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SUSTAINABILITY OF NATURAL CAPITAL IN THE BEYOND GROWTH CONCEPT

Aleksandar Kostić[1], [0000-0002-6315-0765]

Andrea Andrejević Panić[2], [0000-0003-4688-3171]

Srđan Milićević[3], [0000-0002-6452-8125]

Gordana Mrdak[4]* [0000-0001-8359-3769]

[1]University of Priština, Kosovska Mitrovica, Serbia

[2]Educons University, Sremska Kamenica, Serbia

[3]University Metropolitan, Belgrade, Serbia

[4]Singidunum University, Belgrade, Serbia

Abstract:
The predominance of GDP growth as the principal objective of economic development has come under increasing scrutiny amid accelerating ecological degradation and the unsustainable depletion of natural capital. This paper examines whether alternative economic paradigms grouped under the Beyond Growth framework provide a coherent and theoretically consistent foundation for redefining sustainability and development priorities beyond growth-oriented policy agendas. The central research question investigates how leading Beyond Growth approaches conceptualize the role and sustainability of natural capital, and the extent to which they converge or diverge in their normative assumptions and policy implications. The paper advances the hypothesis that, despite important theoretical differences, the principal Beyond Growth approaches share a common rejection of economic growth as the overriding development objective. Instead, they place ecological limits and the preservation of natural capital at the core of sustainable development. Focusing on four representative models – Steady-State Economy, Degrowth, Doughnut Economy, and Post-Growth – the study employs a typological and comparative methodology to assess their theoretical premises and normative orientations. By clarifying their similarities and distinctions, and differentiating them from green growth and neoclassical frameworks, the paper provides an integrated analytical basis for future research and policy debates on development beyond economic growth.

Keywords:
beyond growth; degrowth; doughnut economy; green growth; natural capital sustainability; post-growth.

JEL Classification:
Q1; Q50; Q56

INTRODUCTION

Although the Beyond Growth literature often presents this perspective as a unified conceptual framework, it in fact encompasses a heterogeneous group of theoretical approaches characterized by distinct normative premises and divergent implications for economic policy. Particularly pronounced are the differences in their understanding of the role of natural capital, its substitutability, and the limits of its exploitation.

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*E-mail: gmrdak@singidunum.ac.rs

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Despite the growing scholarly interest in these approaches, their key theoretical elements, as well as their similarities and differences, remain insufficiently systematized, especially with regard to the sustainability of natural capital.

Addressing this research gap, the aim of this paper is to examine the role of natural capital sustainability within the Beyond Growth framework and to analyze the extent to which development policies grounded in this concept qualitatively differ from policies promoting the greening of the economy. The study is guided by two research questions. First, does the sustainability of natural capital constitute one of the key theoretical pillars of the Beyond Growth concept? Second, to what extent do development policies based on the Beyond Growth framework qualitatively differ from policies promoting the greening of the economy in terms of development objectives, normative assumptions, and their relationship to economic growth?

The theoretical framework of the study builds on the understanding that both natural capital sustainability and Beyond Growth represent dynamic and adaptive categories evolving within complex systems of interdependence among ecological, economic, and social processes. Although their interconnection is acknowledged in the literature, the mechanisms shaping this relationship, as well as its potential socio-economic and ecological implications, remain insufficiently conceptually clarified.

The findings indicate that natural capital sustainability constitutes a common, albeit differently operationalized, principle across all examined Beyond Growth approaches, thereby fundamentally distinguishing them from the neoclassical assumption of unlimited economic growth. At the same time, substantial differences persist with respect to the interpretation of economic growth, institutional arrangements, and public policy priorities.

The contribution of this paper lies in systematically clarifying the theoretical status of natural capital sustainability within the Beyond Growth framework and in more precisely differentiating these approaches from policies aimed at greening the economy. In doing so, the study strengthens the theoretical foundation for the design of post-growth development strategies and opens avenues for future empirical research in sustainable development economics.

RESEARCH METHODOLOGY

The research is grounded in a qualitative theoretical approach, employing the methodology of theoretical analysis and a systematic literature review. The theoretical analysis entails a comprehensive and critical examination of relevant scholarly sources addressing the sustainability of natural capital within the Beyond Growth framework, combined with a comparative assessment vis-à-vis the neoclassical paradigm of economic growth and the concept of green growth. Particular emphasis is placed on elucidating the ontological and epistemological assumptions underlying these theoretical approaches, their normative foundations, and the policy implications that follow from them for the design of economic and development strategies. The primary objective of the study is to identify and systematize the key differences in the conceptualization of the relationship between economic growth, natural capital, and ecological limits.

The methodological framework encompasses a systematic review of the relevant academic literature, conducted in accordance with predefined inclusion and exclusion criteria in order to ensure transparency, replicability, and consistency in the selection process. The literature search was carried out in the internationally recognized databases Scopus and Web of Science, using carefully operationalized keywords and their combinations (e.g., economic growth, natural capital sustainability, green growth, beyond

growth, ecological limits). Only theoretical and conceptual contributions were included in the review, while empirical studies and case analyses were excluded in line with the theoretical orientation and analytical objectives of the research.

