydropower and geothermal energy. Energy production based on these technologies reduces the use of fossil fuels and carbon dioxide emissions, contributing to the fight against climate change (Schoor et al., 2023). The technology also enables energy efficiency (Horváth et al., 2023) in buildings, industry and transport. By stimulating the development of digital technology, smart home systems and efficient manufacturing processes will help to reduce energy and resource demand. Innovative

technologies support the circular economy (Mattiasich-Szokoli & Szóka, 2022) and sustainable manufacturing using green technologies, consideration of the whole life cycle of the product, and sustainable value creation (Vacchi et al., 2021).

Innovative technologies can also help to manage waste in a more environmentally friendly way, recycling plastics and other waste and reducing the amount of waste generated. In addition, technology can support greener and more sustainable transport by promoting electric and other sustainable transport solutions, reducing air pollution and emissions. Information technology and big data analysis will enable a better understanding of environmental problems and more effective planning and implementation of measures to combat climate change. Innovative technology and related developments are therefore key to promoting sustainable environmental practices and achieving environmental sustainability. In addition to environmental sustainability, technological sustainability also supports the achievement of social sustainability through information and communication systems, as their development and accessibility improves people's quality of life, healthcare, education and access to information. Online educational platforms and digital tools also help to educate for sustainability and raise awareness in society. Technological innovation and development also contribute to sustainable economic development. Smart and green technologies, digitalisation and more efficient production enhance the sustainability of the economy. Technological sustainability is therefore a comprehensive approach in the overall context of sustainability, as it has a fundamentally positive impact on the three classical pillars of sustainability (economy, society, environment), helping to balance them and achieve the sustainability goals.

Digitalisation is an important element of technological sustainability. Technological sustainability seeks to use the benefits of technology to support and promote sustainability in the ecological, economic and social dimensions. Integrated and smart technology solutions are key to achieving sustainability goals, as technology contributes to all pillars of sustainability. The appropriate and responsible use of technology is the basis for achieving and maintaining sustainability goals for future generations. The key importance of digitalisation is emphasised in a number of studies (Bereczk et al., 2022; Lipták et al., 2023), by the European Commission in its Decision that Europe should exploit the potential of the digital switchover, i.e. 'to deploy and invest in digital technologies that put sustainability at their core and contribute to a sustainable, circular and climate-neutral economy and society in line with the European Green Deal' (EU, 2022). 'Digital technologies such as artificial intelligence, 5G, cloud computing, edge networking and the Internet of Things can accelerate and maximise the impact of climate and environmental policies. Digitalisation also offers new opportunities for remote monitoring of air and water pollution, and for monitoring and optimising the use of energy and natural resources' (European Commission, 2019). The role of digitalisation in achieving sustainability is reinforced by the European Commission's Communication on 'Aligning the green and digital transition in the new geopolitical environment' (EESC, 2023).

Innovation, technological progress and the integrated and judicious use of digitalisation are key to achieving sustainability goals. The appropriate use of technology helps to reduce environmental pressures, optimise resource use and contribute to global sustainability goals. For this reason, some studies include human sustainability (Glenn, 2023) or cultural sustainability (Schoor et al,. 2023) among the pillars of sustainability, alongside technological sustainability. This is because the way technology is used to achieve sustainability depends on the values, perceptions and ultimately the culture associated with sustainability.

Corporate sustainability

Nasrollahi et al. (2020) assess sustainability along five dimensions, adding technology to the classic three aspects of environment, society and economy, and introducing the importance of industry as a new factor. Obviously, in a different approach, it is part of the economic pillar, while technology is seen as a component of industry. Closely related to this is a research conducted in Australia on the understanding of sustainability (Greenland et al., 2022). A survey of business and law students was conducted and evaluated using factor analysis, and a five-pillar model of sustainability was developed. This model includes the pillars of the traditional three- and four-pillar conceptual model of sustainable development, plus a new fifth pillar, corporate sustainability. The research identified a hierarchy of pillars in order of perceived importance: social, political, environmental, corporate and economic. Corporate sustainability is defined as the sustainability of the company, as defined by Kantabutra & Ketprapakorn (2020) went beyond the concept of CSR to define it as the management and governance approach that a company adopts to grow profitably while achieving social, environmental and economic outcomes. In other words, corporate sustainability is understood as more than CSR. For more details on the different interpretations of corporate sustainability, see Hernádi (2012).

Corporate sustainability is based on principles and practices that aim to balance the impacts generated by companies with economic growth, social responsibility and environmental sustainability. It is important that companies do not only focus on maximising profits, but also take into account social and environmental impacts.

