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The Price of Sustainable Development in Polish States and Private Universities in Terms of Natural Capital Theory and Doughnut Economics Theory

Introduction

Sustainable development is a concept that implies a balance between social development and economic growth, environmental protection and social inclusion. As the United Nations Educational, Scientific and Cultural Organisation (UNESCO) points out, "universities, as a place to train future leaders, have a special responsibility to implement education for sustainable development – not only through their teaching programmes, but also through their management strategies, research policies and impact on local communities" (UNESCO, 2017, p. 18–19).

For society, universities play a special role, as they not only educate, conduct research, implement sustainable environment projects, upgrade infrastructure, but also provide a model for implementing environmentally friendly solutions within their own organisations. In Poland, state universities, leaders in research, implement the state's administrative recommendations explicitly set out in directives. Private universities, on the other hand, which are market-oriented – treating education not only as a mission but also as a business – are aware of the need to meet market and societal needs.

As Muhammad Sohail, from the World Economic Forum, points out, higher education institutions are a key pillar for achieving the Sustainable

Development Goals in 2025. They provide the knowledge, skills and attitudes necessary to solve the world's sustainability challenges and achieve the Sustainable Development Goals. The 2022 Sustainable Development Goals Report painted a worrying picture of progress in almost all areas. Moreover, educational institutions still have untapped potential. They can contribute to the Sustainable Development Goals in a variety of ways, using their obvious strengths, such as education and research, but also their capacity to build communities, influence people and engage communities directly (Sohail, 2023). The results of the IAU Global Report Accelerating Action for the SDGs in Higher Education (2021–2022), describing the activities of 397 universities, identify the main challenges (e.g., lack of funding, insufficient staff, training) of the structures responsible for the SDGs and strategies for action (Toman et al., 2023).

Sustainability solutions are neither organisationally easy nor cheap. Simple economic calculation ignores environmental and social issues. Their cost is high, and the investment and economic scale are over many years. They require investment and commitment to one's own future and that of generations. The price of investment in sustainability can be considered and analysed through the lens of economic, environmental and social theories such as natural capital theory and doughnut economics theory by Kate Raworth which not only allows for effective policy making and investment decisions, ensures efficient allocation of resources and avoidance of waste, identification of long-term benefits and savings as confirmed by researchers including Polasky and Kling (2019).

Taking this into account, the author defined the research question: " What is the price of actions taken to implement sustainability strategies, undertaken in private and public universities in Poland?, in the context of natural capital theory and doughnut economics?". The research premise was:

Private universities achieve sustainable financial stability through diversified revenue streams. State-owned institutions face lower bankruptcy risk thanks to subsidies and grants, but the higher costs of adapting to new sustainable standards can strain public budgets. Decisions to implement environmental initiatives in private universities depend more on marketing cost-benefit calculations than in public institutions, which are obliged to implement state policies.

Literature analysis and survey methods were used. The study aims to analyse the 'price' of sustainability from two perspectives: a theoretical one in the light of selected economic concepts and a practical one by collecting students' opinions on costs, visible effects and perceptions of the university's commitment to sustainability.

As a result of the research, in the first part the author defined the price of sustainable development activities in the context of the two theories cited:

doughnut economics and natural capital, in the second part she conducted a review of the actions taken for sustainable development in Polish private and public HEIs and in the third part the result of a survey among employees and students of private and public HEIs on the declarations vs. actual actions in the field of 'green' education, science and organisational transformation.

The Price of Investing in Sustainability

Price, understood as an economic category, is, as Samuelson and Nordhaus (2019: 67) point out, an economic category that serves as an informational signal in the market, determining the value of a good or service at a specific place and time.

Sustainability is a way of operating that allows organisations, companies and society to grow in a way that simultaneously cares for the environment, the economy and people (World Commission on Environment and Development, 1987, p. 7). This means that organisations can grow and make profits, but without harming nature or local communities. While ESG (Environmental, Social, Governance) is a concept that refers to the three key areas (economic, social, and environmental) that organisations must consider in their operations to act in an eco-responsible manner.

When considering price as a cost of investment in sustainability, it is worth recalling classical natural capital theory and modern doughnut economics theory. Classical and neoclassical economic theory view price as the result of market equilibrium between supply and demand, primarily determined by production costs and consumer expectations. However, such an approach does not account for the social and environmental costs or the long-term economic consequences of sustainable development investments. Natural capital theory and doughnut economics offer broader, more relevant perspectives for analysis.

Natural capital theory dates back to the early classics, e.g., Adam Smith and Alfred Marshal. It was developed in the 1990s by H.E. Daly, and stands for an economic construct describing the natural world, its ecosystems and their value to society (Kareiva et al., 2013). The way people value the natural world determines how companies and societies both conserve and deplete it. Economists use the concept of natural capital to explain the contribution that the resources of the natural world make to human economies (England, 2000, p. 425). Costanza et al. define natural capital as the resources of ecological systems that produce the ecosystem services necessary for the functioning of life-support systems on Earth and for human well-being, directly and indirectly. The authors point out that it is not enough to assign a price to natural capital and force it into competitive market boundaries.