The analysis covers three dominant theoretical approaches to economic growth: the neoclassical framework, the concept of green growth, and the Beyond Growth approach. Within the Beyond Growth perspective, particular attention is devoted to its principal theoretical strands – Steady-State Economy, Degrowth, Doughnut Economy, and Post-Growth – with the aim of systematizing their foundational principles, normative commitments, and policy recommendations. Special consideration is given to the manner in which each approach conceptualizes the sustainability of natural capital, especially with regard to the substitutability between natural and produced capital, as well as to their respective interpretations of ecological limits in the context of the long-term sustainability of the economic system.

The analytical procedure is based on a comparative interpretation of theoretical constructs, identifying their internal coherence, potential normative tensions, and implications for the redefinition of development priorities. Particular emphasis is placed on examining the epistemological status of economic growth as a central category of contemporary economic theory, as well as on critically evaluating the assumptions concerning the possibility of absolute decoupling between economic growth and ecological pressure. In this way, the study seeks to contribute to a deeper theoretical understanding of the sustainability of natural capital under conditions of planetary constraints.

The limitations of the research stem from its theoretical orientation and exclusive reliance on secondary sources. As the study does not include empirical analysis or quantitative testing of the proposed arguments, its conclusions are based on an interpretative and comparative analysis of the existing literature. Furthermore, the selection of sources is confined to publications indexed in Scopus and Web of Science, which may result in the exclusion of relevant works published in other databases or in the form of grey literature. Notwithstanding these limitations, the systematic and theoretically grounded comparative approach adopted in this study provides a coherent and methodologically consistent analysis of competing conceptions of natural capital sustainability and offers a foundation for future empirical inquiry and normative debate within the field of economic theory.

LITERATURE REVIEW AND THEORETICAL CONSIDERATIONS

This chapter establishes the theoretical foundations of the research by critically engaging with the key strands of literature that frame contemporary debates on economic growth and the sustainability of natural capital. Rather than offering a purely descriptive overview, it situates the discussion within the historical evolution of economic thought, tracing the emergence, consolidation, and subsequent transformation of the growth narrative from classical political economy to neoclassical theory. Particular attention is devoted to the gradual incorporation of ecological limits and the concept of natural capital into economic analysis, highlighting the tensions this integration has generated within mainstream theoretical frameworks.

The chapter is structured in accordance with the intellectual progression of growth-related paradigms – from the dominance of the conventional growth model, through the reformist logic of green growth, to the more fundamental critiques articulated within the Beyond Growth framework. By comparatively examining their ontological premises, epistemological orientations, and normative commitments, the analysis seeks to clarify how each approach conceptualizes the relationship between the economic system and biophysical constraints, and what this implies for the redefinition of development priorities under conditions of planetary limits.

The narrative of economic growth

The narrative of economic growth can be traced from Adam Smith (1776), the founder of classical economic thought, to contemporary economic theories. Smith's contributions laid the foundation for analyzing economic processes, particularly through the idea of the "invisible hand" of the market. By the mid-20th century, research in growth theory had significantly advanced the theoretical foundations of the discipline, notably through the work of Simon Kuznets (1955), who analyzed the relationship between economic growth and income distribution.

Neoclassical growth theorists developed models focused on long-term economic growth and the key factors influencing aggregate productivity. According to their analyses, the main drivers of sustainable growth are physical capital, labor, and technological progress (Solow, 1956). Investments in physical infrastructure and the workforce are considered essential for economic growth. However, due to the principle of diminishing returns, the effects of these investments weaken over time. Consequently, a significant portion of growth in developed economies can be attributed to technological innovations (Solow, 1957).

Although neoclassical growth theory has substantially contributed to understanding the key drivers of long-term economic development, critics highlight several fundamental shortcomings of this perspective. Primarily, neoclassical models oversimplify the complexity of real economies, especially by completely neglecting the role of natural capital – resources such as land and energy, environmental quality, and biodiversity – in the analysis of economic growth. Furthermore, they overlook the influence of numerous cognitive factors, including institutional, historical, and cultural frameworks, as well as the impact of various social norms. They also entirely ignore the challenges of sustainable development (Pasinetti, 2012).

Criticism of the neoclassical perspective on economic growth intensified with the questioning of its key assumptions. In the early 1970s, the publication of *The Limits to Growth*, prepared by a group of researchers led by Donella H. Meadows (Meadows *et al*., 1972), challenged the relevance of neoclassical views on growth drivers, particularly regarding the possibility of unlimited growth within planetary boundaries. This report presented a computer model that projected various global economic and demographic growth scenarios based on finite natural resources and the limited capacity of ecosystems.

The core message of the report was a warning about potential ecological and economic crises if the policy of unlimited growth continued despite resource constraints, emphasizing the necessity of respecting the planet's physical limits, aligning economic activities with the laws of thermodynamics and ecological principles, and developing sustainable strategies that integrate ecological and economic objectives.

Although *The Limits to Growth* has often been criticized for its methodological approaches and pessimistic projections, its fundamental message laid the groundwork for contemporary ecological and socio-economic theories. Moreover, the report highlighted a fundamental paradox of economic theory: the concept of unlimited economic growth in a world characterized by finite resources and limited ecosystem absorption capacity – a question of critical importance for the research topic of this paper.