Corporate sustainability includes, among others:

1. *Environmental sustainability in business*: Companies should be responsible for the natural environment, minimise harmful environmental impacts and contribute to sustainable environmental practices such as promoting environmental protection, sustainable product design and green technologies and innovations.
2. *Social sustainability in business*: Companies must take responsibility for the well-being of people, communities and workers. This includes ethical business practices, respect for human rights and a decent working environment, and reasonable pay for employees. It also means supporting local communities through philanthropy.
3. *Economic sustainability in business*: Companies must strive for sustainable economic growth and financial stability. This includes long-term planning, efficient use of resources and sustainability of the business model.

Corporate sustainability is therefore an important dimension of sustainability and contributes to sustainable development within the economic sector. Companies need to balance their economic interests with their social and environmental responsibilities to create a more sustainable future.

THE 5 P MODELS OF SUSTAINABILITY

At the UN summit in September 2015, the world's 193 member states pledged to end poverty, fight injustice and tackle climate change. The 2030 Agenda (United Nations, 2015) was adopted, setting out sustainability goals in 17 areas.

These are as follows (Figure 1).

Source: UN website

Figure 1. Sustainable development goals

The 17 goals have been broken down into 169 sub-targets and 231 specific indicators that serve as a 'compass' for countries, regions, organisations and companies on how to achieve planetary protection, social and economic well-being. The 17 goals are divided by the UN into five so-called pillars, covering the three classical dimensions of sustainability: social, economic and environmental. Each of the five pillars begins with a letter P in English, as people, prosperity, planet, peace, and partnership (United Nations, 2015). This partially corresponds to the social (people), economic (prosperity) and environmental (planet) aspects, with the exception of the last two areas, peace and partnership, which are a separate group because they are highly relevant to all the other goals (Lekagul et al., 2022).

The 5 P models of sustainability (United Nations, 2015):

1. *People:* 'People' represents the human dimension of sustainability, which is linked to society. This includes people's well-being, health care, education and equality. This first 'P' dimension focuses on ending poverty and hunger, ensuring equal opportunities for all people and that they live in dignity and a healthy environment. The first five goals of the SDGs fall under the category of people, which emphasise the importance of livelihoods for all (Carlsen, 2023). The first two goals address basic subsistence, while the third and fourth goals set targets in the areas of health, well-being and education. And Goal 5 addresses one of the key societal issues, equal opportunities for women.
2. *Planet:* The second 'P' focuses on protecting the planet from destruction, including through sustainable consumption and production, sustainable management of natural resources and urgent action to tackle climate change so that it can meet the needs of present and future generations. The challenges facing our planet are presented in Goal 6, 12, 13, 14 and 15. Goal 6 says that all people should have access to clean and safe water and sanitation. As we know, water management is critical to saving the world and our planet, as all life forms need water to survive. Goal 6, Goal 12 address the strengthening of adequate and proportionate production and consumption. Goals 13, 14, 15 directly address the protection of the ecosystems around us and the climate, which are key to the survival of our planet.
3. *Prosperity:* The third 'P' focuses on a life of well-being for all, and on economic, social and technological development in harmony with nature. Prosperity represents the economic dimension of sustainability, focusing on sustainable economic growth, job creation and income distribution. Goal 7 aims at achieving an appropriate and sustainable balance in energy use by reducing the negative impacts of overconsumption, as we cannot save the planet without addressing energy use. In addition, Goals 8, 9, 10 and 11 are also included, covering decent work, industry, innovation, infrastructure, reducing inequalities, sustainable cities and communities.
4. *Peace:* The fourth 'P' calls for peaceful, just and inclusive societies, free from fear and violence, because, as it affirms, there can be no sustainable development without peace, and no peace without sustainable development. Goal 16 therefore shows that the international community must unite to promote and protect peace worldwide.
5. *Partnership:* The fifth 'P' refers to partnerships, cooperation and global collaboration to achieve sustainable development (supporting the implementation of the 2030 Agenda), with a special focus on the needs of the poorest and most vulnerable, involving all countries, all stakeholders and all people. That is, it enables the sharing of resources, knowledge and experience and collective action to achieve sustainability. In other words, SDG 17 supports the achievement of the other 16 SDGs by involving all actors in society.