Instead, they must adjust to the fact that natural capital is non-renewable and generates a flow of public good services best protected by corporate efforts (Costanza et al., 1997, p. 350–260). As Farley points out, the importance of the natural capital concept increases, as evidenced by its steadily growing use in the literature. The market system is very efficient at allocating natural capital to market products, but does not account for the increasing scarcity of natural capital. The depletion of natural capital will diminish not only nature's ability to regenerate itself, but also the raw materials needed for all economic production and the flow of ecosystem services necessary for human well-being (Farley, 2012, p. 264).

Doughnut Economics theory (doughnut/ring economics) is an economic model proposed by British economist Kate Raworth, which aims to transform traditional economics into a tool for human development in the 21st century. The model visualises the economy as a 'parcel', where the space between the inner and outer ring represents a 'safe and just space' for society-a place where the needs of all people are met, without overstepping the planet's ecological boundaries (Raworth, 2017, p. 16). There are two boundaries in the model: the inner ring the so-called social foundation, which represents the minimum human needs necessary for a dignified life, includes 12 categories, inspired by the UN Sustainable Development Goals. The second outer ring of so-called Planetary Boundaries encompasses the Earth's ecological limits, the exceeding of which threatens to destabilise natural systems. It includes nine boundaries, such as climate change, biodiversity loss, ocean acidification, freshwater consumption and chemical pollution, for example (Raworth, 2018). These boundaries are based on research by scientists such as Johan Rockstrom (Doughnut Economics Action Lab, 2025). The space between these circles is where the economy should operate: meeting societal needs (avoiding the 'hole' in the doughnut) without destroying the environment. The aim is to create an economy, regenerative (renewing resources), and distributive (equitably sharing benefits), rather than focused on endless GDP growth. The theory has gained widespread application, e.g., for shaping public policy, corporate strategies, and city planning (the city of Amsterdam adopted the Doughnut model as a framework for its sustainability strategy) in 2020. similar initiatives implemented in New Zealand, Wales and some companies (Nugent, 2021). Critics believe the model is too general and fails to provide specific prescriptions, while proponents praise it for its holistic approach to climate crises and inequality. As Doughnut Economics points out, it is a vision of an economy that balances human needs with planetary capacity, promoting social and environmental justice (Bascle, 2023).

Thus, natural capital theory views natural resources as a key factor in economic production, whereas the Doughnut Economics model is a holistic framework integrating social and ecological aspects in a vision of

a sustainable economy. Table 1 summarises the main differences and similarities of these two approaches to sustainability.

Table 1. Natural capital theory and Doughnut Economics theory – similarities and differences

List	Natural capital theory	Doughnut economics theory
Basic assumptions	Natural capital cannot be replaced, sustainability requires the preservation or growth of natural capital itself with rigid ecological limits. It is an approach that emphasises planetary limits and the need for rules, e.g., emission limits, conservation of resources, not just market mechanisms.	This theory rejects the obsession with GDP growth, promoting a regenerative (renewing resources) and distributive (equitably sharing benefits) economy is closer to strong sustainability, but extends it to include a social and dynamic dimension (the economy as an adaptive system
The price of investing in sustainability	Environmental resources are a form of capital with a specific economic value, and their degradation or protection has real financial and social costs	The price of transformation cannot be considered and analysed solely through the prism of the market. It takes into account the needs of society and environmental constraints. It helps to understand that the cost of implementing sustainability is also the cost of changing business models, organisational values and social relationships.
Differences	– The natural capital model lacks a social dimension. The doughnut economics model is a practical tool and is more adaptive to crises. – The natural capital model focuses more on the environment than on social justice. The doughnut economics model, emphasising the importance of social justice with sustainability, must meet the needs of all without exclusion.	
Similarities	– Conservation of natural capital – no renewal of natural capital – Holistic approach – linking the economy with social aspects – The traditional perception of economic growth leads to overstepping ecological boundaries	

Source: Hinson et al., 2022; Raworth, 2017; Polasky & Daily, 2021, p. 88.

In summary, the cited theories of natural capital and Doughnut Economics offer an opportunity to more fully capture the price of sustainability investments, as they combine traditional financial considerations with social and environmental costs and account for the long-term impact of organisational transformation on the environment.

Polish Private and Public Universities in the Face of Environmental Challenges

A university, as T. Pearson points out, is an educational and research organisation with the character of a public or private institution, whose purpose is not only to transmit knowledge and conduct research, but also to shape human capital and the social and cultural development of society (Parsons, 1959, p. 298).