The Brundtland Commission's report *Our Common Future* marked a turning point in sustainability discourse, defining sustainable development as development that satisfies present needs without compromising the ability of future generations to meet theirs (World Commission on Environment and Development, 1987). This definition fundamentally challenges the long-standing dominance of neoclassical economic thought, which is based on the idea of unlimited economic growth on a planet with finite resources. The report further stimulated the development of various approaches that recognize natural capital as both a driver and a limiting factor of economic growth. In this context, an increasing number of theoretical and practical approaches focus on acknowledging the physical limits of ecosystems and the need to adapt development policies to these constraints. These concepts aim to provide responses to growing ecological as well as socio-economic global challenges. After the institutionalization of the concept of sustainable development at the end of the 20th century, the narrative of economic growth was not abandoned but transformed. Instead of challenging the goal of growth itself, dominant policies sought to "green" it and align it with ecological limits. This shaped the concept of sustainable growth, which entails continuing economic expansion while simultaneously reducing negative environmental impacts. However, empirical findings and contemporary ecological analyses indicate that the absolute and long-term decoupling of growth from material and energy flows remains limited, particularly at the global level. Although some countries have achieved relative reductions in emissions while growing their GDP, overall global pressure on natural capital continues to rise due to increased consumption, population growth, and globalized production chains. This fact further deepens the debate on the sustainability of the growth narrative and raises the question of whether it is possible to indefinitely increase economic activity within a biophysically constrained system.

In this context, at the beginning of the 21st century, there has been a stronger reexamination of the growth paradigm itself. An increasing number of authors argue that sustainable development, if tied to the imperative of continuous GDP growth, does not resolve the fundamental conflict between the economic system and ecological limits. The growth narrative thus enters a new phase – the phase of critical reexamination – where the question arises whether growth is a means to achieve social well-being or has become an end in itself. Contemporary debate thus evolves from the question of how to grow sustainably to the question of whether growth is necessary at all for social progress. This shift in focus opens space for the development of alternative paradigms that emphasize quality of life, social justice, preservation of natural capital, and ecosystem stability rather than the quantitative increase of production and consumption. It is precisely in this theoretical and normative turn that approaches unified under the Beyond Growth concept emerge, representing the next phase in the evolution of the economic development narrative.

Natural capital in economic growth theory

Capital, in its fundamental sense, refers to resources employed in the process of generating economic value, i.e., contributing to a country's GDP. The concept of capital does not merely denote the quantity of money or a stock of assets, but rather their active mobilization within production processes with the objective of generating profit. In this context, capital is defined as a value that seeks self-valorization. As a result of capital accumulation, economic growth is viewed as the aggregate increase in the production of goods and services, most commonly measured by the annual rate of change in GDP.

Capital can be classified according to various criteria. In this study, the primary division into five forms of capital is applied: physical, financial, social, human, and natural capital (Goodwin, 2003).

Physical capital encompasses material resources utilized in the production of goods and the provision of services, such as infrastructure, machinery, and equipment. These resources directly contribute to increased productivity and efficiency in production processes. Additionally, physical capital includes transportation systems, storage capacities, and energy networks, which enable market integration and reduce logistical costs (Mankiw, 2020). The quality and maintenance of physical capital strongly influence long-term economic competitiveness, as outdated or poorly maintained infrastructure can constrain production capacity and reduce growth rates.

Financial capital comprises monetary assets, investments in equities and bonds, loans, and investment funds, which facilitate efficient allocation of resources via capital markets and support economic growth by financing diverse development projects (Strumeyer & Swammy, 2017). Beyond merely enabling accumulation and the reallocation of resources to productive investments, financial capital allows for risk management through portfolio diversification and hedging instruments. Its function extends beyond markets to include banking and non-financial institutions that facilitate corporate lending, foster innovation, and enable job creation.

Social capital is defined as the network of interpersonal relationships, along with trust, norms, and shared values, which promote and facilitate social cooperation (Coleman, 1988; Putnam, 1995). Social capital enhances the efficiency of economic transactions by reducing negotiation and monitoring costs while strengthening institutional reliability and community resilience. High levels of social capital are associated with greater civic participation, innovation, and sustainable development, as communities with well-developed trust networks can more effectively coordinate collective actions, such as environmental conservation or local development initiatives.

Human capital includes knowledge, skills, education, and the health status of individuals, all of which directly contribute to economic productivity, innovation, and societal advancement (Becker, 1964; Schultz, 1961). Investment in human capital through education and training enables the accumulation of competencies that enhance innovative potential and economic competitiveness. Human capital also encompasses social and cognitive skills, adaptability to change, and problem-solving abilities, which are crucial for sustainable development in dynamic economic and technological environments.

Natural capital refers to all natural resources and ecosystems that support production and life functions, including land, water, forests, minerals, and biodiversity (Costanza *et al.*, 1997). This form of capital constitutes the foundation for all other forms of capital, as physical, financial, social, and human capital depend on the sustainability of the natural environment. The long-term stability of economic systems depends on the conservation, sustainable use, and regeneration of natural capital, while its degradation can result in reduced productivity, higher costs, and ecological crises.