This model organises the pursuit of sustainable development around five aspects, such as people, economic development, environmental preservation, peace and partnership, which it defines as the pillars of sustainability. In the classical understanding of sustainability, these 5 P's can be mapped as follows. The human pillar is the social aspect, the planet is the natural environment, prosperity is the economic aspect (Lekagul et al., 2022), peace is defined by the UN as good governance (UN DESA, 2019), while partnership is the system-wide aspect, involving and collaborating at global, regional, and national levels to achieve sustainability.

Multidimensional models of sustainability integrating the above factors are presented in Table 1.

Table 1

Multidimensional models of sustainability -

Factors of sustainability	Model of sustainability	Authors
Classical sustainability	Environmental + social + ecological sustainability	Brundtland (1987)
Cultural sustainability	Environmental + social + ecological + cultural sustainability	UCLG (2010), Loach et al. (2017) Sabatini 2019, Pop et al. (2019)
Human sustainability	Environmental + social + ecological + human sustainability	Suri (2023)
	Environmental + social + ecological + human + cultural sustainability	Simon (2023)
Political/institutional/ governance sustainability	Environmental + social + ecological + political/institutional sustainability	UN 2001, Spangenberg (2002), Pfahl (2005), Vázquez et al. (2015), Grindheim et al. (2019)
	Environmental + social/cultural + ecological + political/institutional sustainability	Ortúzar (2019)
	Environmental + social + ecological + political + institutional sustainability	Zen et al. (2012)
	Environmental + social + ecological + cultural + political/institutional sustainability	Burford et al. (2013)
Technological sustainability	Environmental + social + ecological + technological sustainability	Raihan & Tuspekova (2022), Lopolito et al. (2022)
	Environmental + social + ecological + technological + human sustainability	Glenn (2023)
	Environmental + social + ecological + technological + cultural sustainability	Schoor et al. (2023)
Corporate sustainability	Environmental + social + ecological + technological + industrial sustainability	Nasrollahi et al. (2020)
	Environmental + social + ecological + political + corporate sustainability	Greenland et al. (2022)
Peace and partnership	The 5 P model of sustainability (people, planet, prosperity, peace, partnership) → environmental + social + ecological sustainability + governance + partnership	United Nations (2015) UN DESA (2019) Lekagul et al. (2022)

Source: own editing

RESULT AND DISCUSSION

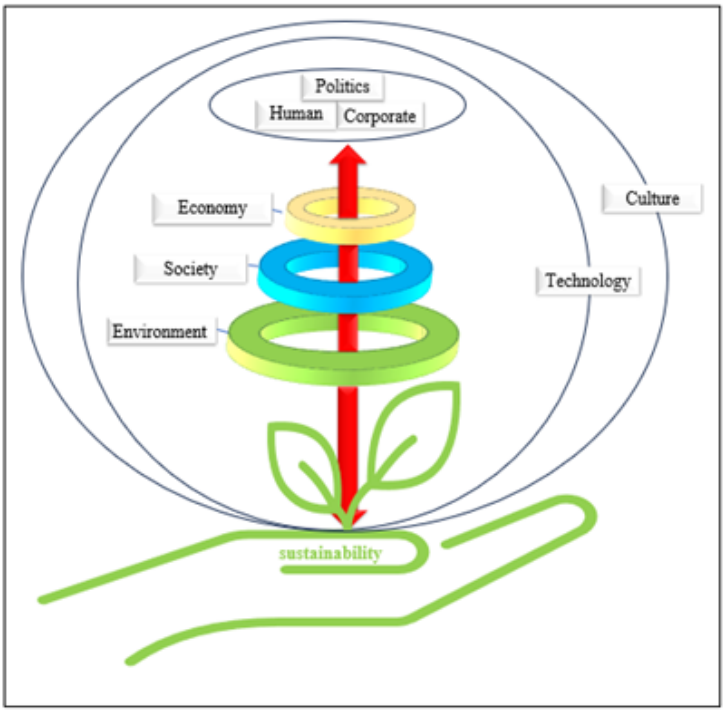
The classical concept of sustainability, which includes economic, social and environmental sustainability, has been complemented in recent years by other factors relevant to sustainability. Sustainability therefore not only has the three classical dimensions, but also human, cultural, political-institutional-governance, technological and corporate sustainability. These can be understood as separate but overarching aspects of sustainability. There is a wealth of research and arguments as to why these factors play a particularly important role in achieving sustainability goals. It is therefore fair to say that each of these dimensions has a place in a complex model of sustainability. Of course, these dimensions are not new in the sense that they have always been part of the three classical pillars, but what is new is that the above-mentioned approaches attribute to these aspects a separate and independent impact in the implementation of sustainability.