Sustainability in a university, according to Shriberg and Tallent, means implementing environmental, social and economic values throughout the management system of the institution – from organisational strategy to campus management to stakeholder relations (Shriberg & Tallent, 2003). Wright adds that universities should integrate sustainability aspects into every aspect of their operations – including energy policy, waste management, building design and promoting sustainable transport (Wright, 2010, p. 73).

Sustainability for HEIs means not only implementing environmental content in education, but also being fully socially responsible in resource management, conducting research on the SDGs, and consciously interacting with the environment.

In Poland, in the academic year 2024/2025, there were 352, including 238 non-public HEIs (211 practical-profile HEIs and 27 are academies) (GUS, 2025, p. 1). State and private HEIs differ in terms of their objectives, structure, funding and scope of activities. Regardless of the type of funding, each university conducts its activities on the basis of Act 2.0 (Law on Higher Education and Science, 2018) subject to the supervision of the Ministry of Science and Higher Education. They have a hierarchical structure comprising a rector, a senate, and faculties (Act of 20 July 2018). The fields of study are diverse across state and private universities, and only the academic or practical profile of the university determines the nature of the activities undertaken. Among universities with an academic profile, the leaders are state universities, which not only have extensive infrastructure, including laboratories, libraries, research centres and campuses, funding mainly from the state budget and EU funds. Full-time study at state universities is free of charge, with a limited number of places available and enrolment is based on matriculation results or entrance examinations. The main sources of funding are budget subsidies, research grants, EU funds, and income from tuition fees for part-time studies and foreign students. They employ qualified scientists with professorial and postdoctoral titles, combining academic and research activities (e.g., according to the AGH Report for 2023, more than 80% of the staff have doctoral degrees, of which 70% have experience of participating in research grants) They actively participate in foreign exchange programmes, cooperate with foreign universities and are members

of international research consortia. They organise scientific conferences, interdisciplinary projects and actively cooperate with industry (AGH Bulletin, 2023).

Private universities, which have been operating since 1989, have developed a significant place in the labour market, they focus on practical preparation of students for the labour market, they offer courses corresponding to current trends, programmes are implemented faster – private universities with less bureaucracy are more flexible, often adapted to the needs of the local labour market. There is an emphasis on practical skills in education programmes, for instance, through internships and collaborations with companies. Infrastructure tends to be more modern, but me is extensive than in public universities. Research is mostly applied, but somewhat less extensive, compared to public universities. At the same time, the scientific activity of private universities is increasing. Studies are paid, with numerous forms of promotion, scholarships and flexible forms of study (online, evening studies). Private universities function as financially independent entities, which are usually run by companies, holding companies, or foundations. The structure, although hierarchical under the law, is less formalised, allowing for faster curricular changes. The main sources of funding are tuition fees averaging 5,000–15,000 per year, supported by income from courses, training, and collaborations with the private sector; less often they benefit from research grants. They combine academics with practitioners, employing both academics but also managers with professional experience, e.g., managers, lawyers, psychologists, which reinforces the private aspects of teaching. Private universities actively promote themselves abroad, offer programmes in English and cooperate with international institutions, open branches abroad.

Sustainability, following the higher education reform (Act 2.0, 2018), is part of the strategy of many universities. Public universities are obliged to develop strategies that take into account the broader socioeconomic context, including sustainability. For example, in its 2002–2030 strategy, the Gdansk University of Technology emphasises values related to social responsibility, technological innovation and environmental protection. The strategy includes goals such as developing green technologies, reducing the campus carbon footprint and promoting equality and inclusivity (Gdansk University of Technology, 2020). The University of Warsaw's strategy for 2019–2025 involves implementing the principles of sustainable development through interdisciplinary research, environmental education and projects related to the UN Agenda 2020, such as climate change research (University of Warsaw, 2022). The strategy of the AGH University of Science and Technology in Kraków includes the development of green technologies, e.g. renewable

energy sources, and education in sustainable development, with an emphasis on environmental engineering (AGH, 2024).

Public universities integrate the SDGs across research, education, and infrastructure management. These strategies are in line with national documents such as *Strategy for Responsible Development from 2017 to 2020 (with an Outlook to 2030)* (Ministry of Development, 2017) or *Regional Development Strategy 2030* (Ministry of Funds and Regional Policy, 2019), but also with *Draft Strategy for Poland's Development until 2035* (Ministry of Funds and Regional Policy, 2025). Although the cited documents do not include direct provisions on the role of HEIs as institutions, each of the mentioned strategies emphasises the role of education and science in achieving the goals, thereby underscoring the key function of HEIs. Priorities include improving the prospects of young generations through educational change, competence development, innovation and the implementation of advanced technologies. Private universities, just like public ones, conduct educational activities for sustainable development, social responsibility – their CSR ESG strategies are geared towards the labour market or practical application. For example, Kozminski University offers not only postgraduate studies but also promotes business ethics sustainable development (Kozminski University, n.d.). SWPS University emphasises social research in support of SDG goals such as equal pay, mental wellbeing or inclusive education (SWPS University, 2023). Private universities often focus on education, but also on cooperation with business for sustainable development, less often on research and green technologies.