As an economic construct, natural capital values nature through market parameters, emphasizing its central role in maintaining ecological balance. Excessive exploitation of natural capital can lead to severe consequences, such as environmental degradation, pollution, and climate change, further underscoring the necessity for its sustainable management (Cvetanović & Andrejević Panić, 2024).

The consideration of natural capital as a key driver of economic growth and development has long been neglected in economic theory. The dominant neoclassical paradigm assumes that the depletion of natural capital can be offset by increased utilization of physical and human capital. In this context, Robert Solow (1993), a Nobel Laureate, argued that natural capital in the production process is gradually substitutable by other forms of capital. According to Solow, present generations exploit natural resources, but future generations inherit a larger stock of physical and human capital. This perspective relies on two key assumptions: that technological change will enable the substitution of natural capital with other forms of capital, and that market mechanisms will ensure the efficient allocation of resources.

However, these assumptions have been subject to significant criticism in contemporary economic theory. If substitution between natural capital and produced (physical and human) capital were fully possible, it is difficult to explain why a substantial share of natural capital has historically been converted into physical capital (Daly, 2007). Natural capital is indispensable for generating physical and human capital, implying that they are not perfectly substitutable. Moreover, while the destruction of created capital can often be reversed, the loss of certain species and the depletion of non-renewable resources constitute an irreversible process.

Hypothetical full substitution of natural capital by created capital raises questions regarding the prioritization of created capital growth when natural capital is relatively abundant. Unlike created capital, natural capital possesses the potential for regeneration under certain conditions (Farley & Daly, 2006). Nevertheless, while some degree of substitution is possible, the theory of perfect substitutability between natural and created capital faces substantial limitations and serious critique.

When natural and created capital are viewed as complementary factors, economic growth largely depends on the capital that constitutes the binding constraint on development. In periods when the productive subsystem was relatively small compared to the global ecosystem, created capital was the primary growth constraint. However, the economic context has evolved. Exponential population growth, intensive industrial development, and accelerated technological progress have led to a situation where natural capital becomes the dominant constraint on long-term economic sustainability (Farley & Daly, 2006; Costanza & Daly, 1992).

Furthermore, the unsustainability of substituting natural capital with created capital must be examined in light of their fundamental functional differences. While the destruction of created capital can often be reversibly remedied, the loss of natural capital – including depletion of non-renewable resources and extinction of plant and animal species – is typically irreversible. Additionally, natural capital provides essential ecosystem services necessary for the creation and maintenance of created and human capital, further challenging the assumption of their perfect substitutability (Milićević *et al.*, 2025).

Historical and contemporary dynamics of economic development indicate that natural and created capital are inextricably linked in the process of sustainable development. The interdependence of these forms of capital necessitates prudent and responsible management of natural capital to ensure the long-term sustainability of economic processes. Accordingly, the assumption of perfect substitutability between natural and created capital cannot be sustained in light of these findings.

Green growth

The term green growth was officially adopted in the *Declaration on Green Growth* (OECD, 2009), and its significance was further emphasized in the *Green Growth Strategy* (OECD, 2011). In 2011, the United Nations Environment Programme published the report *Towards a Green Economy*, highlighting the need for increased investment in renewable energy, ecological innovation, and sustainable production (United Nations Environment Programme, 2011).

International agreements, such as the Paris Agreement of 2015 and the United Nations 2030 Agenda, have further reinforced the concept of a green economy through the Sustainable Development Goals (United Nations, 2015a) and climate policies (United Nations, 2015b). As the European Union's flagship initiative to combat climate change, the European Green Deal encompasses a comprehensive set of policies and measures aimed at reducing carbon emissions, promoting the transition to renewable energy, enhancing energy efficiency, and protecting biodiversity, with the ultimate goal of achieving climate neutrality in Europe by 2050. This program represents a step toward a more sustainable future and significantly impacts multiple sectors, including industry, transportation, and agriculture (European Commission, 2019). In Asia, countries such as South Korea have developed national green growth strategies, while China has integrated the principles of an ecological civilization into its long-term development plans (Government of South Korea, 2020; Government of China, 2016).

Green growth constitutes a crucial foundation for sustainable development and is defined as economic growth based on green investments, resource-efficient, cleaner, and more resilient production. The central idea of this concept rests on the assumption that it is possible to achieve a growing economy while maintaining, or ideally reducing, the exploitation of natural capital (Hickel & Kallis, 2019; Kostić *et al.*, 2025).

Green growth provides a strategic framework for addressing long-term economic and environmental challenges through the development of new pathways. These pathways involve production processes with reduced consumption of natural and energy resources, as well as lower emissions per unit of output. This perspective also emphasizes the importance of effective natural capital management (Dietz & Neumayer, 2007; Neumayer, 2013; Loiseau *et al*., 2016), aiming to reconcile economic growth with the preservation of natural resources and biodiversity.