Therefore, a complex model of sustainability along the eight aspects mentioned above can be described as follows.

The basic elements of sustainability are culture and technology, which permeate and influence all dimensions of sustainability, including economic, social and environmental sustainability. These classical dimensions of sustainability are interlinked and interact. In addition, political/governmental, corporate and human sustainability add new levels of understanding and implementation of sustainability. The importance of these dimensions and their role in the context of sustainability can be summarised as follows:

1. *Cultural and technological sustainability:*
    - *Cultural sustainability***:** Culture determines people's values, attitudes towards the environment and their relationships with each other. Values and habits shape sustainable lifestyles and consumption, and the way we treat natural resources. This dimension focuses on the preservation, promotion and development of human culture, traditions, identities and cultural heritage.
    - *Technological sustainability:* Technology enables innovation and more efficient use of resources, helping to develop sustainable solutions to achieve sustainability goals such as energy saving, recycling, smart waits and digitalisation.
2. *Economic, social and environmental sustainability:*
    - *Economic sustainability* means sustainable economic development and efficient use of resources.
    - *Social sustainability* focuses on people's well-being and social justice.
    - *Environmental sustainability* focuses on preserving natural resources, maintaining ecological balance and combating climate change.
3. *Human, political/governance and corporate sustainability:*
    - *Human sustainability:* Maintaining and improving people's well-being is the key to sustainability. Education, health and equality are important elements of this dimension, as well as ensuring that people can live a fair and fulfilling life now and in the future.
    - *Political/institutional sustainability good governance:* The policy dimension focuses on the analysis and development of policies, institutions and decision-making processes related to sustainability. The development of effective policy frameworks is essential to achieve sustainability goals.
    - *Corporate sustainability:* Business and other organisations must take responsibility for society and the environment and promote ethical and sustainable business. Sustainability should also be part of the corporate culture and business model.

Each dimension is partly interdependent and together they form the whole of sustainability. An integrated approach and a balance between the dimensions are important to fully understand and achieve the sustainability goals. The following figure illustrates the integrated model of sustainability and helps to understand the place of the sustainability dimensions and how they interact with each other (Figure 2).



Source: own editing

Figure 2. Eight dimensions of sustainability

The dimensions of sustainability presented in this study fit perfectly with the classical model of sustainability, but only complement and fine-tune it. These factors have been given special attention because the more countries, organisations and individuals commit themselves to the ideal of sustainability, the more they integrate it into their actions and behaviour in their decision-making, and the more they see the additional means without which they cannot achieve the goals set by the UN and without which they cannot achieve full sustainability. Thus, the integrated model of sustainability, an eight-factor model, in which one 'axis' is the classic three aspects of sustainability (strong interpretation), the environment, which includes society, which includes the economy, and the other 'axis' is the partners (partnership in the 5P model), i.e. all those who influence the achievement of economic, social and environmental goals in their decisions. These must contribute to sustainability, both individually and collectively, and are affected by the classical dimensions, both individually and collectively. These 'partners' are at the level of countries (political sustainability), companies (corporate sustainability) and individuals (human sustainability). And culture and technology permeate and support the whole sustainability framework, as they are both the basis and one of the tools for achieving sustainability. Culture is also understood by international organisations as a distinct aspect of the dimensions of sustainability, and technology and with it digitalisation has been given a prominent place in the EU's objectives, claiming that without it we will never achieve full sustainability. Levels of cooperation (individual, organisational, governmental), which are effectively also levels of implementation, are also undoubtedly essential elements of sustainability efforts.

CONCLUSION

In addition to the classic three pillars of sustainability, which include economic, social and environmental sustainability, in recent years other areas have been identified in terms of sustainability. Therefore, the study provides an overview of the other dimensions of sustainability based on the literature and practice, presenting their role and impact in the realization of classical sustainability goals. The article also maps which factors expand the standard model of sustainability into four, five or even more pillar concepts. Based on this, it identifies five additional areas, which it combines together with classic sustainability aspects in an integrated model. Thus, it develops the three-dimensional standard model of sustainability into an extended eight-dimensional model.

This points the way forward for further research, as the achievement of sustainability goals needs to be continuously measured and evaluated. Sustainability performance can be assessed at global, national, corporate and individual levels. There are efforts to do so, e.g. at the corporate level through various sustainability reports, e.g. the EU's taxonomy regulation facilitates the assessment and comparison of companies' sustainability efforts. This, in turn, may require looking at the additional factors mentioned above when interpreting sustainability at the company level, which may also lead to a refinement of the term ESG as it is used today.

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