Education includes the offer of both undergraduate and postgraduate degrees, postgraduate studies or courses in curricula related to sustainable development. For example, the AGH University of Science and Technology offers specialisations in ecological foundry technologies and renewable energy (AGH University of Science and Technology, n.d.). Warsaw University of Technology offers postgraduate studies in modern renewable energy (Warsaw University of Technology, n.d.) as well as specialisations in first- and second-level studies, i.e., Environmental Engineering (Warsaw University of Technology, n.d.). Kozminski University offers ESG training for HR managers, teaching them how to create sustainable workplaces (Kozminski University, n.d.). In addition, universities offer classes on the SDGs, e.g., the workshop on climate change Ambassadors/others of the energy transition (AGH University of Science and Technology, n.d.), the summer school on the use of land as a sustainable building material at the Warsaw University of Technology (Warsaw University of Technology, n.d.). The team of the Jagiellonian University Rector's Plenipotentiary for Sustainable Development runs a website dedicated to sustainable development at the Jagiellonian University, e.g., promoting environmental awareness among students, staff and the local

community, but also offering voluntary work, integrating people willing to cooperate on projects and events (Jagiellonian University, n.d.).

In terms of research, universities conduct research on technologies supporting sustainable development, e.g., PŚ Assoc. Prof. Katarzyna Stolecka-Antczak, Silesian University of Technology is conducting a research project entitled 'Enrichment of coke oven gas into renewable hydrogen to reduce CO2 emissions from industrial production units' (Silesian University of Technology – KMiUE, n.d.). Universities are setting up research centres, e.g., the University Research Centre for the Environment and Sustainable Development at the University of Warsaw, which brings together researchers from different disciplines to work on sustainable development projects (University of Warsaw, n.d.). They participate in international programmes, such as Horizon Europe funding research on sustainable development, e.g., closed loop economy projects for example A team of scientists from the Department of Materials Technology and Chemistry at the Faculty of Chemistry of the University of Łódź, led by Prof. Jarosław Grobelny, is implementing a project on the safety of (nano)materials entitled 'Implementing Innovative Methods for (nano)materials'. "Implementing Innovative Methods for Safety and Sustainability Assessments of Chemicals and Materials Particularly at Nano Level in the European Union" (University of Łódź, n.d.).

Corporate social responsibility in universities usually includes investments in green materials and infrastructure solutions, for example: Gdansk University of Technology has modernised buildings on campus to reduce energy consumption (Politechnika Gdańska, n.d.). Wroclaw University of Life Sciences is introducing waste management systems and recycling on campus (Wroclaw University of Life Sciences, n.d.). Universities are implementing decarbonisation plans, e.g., by reducing paper consumption, digitising administrative processes and promoting public transport among students. They promote inclusiveness and diversity gender equality, accessibility for persons with disabilities and multiculturalism, e.g., through scholarship programmes and anti-discrimination policies (Powiślańska Szkoła Wyższa, n.d.). Universities collaborate with businesses, NGOs, and local governments; e.g., the Silesian University of Technology works with companies in Gliwice on GOZ projects. Increasingly, they publish ESG reports, e.g., Sustainability Reports, in which they present progress towards the SDGs, for example, the University of Warsaw, which reports on activities under Agenda 2030. Universities conduct SWOT analyses to identify areas in which they can support the SDGs. An example is the report *Bialystok University of Technology on the road to sustainable development 2023*, which is based on internal data and stakeholder consultations (Bialystok University of Technology, 2024). The Warsaw University of Technology is implementing a project to modernise the thermal efficiency of historic buildings (Warsaw University of Technology,

2025) and the ECO-Mobility Project to promote eco-mobility, e.g., bicycle stations (Warsaw University of Technology, 2024). Jagiellonian University is conducting research on public health and social inequalities in support of the SDG goals on well-being and equality (Jagiellonian University – INCET, 2024).

The mentioned activities for sustainable development undertaken by Polish universities in the field of: education, science, research and management can be considered through the prism of the natural capital theory cited in the second part of this article, as well as K. Raworth's theory of doughnut economics. With natural capital theory meaning investment in energy efficiency and environmentally friendly infrastructure as protection of this capital. Natural capital theory treats natural resources (ecosystems, raw materials) as a key, often non-substitutable factor of production, with a distinction between weak (substitutable) and strong (protective) equivalence. They treat natural capital in this view as a resource to be valued and protected, applying it to research, policies, strategies and education. The price of investing in the sustainability of HEIs, in this case, depends on factors including the mission of the institution, available resources and perceptions of the value of natural capital, social capital and external costs. Doughnut economics, on the other hand, can be used to holistically assess the social and environmental impact of HEI activities, promoting a regenerative and distributive economy. It is an analytical framework for examining the activities undertaken, following this approach, universities are shaping an important competence for the future: systems thinking – linking economics, society and ecologies. The University of Leeds is taking an active role in Climate Action Leeds' activities, e.g., using doughnut economics to assess the status of education, identifying social deficits, e.g., accessibility of education (Climate Action Leeds, 2022). Students at the London School of Economics apply the model to evaluate urban policies where growth is not an end in itself (Rogers, 2022). Table 2 summarises the theories mentioned in relation to private and public scholars.