The key characteristics of green growth can be summarized as follows. Promotion of renewable energy sources: development of energy systems based on renewable resources and improved energy efficiency through cleaner technologies. Sustainable resource management: waste reduction, recycling, reuse of materials, and the application of environmentally responsible design. Application of economic instruments: introduction of fiscal policies, subsidies, and other financial incentives to promote sustainable practices. Global coordination and cooperation: addressing climate change and conserving biodiversity through international agreements and joint initiatives. Technological innovation: utilization of innovative solutions to reduce environmental pressures and enhance resource-use efficiency.

The green growth framework is based on the concept of relative and absolute decoupling of economic activities from the exploitation of renewable and non-renewable natural resources, as well as from environmental pollution (Haberl *et al.,* 2020). The decoupling assumption is grounded in the belief that the economy can grow in an ecologically sustainable manner through technological progress, which allows for reduced resource exploitation in the production process. This approach also incorporates other sustainable development ideas, such as green taxation of negative externalities and emission-limiting mechanisms, including emission trading systems (Wiedenhofer *et al*., 2020).

In assessing the success of the transition from a traditional production model to a green economy model, key indicators include growth rate, material resource consumption, and pollutant emissions per capita. One of the most commonly used sustainability indicators is material footprint, while environmental pollution is often measured by per capita carbon dioxide emissions. These indicators provide a comprehensive picture of the impact of economic activities on the environment and serve as the basis for assessing the sustainability of economic growth.

Economic policy that recognizes the importance of green growth aims to minimize the negative impacts of economic growth on natural capital. Examples of such policies include the introduction of environmental taxes, decarbonization measures, changes in production and consumption structures (e.g., adoption of electric vehicles and recycling), as well as policies aimed at reducing inequalities in the distribution of newly created value. Green economy policies are deeply rooted in the idea of sustainable development; they do not challenge the concept of growth itself but focus on transforming it into a more environmentally friendly model. However, even when transformative agendas include a significant increase in the use of green energy sources, industrialized countries face challenges in reducing their negative impact on natural capital as their economies continue to grow (Schmelzer *et al.,* 2022; Schmelzer & Vetter, 2021).

Despite broad support, the concept of green growth faces criticism regarding its ability to ensure growth within planetary boundaries. The debate is conducted between advocates of green technologies and those who argue that reductions in consumption and transitions to alternative economic models are necessary. Critics contend that this approach does not question the logic of economic growth itself but primarily focuses on its sustainable implementation (Wiedenhofer *et al.*, 2020). According to these arguments, more radical changes to economic systems are required to address key global problems, including the climate crisis, biodiversity loss, and ecosystem degradation (Polewsky, 2023). This critical reflection has opened space for a broader perspective that transcends the concept of growth itself and shifts the focus toward transforming economic and social systems into sustainable models. Such a perspective explores alternatives to traditional economic growth, seeking to integrate ecological, social, and economic dimensions of sustainability.

Beyond Growth

In response to the limitations of neoclassical economic growth theories and green growth frameworks in ensuring the long-term sustainability of natural capital, alternative paradigms have emerged under the umbrella of the *Beyond Growth* concept (Daly, 1996; Lehmann *et al*., 2023; Terzi, 2021; OECD, 2020). These approaches challenge the assumption that continuous GDP growth is the primary development goal, emphasizing ecological and social sustainability instead.

Steady-state economics

Steady-state economics, developed by Daly (1973; 2005) and Georgescu-Roegen (1977), advocates maintaining economic activity within ecological limits. It emphasizes that renewable resource extraction should not exceed natural regeneration, waste emissions must stay within ecosystem absorption capacities, and resource use should be aligned with the development of renewable substitutes, while economic activities must preserve critical ecosystem functions and population stability is considered a fundamental goal (Farley, 2015). The steady-state model redefines development through ecological

and social sustainability, challenging the conventional paradigm of perpetual growth. It emphasizes policy and institutional measures, including regulation of material consumption, progressive resource and emission taxes, promotion of circular economy practices, and technological innovation to reduce ecological footprints. The model aims to operate the economic system within a "safe operating space," ensuring stability and resilience of both society and ecosystems, rather than prioritizing quantitative GDP expansion.

In addition to the normative requirement that the economy remain within biophysical limits, the steady-state concept is based on a clear distinction between growth and development.

While growth refers to the quantitative increase in the volume of material and energy flows, development implies a qualitative improvement in the structure and organization of the economic system (Daly, 1996). In this sense, a steady-state economy does not reject progress but rather redirects the focus from quantitative expansion to the improvement of efficiency, distribution, and quality of life.

Moreover, this approach strongly relies on the law of entropy, introduced into economic analysis by Georgescu-Roegen (1971), emphasizing that the economic process is irreversible and based on the transformation of low-entropy resources into high-entropy waste. This calls into question the possibility of infinite growth within a closed planetary system. In contemporary interpretations, the steady-state model includes instruments such as limits on resource use (e.g., cap-and-trade systems for material flows), reform of taxation systems toward taxing resources instead of labor and capital, as well as the redefinition of indicators for economic success (Daly & Farley, 2011).