Public universities are more likely to treat sustainability as a social mission and a systemic obligation - they have better access to external funding, participate in research, EU programmes and national policies. Private universities take a more strategic and market-based approach - they promote green activities as a competitive differentiator, may be more flexible and quicker to react to trends, but do not always have a reporting or public interest obligation.

Table 2. Costs of sustainability measures in public and private universities Natural capital theory and the 'doughnut economy'

Natural capital theory	Theory of the doughnut economy
Goal: need for conservation and rational use of resources	**Goal: balance between needs and limits**
Environmental approach: – Public universities: cost of campus energy transition, need to supply to public policies – Private universities: need to pay their own costs or through grants, subsidised projects, is part of green marketing Social approach: – Public universities: need to change working style – Private universities: social goals are subordinated to business goals Economic approach: – Public universities: the amount of spending and investment depends on the budget and grants but also on the project activity of the institution Private universities: – High but rapid investment in green technologies	Environmental perspective: – Public universities: pressure to provide access to education for all social groups, even at the expense of financial efficiency – Private universities: limited scale of social activity – expensive pro-social projects can only be implemented if they bring an image benefit Social approach: – Public universities: high costs of implementing equality, health and education policies – Private universities: balancing the price of tuition fees with social expectations of accessibility and equality Economic approach: – Need to redistribute resources, e.g., reduction of consumption by richer groups, social conflicts due to differences in interests – Private universities: high costs of socially responsible activities with no guarantee of return and success

Source: own elaboration based on Polasky & Daily, 2021; Wright, 2002; Shriberg & Tallent 2003; Lozano et al., 2015.

Research questionnaire – actions in the field of sustainable development in the opinion of students and employees of private and public universities

In the research part of the study, the author conducted a survey among students and staff at a practical-profile university in the Lower Silesian voivodship, both private (PRY) and public (PUB), between May and July 2025, regarding their sustainability efforts.

The study aimed to find out the opinions of university staff and students on the effectiveness of each university's sustainability efforts – with

a particular focus on their actual course of action compared to official declarations towards the concepts of natural capital theory and 'doughnut' economics.

The research assumption made by the author was that the price of sustainable development for HEIs is not limited to financial costs, but also includes investment in organisational change, building social capital, environmental protection and the development of pro-social and pro-environmental competences of staff and students, as well as avoiding the costs of inaction. From the perspective of the theories cited: natural capital and doughnut economics – these costs are necessary to avoid the much higher price associated with environmental degradation, loss of credibility and failure to adapt to the challenges of today.

Both the university – private (PRY) and public (PUB) have been taking action for sustainability for more than 10 years, adapting their infrastructure and undertaking training activities for staff, educational courses for students and employees, undertaking – although to a lesser extent – research in this area on the part of staff and students (Table 3).

Table 3. Overview of measures taken for sustainability in a public and private university

Public university (PUB)	Private university (PRY)
– Implements environmental policies resulting from legislation (e.g., waste management, energy retrofitting of buildings), including subsidised projects, – Conducts activities promoting pro-environmental attitudes among students and employees (campaigns, competitions, sustainability days), – Carries out research and teaching projects on sustainable development – subsidised, – Introduces classes on CSR, eco-innovation, sustainable development, in courses and dedicated SD postgraduate studies, – Reduces energy and water consumption, e.g., retrofitting lighting, monitoring consumption, – Engages in local social and educational initiatives,	– Implements environmental policies resulting from legislation (e.g., waste management, energy retrofitting of buildings), including subsidised projects, – Introduces sustainability into the educational offer by adapting the study offer to labour market trends, – Implements eco-innovations in management and administration with a view to optimising costs and resource consumption, – Conducts research and implementation projects – Conducts marketing information campaigns to promote green transformation, – Reduces energy and water consumption, e.g., modernisation of lighting, monitoring of consumption, – Engages in local social and educational initiatives for image purposes,

Source: own compilation based on private (PRY) and public (PUB) websites.

The survey was conducted among full-time and part-time students in the 3rd year of bachelor's studies, 4th year of engineering studies, 2nd year of master's studies (40 students – state university and 87 students of private university) and interviews among a total of 15 employees (7 – state university, 8 – private university). Areas of research included:

- Sustainability Action Area,
- Education on sustainability,
- Development of 'green' skills,
- Visible sustainability practices within the university,
- Areas of integration of the SDGs into the university's strategy (practice versus university statements on sustainability).

The first area was **sustainability activities.** As shown in Figure 1, students at the private university are more likely to perceive the university as undertaking sustainability activities.

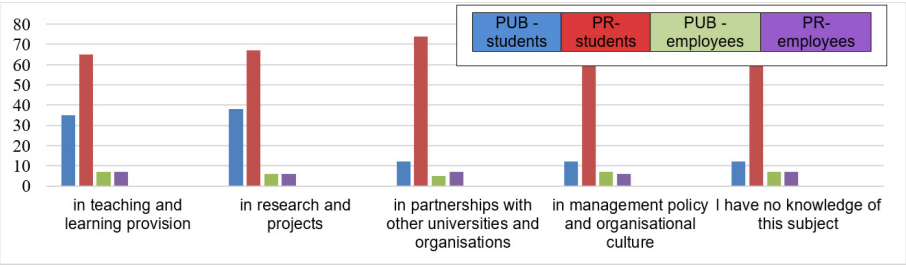

Figure 1. Distribution of respondents' answers to the question "In which areas does your university integrate sustainability goals with management and strategy building?"
Source: own study.

With regard to the next research area, **Education on sustainability,** the largest number of private university students indicated implementation in curriculum content (56%) and workshops (51%) (Figure 2). In public universities, the indications are lower around 30-32%. As can be seen from the answers given, private universities, guided by the need to remain in the competitive market, show a better understanding of market trends and are more willing to introduce SD content as an element of advantage-building (investment in reputation and image), which fits in with the assumptions of the doughnut economy theory. Natural capital is seen as a resource that educational universities expose private universities are more likely to use this 'image rent'. At a public university, education about SD seems less prominent or communicated.

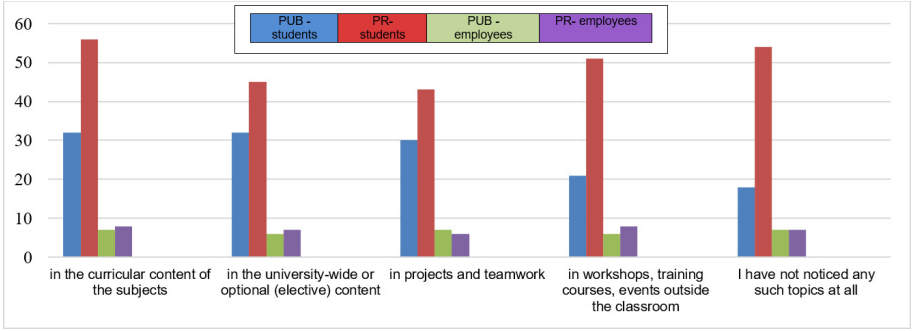

Figure 2. Distribution of respondents' answers to the question "In which areas does your university provide sustainability education?"
Source: own study.

The next area of research involved **the development of green skills.** In a multiple-choice question, respondents evaluated the university's activities in relation to a list of seven competences. Analysing the results of the given answers presented in Figure 3 – students of a private university and a public university rated competences such as interdisciplinary cooperation, social responsibility and design thinking the highest. Employees of the public university rated the development of competences significantly lower than students and employees of the private university. The private and public universities, in developing the green competencies needed to implement systemic change, act in line with the Doughnut Economic. With comments from students and staff at the private university indicating that the university actively and frequently provides courses and online training in SD, through which they feel they are investing in students' skills to take action to conserve natural resources, which aligns with natural capital theory.

Another area concerned **sustainability practices at the university.** The results presented in Figure 4 indicate that students at the public university most frequently noted integration in research, teaching and partnerships and most highly valued sustainable accommodation and green changes to the university infrastructure.

A private university consciously implements SD in its organisational strategy. HEIs investing in SD-compliant infrastructure contribute to the protection of environments and better application of resources, which fits in with natural capital theory. Investment in sustainable infrastructure is not only a cost but also a way of conserving resources and reducing the ecological footprint. Such actions are a manifestation of respecting environmental boundaries while creating social value and reinforcing institutional accountability – they promote institutional responsibility and fit with the assumptions of doughnut economic theory.