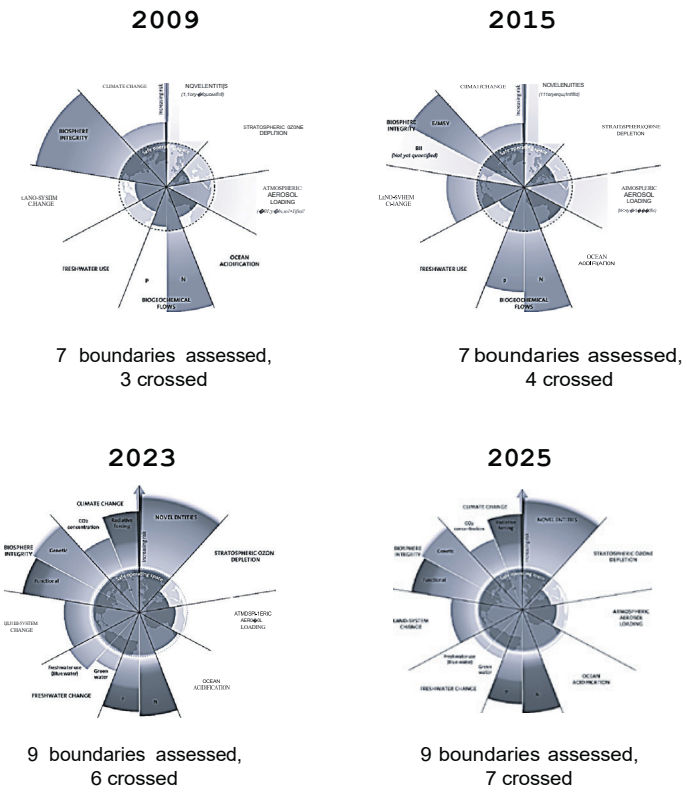
Degrowth

Degrowth critiques the assumption that economic growth is necessary for societal well-being, emphasizing social solidarity, sustainability, care, and quality of life over GDP expansion (D'Alisa *et al.*, 2014; Hickel, 2020; Vetter, 2018). Its core argument is that beyond a certain level of GDP per capita, additional growth accelerates natural capital depletion and transgresses planetary boundaries (Burkhart *et al.*, 2020). To address these challenges, degrowth advocates structural reforms that include halting fossil fuel exploitation, ensuring a fairer distribution of created value, and reducing working hours to relieve pressure on resources (Cosme *et al.*, 2017).

Degrowth questions the ultimate effectiveness of green growth in ensuring long-term sustainability, emphasizing that improving quality of life and preserving the environment should be society's primary goals (Spash, 2020). This approach is grounded in ecological economics, focusing on biophysical limits and reducing excessive natural capital consumption, although the scale and timing of these reductions remain debated (Kerschner, 2010; Schneider *et al.*, 2010; Hickel, 2021).

The planetary boundaries framework serves as the conceptual foundation of degrowth, identifying nine critical ecological limits: climate change, biodiversity loss, land degradation, ocean acidification, freshwater depletion, disruptions of the nitrogen and phosphorus cycles, chemical pollution, and ozone depletion (Rockström *et al.*, 2009). The number of exceeded boundaries has increased over time – three in 2009, four in 2015, six in 2023, and even seven by 2025 – clearly highlighting the deepening ecological crisis and the urgent need for a systemic transformation of economic and social systems (Figure 1).

Figure 1. Transgression of planetary boundaries in 2009, 2015, 2023 and 2025.



Source: Rockström et al. (2009); Steffen et al. (2015); Richardson et al. (2023); Sakschewski et al. (2025).

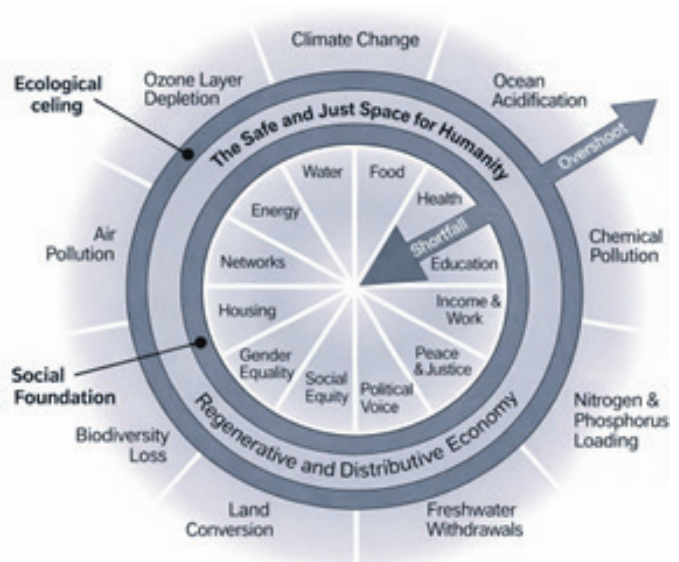
Degrowth is not only a macroeconomic concept but also a social movement that promotes the transformation of value systems in contemporary societies. It challenges the dominant discourse that growth is necessary for employment stability, fiscal sustainability, and social security. Authors emphasize that the dependence of modern economies on growth stems from institutional structures (debt systems, labor markets, the profit logic of capital) rather than from a natural necessity (Kallis, 2018). Therefore, degrowth advocates for deep institutional reform, including the democratization of the economy, strengthening of public goods, and the development of local economic systems.

Additionally, degrowth draws on the concept of "prosperity without growth" (Jackson, 2017), which highlights that social well-being is not linearly dependent on GDP growth, particularly in highly developed countries. Empirical research shows that after reaching a certain income level, growth has a marginal or negligible impact on subjective life satisfaction, while simultaneously increasing ecological pressure (Hickel, 2020). In this context, degrowth proposes measures such as universal basic services and the relocalization of production as mechanisms to reduce material flows while maintaining social stability.

The Doughnut Economy

The Doughnut Economy integrates social and ecological objectives, aligning human well-being with planetary boundaries. Raworth (2012) introduced the initial framework establishing a social foundation that ensures dignity, equity, and access to basic human needs, while Raworth (2017) expanded the model to include ecological limits that prevent human activities from undermining natural systems and ecosystem stability (Figure 2).

Figure 2. The Doughnut of social and planetary boundaries



Source: Raworth, 2017.

The Doughnut model provides a practical framework for balancing social justice with ecological sustainability. It emphasizes that exceeding the social foundation weakens societal well-being, while breaching the ecological ceiling degrades natural systems. This approach guides policy toward reducing pressure on natural capital while promoting sustainable development through measures such as investment in renewable resources, ecological taxation, and the adoption of circular economic practices.

Doughnut Economics represents the operationalization of the concept of a "safe and just space for humanity" (Raworth, 2017). Unlike traditional economic models, which are based on the equilibrium of supply and demand, the doughnut model starts from normatively defined boundaries – a social foundation and an ecological ceiling. In this way, the economy is positioned as a subsystem of the biosphere, rather than as an autonomous system capable of unlimited growth.

The practical application of this model has already begun at the local level, particularly in urban policies (e.g., Amsterdam), where the doughnut framework is used to shape budgetary priorities, climate strategies, and social programs (Raworth, 2020). The model emphasizes a regenerative and distributive design of the economy – regenerative in terms of restoring natural systems, and distributive in terms of a fairer allocation of resources and opportunities.

In this way, natural capital is treated as the foundation of the economic system, rather than as an externality.

The post-growth paradigm

The post-growth paradigm redefines economic growth as a secondary objective, shifting the focus away from GDP per capita toward social progress, including health, education, and overall well-being. It emphasizes the preservation of natural capital, the adaptation of economic structures to ecological limits, and the reduction of inequality through fairer resource distribution (Cosma *et al.*, 2017; Roberts & Henderson, 2020).

Post-growth emphasizes the balance between ecological, social, and economic factors, focusing on local communities, collective values, reduced material needs, and economic decentralization. It critiques globalization for its ecological unsustainability and social inequity, proposing policies such as eco-sensitive trade indicators, fiscal reforms to eliminate polluting subsidies, and global economic alignment with planetary boundaries. Additionally, post-growth explores participatory economic structures and innovative ownership models that reduce pressure on natural capital while supporting long-term societal sustainability (Jackson, 2017).

The post-growth paradigm develops an analytical framework that goes beyond the binary distinction between growth and degrowth. It recognizes that contemporary economies are structurally dependent on growth, while simultaneously exploring the possibilities for stable economic functioning under conditions of low or zero growth (Fioramonti *et al.*, 2022). The focus is on institutional innovations that enable social security without relying on the expansion of material production.

This approach particularly emphasizes the reform of development indicators, advocating for the replacement of GDP with composite indicators that include ecological and social dimensions (Wellbeing Economy Alliance, 2021). Post-growth also entails fiscal reforms, transformation of the financial sector, and the introduction of mechanisms that prevent financial instability under conditions of stagnation. In this context, the preservation of natural capital becomes a structural requirement for system stability, rather than merely a normative objective.

DISCUSSION

This study examines different approaches to the study of economic growth: the neoclassical approach, the concept of green growth, and four directions within the *Beyond Growth* paradigm (Steady-State Economy, Degrowth, Doughnut Economy, and Post-Growth), with a focus on their treatment of natural capital sustainability and development policies.

Neoclassical growth assumes unlimited substitutability of natural resources with physical and human capital, emphasizing market efficiency and minimal government intervention. While effective in explaining short- and medium-term economic dynamics, it largely overlooks ecological constraints and the limits of natural capital.

Green growth maintains the growth paradigm while promoting ecological taxes, decarbonization, recycling, sustainable production, and poverty and inequality reduction. Critics argue that it often provides reactive and incremental solutions, insufficient for ensuring long-term ecological sustainability, as it does not fundamentally question the primacy of GDP growth.

Beyond Growth approaches move past the singular focus on GDP, emphasizing well-being, ecological limits, and social equity. They explore alternative economic models and policies aimed at sustaining natural capital while redefining prosperity beyond mere material expansion.