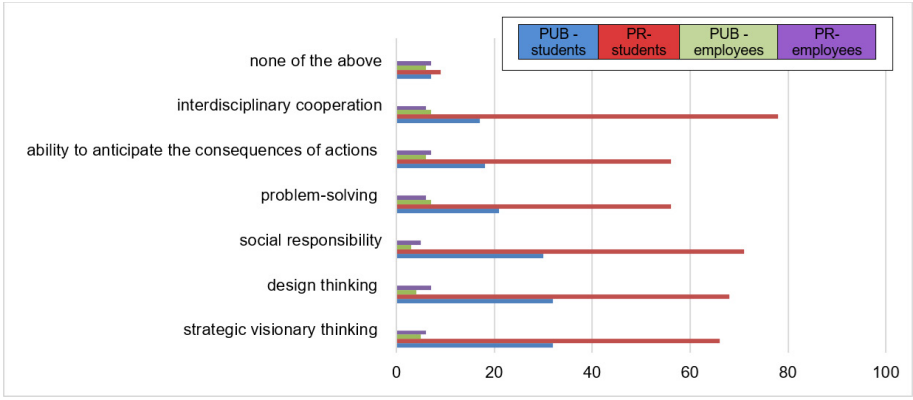

Figure 3. Distribution of respondents' answers to the question "What skills related to the Sustainable Development Goals do you develop at your university?"
Source: own study.

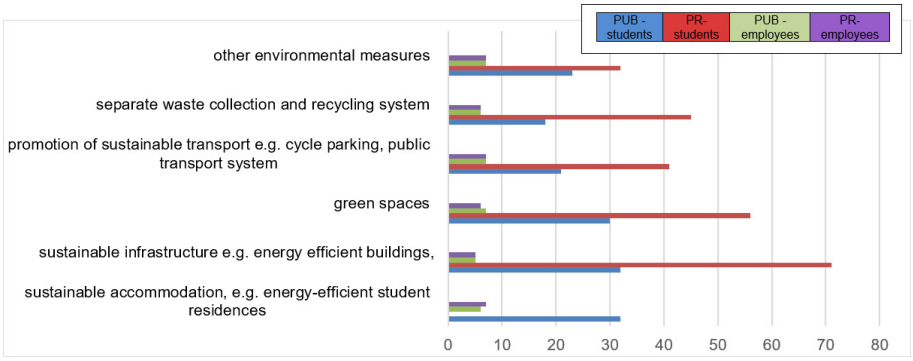

Figure 4. Distribution of respondents' answers to the question "What sustainability practices are visible at your university?"
Source: own study.

The last point of the research concerned the areas of integration of the SDGs with the university's strategy (practice vs. the university's sustainability statements). Analysing the responses of HEI staff and students, presented in Figure 5, it can be seen that in a public HEI the frequently selected responses relate to research and teaching and also to partnerships. Students at the private university indicated research, teaching and also partnerships, and management policies. This approach sees SD as an investment in the future of the institution and society. From a natural capital perspective, partnerships enable effective resource conservation through joint projects and activities. Collaboration and organisational accountability are key to remaining in a safe social and environmental space as envisaged by doughnut economic theory.

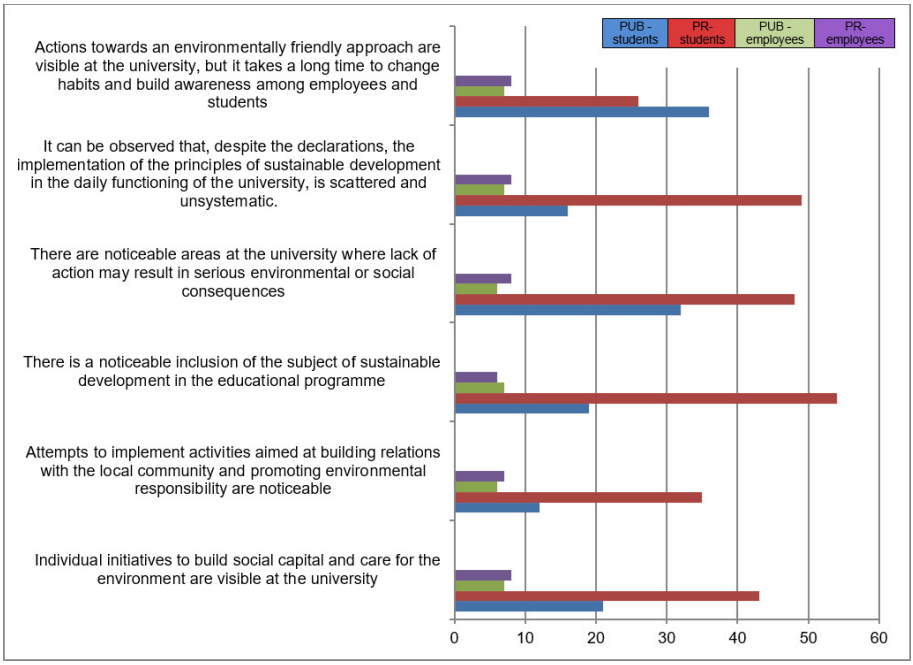

Figure 5. Distribution of respondents' answers to the question: *Opinions regarding sustainability statements and actual actions*

Source: own study.