Beyond Growth approaches challenge the centrality of GDP growth and prioritize ecological limits, social well-being, and structural economic transformation. Steady-State Economy emphasizes maintaining economic activity within ecological limits. It advocates for a stable population and controlled consumption, prioritizing long-term sustainability over short-term growth. The approach stresses regulation of resource extraction and emissions to prevent exceeding the planet's carrying capacity, promoting a balance between human activity and ecological stability. Degrowth critiques perpetual economic expansion, advocating for reduced material and energy consumption, social solidarity, and overall well-being. It highlights adherence to planetary boundaries, implementation of structural reforms, and questions the long-term sustainability of green growth strategies. Degrowth emphasizes that quality of life and ecological preservation are more important than continuous GDP growth. Doughnut Economics offers a holistic framework linking social foundations with ecological ceilings. It serves as a practical tool for policymaking, urban planning, and civil society engagement, guiding economies to operate within a "safe and just space" where human needs are met without exceeding planetary limits. Post-Growth redefines economic progress by prioritizing ecological regeneration, social equity, and human well-being over GDP expansion. It emphasizes quality of life, equitable resource distribution, local economic resilience, and the decoupling of prosperity from continuous material growth, providing a vision for economies that thrive without relying on perpetual expansion.

Collectively, these four Beyond Growth approaches provide a critical lens for rethinking contemporary development policies. They place the sustainability of natural capital at the center of economic planning and highlight the need for models that integrate ecological limits, social justice, and long-term prosperity, moving beyond the constraints of traditional growth-oriented paradigms (Table 1).

Table 1. Comparative Overview of Contemporary Economic Growth Paradigms

Dimension	Neo-classical	Green Growth	Beyond Growth			
			Steady-State	Degrowth	Doughnut	Post-Growth
Key representatives	Solow	Lovins; Sukhdev	Daly; Georgescu-Roegen	Kallis	Raworth	Jackson
View on economic growth	Unlimited	Conditionally feasible	Incompatible with biophysical limits	Incompatible with planetary boundaries	Ecologically constrained	No longer a primary objective
Treatment of natural capital	Largely excluded	Explicitly incorporated	Binding constraint	Absolute limit	Ecological ceiling	Structural constraint
Developme nt policy orientation	Market-oriented	Green transition	Ecological limits	Deliberate downscaling	Safe and just operating space	Managed transformation
Primary policy focus	GDP growth	Sustainability	Long-term balance	Structural transformation	Human well-being	Quality of life

Source: Authors' analysis

These approaches, each grounded in their specific paradigms, open up space for critical reflection and the redefinition of contemporary development policies. Central to their analysis is the sustainability of natural capital, which underscores the potential for societies to balance economic prosperity, social justice, and ecological stability.

When comparing the perspectives of neoclassical economists and green growth proponents with those of Beyond Growth advocates, clear distinctions emerge, particularly regarding the possibility of unlimited economic growth and the substitutability of natural capital. Neoclassical theorists tend to promote the replacement of natural capital with other forms of capital, often overlooking the ecological limits of natural resources. In contrast, all approaches within the Beyond Growth framework consistently place the sustainability of natural capital – including natural resources, ecosystems, and biodiversity – at the forefront, illustrating that the preservation of natural capital constitutes a foundational principle of this concept.

Moreover, the implications for policy-making further differentiate these approaches. Neoclassical policies assume the continuation of economic growth regardless of environmental boundaries, while green growth policies aim to achieve sustainable growth through targeted green public interventions. Beyond Growth policies, however, go beyond the mere pursuit of growth; they redefine development objectives and underlying normative assumptions, prioritizing ecological sustainability and social well-being over GDP expansion. This emphasis reflects the distinctive character of the Beyond Growth framework in guiding economic and social development, offering an alternative vision that integrates environmental limits with human welfare.

CONCLUSIONS

This study analyzed the neoclassical approach to economic growth, the concept of green growth, as well as four approaches within the Beyond Growth framework. The analysis showed that neoclassical growth theory largely overlooks the sustainability of continuous production increases, as it assumes that natural capital can be fully substituted by human and physical capital. Green growth approaches, while emphasizing environmental protection, still operate within the paradigm of continued economic expansion. In contrast, Beyond Growth approaches challenge the automatic link between GDP growth and social prosperity, emphasizing the need to transform economic structures and reduce pressure on natural capital. This perspective leads to different objectives and priorities in development policies compared to neoclassical theories and green growth strategies.

Beyond Growth policies, therefore, differ from both neoclassical and green growth strategies in terms of development objectives, underlying normative assumptions, and the prioritization of ecological sustainability and social well-being over unlimited economic growth. By placing the sustainability of natural capital at the center of analysis and policy, these approaches highlight its fundamental role in creating societies that balance economic prosperity, social justice, and ecological stability.

Future research should further explore the practical implementation of Beyond Growth approaches, particularly in different national and regional contexts. While theoretical foundations are increasingly developed, empirical analyses examining policy outcomes, institutional feasibility, and socio-political acceptance remain limited. Comparative studies between green growth and Beyond Growth strategies could also provide deeper insight into their long-term environmental and social impacts. Additionally, future research could focus on developing alternative indicators to GDP that more effectively measure natural capital sustainability, social well-being, and ecological boundaries. Such research would contribute to bridging the gap between theoretical frameworks and actionable policy design, supporting the transition toward more resilient and sustainable economic systems.

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