In conclusion, both staff and students at the private university report greater involvement in SD – they note the visibility of these activities on social media, indicating that the university invests in sustainability and makes them visible and socially measurable (image, competitiveness). The activities at public universities are more diffuse, and students' perceptions indicate they are less transparent. The activities of both universities surveyed show an understanding and activity in line with the assumptions of natural capital theory, which helps to explain the treatment of the environment as a strategic resource whose protection translates into socio-economic value. At the same time, according to the assumptions of doughnut economics, the activities of the HEIs should strive to maintain a balance between activities – marketing and investment.

The results of the research indicate that a private university is more likely to emphasise sustainability activities. Which may explain the market motivation to build organisational value and image capital. The public university, in spite of its potential, seems to communicate its activities less frequently or to treat them as part of a competitive strategy.

Based on the research conducted, the following research conclusions can be drawn:

- the integration of sustainability topics in all forms of education should be strengthened, not only in the form of single courses, but also in modules and thematic tracks, which is in line with the assumptions of doughnut economic theory – building students' awareness of the limited resources of the planet and social responsibility,
- involve students in social and environmental projects and invest in pro-social and pro-environmental competences, in line with the assumptions of natural capital theory, yielding a long-term return in the form of better management of social and environmental resources,
- provide transparent – but adequate to the scale and dimension of the activities – information on post-environmental activities at the university, which is in line with the assumptions of doughnut economic theory, act in accordance with environmental and social boundaries, not only in the sphere of declarations, but also in everyday practices,
- the results indicate that sustainability measures are insufficiently integrated into the management policy and strategy of the university. In line with natural capital deposits, the university should manage its resources, relationships and organisational capital in such a way as to invest in the future of the institution and the perception of its environment.

The price of sustainability for each of the analysed universities is not limited to financial costs, but also includes investments in organisational change, building social capital, environmental protection but, also in new green competences of staff and students. From the perspective of natural capital theory and doughnut economics – these costs are necessary to avoid the much higher 'price' associated with environmental degradation, but also loss of credibility and failure to adapt to the challenges of today.

Summary

Working towards sustainable development in the 21st century requires cooperation between education, business and public administration to respond effectively to environmental and social challenges.

The need to take an interdisciplinary approach to implementing sustainability education in higher education institutions was highlighted in their 2018 research by Ismael Franco and other researchers, among others, who clearly indicated that a more effective approach to governance in higher education is essential, as sustainability issues become more acute and interconnected, collaboration becomes not only more important, but more difficult.

Key problems in collaborative processes include a lack of involvement of key stakeholders such as teachers and students, lack of communication between stakeholders, low accountability, limited funding opportunities and limited stakeholder capacity for effective implementation (Franco, 2019).

The stated aim of the research has been met. A change in the valuation of university activities is needed - models that treat natural capital as a common resource in need of protection are rare. Investment in eco-infrastructure is associated with improved image, increased social trust, and increased student engagement. Social capital is strengthened through actions in line with the doughnut economics model - around values, not just around economic calculation. The two sectors pursue different approaches, but which can complement each other in the higher education ecosystem.

Analysing the use of the following theories in the analysis of the sustainability measures undertaken: doughnut economics and natural capital theory, they found, among other things, that while public universities can more easily scale the social aspects of, e.g., inclusion, in private universities the natural capital theory allows for faster valuation of assets for business partnerships, as private ones tend to undertake an adaptive strategy which is in line with the assumptions of the doughnut economics theory. In the universities studied, natural capital theory emphasises the environment and its value as a resource, whereas doughnut economics integrates social and environmental needs. The doughnut economics model is a theory of sustainable development when it does not cross ecological boundaries and meets the basic needs of all stakeholders. With unlimited needs and limited opportunities, other forms of capital cannot replace natural capital, so it must be preserved. Some of the biggest challenges in the ongoing research, education and organisational transformation of universities include: insufficient communication, resistance to change, limited financial capacity in the face of significant infrastructure investment costs, financing of costly investments, e.g., in green infrastructure, uneven involvement of universities resulting from different levels of bureaucracy and the scope of current regulations. It is also worth mentioning that the author encountered constraints during the course of the study – in particular distrust among private and public university staff towards the topic and the sharing of their own experiences. Future research will be related to increasing the research sample and deepening the research topic.

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Abstract

Sustainability is not just an idea. The energy transition green economy and the circular economy require investments in infrastructure, research and education activities, strengthening knowledge and awareness and thus incurring costs in states and private universities. The aim of the article was to identify factors shaping the economic and social value of sustainability activities in Polish higher education: public and private, in the light of natural capital theory and doughnut economics. Research methods: literature analysis and a 2025 survey of students and staff at a public and private university. The public university is more likely to report environmental outcomes (education and research), while the private university invests in educational programmes and social campaigns, demonstrates image-based activities, with a much lower capital commitment. The value of actions does not depend solely on

the cost of implementation, but on their impact on social relations, the environment and the business environment.

Keywords: university, ecology, doughnut economics, natural capital theory, education,

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