**OLSZTYN ECONOMIC JOURNAL**
**2025, 20(2), 137–156**
ISSN 1897-2721 e-ISSN 2083-4675 DOI: 10.31648/oej.11388

ORIGINAL PAPER

# FROM SUSTAINABILITY TO A REGENERATIVE ECONOMY – PLANET-CENTRIC TRANSFORMATION IN THE FACE OF CONTEMPORARY CHALLENGES

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JEL Classification: Q2, Q56, Q57.

Key words: regenerative economy, planet-centric paradigm, sustainable development, green transformation, postgrowth.

Abstract

The text is devoted to the idea of regenerative development, which is a response to the challenges of the climate crisis, depletion of natural resources and social inequalities, going beyond the traditional approach of sustainable development. Regenerativity is treated as a premise for active repair and reconstruction of natural and social systems, for their further evolution and strengthening. The changes of the goals of the green transformation are presented, from the ecological economy, through sustainable, to regenerative, the aim of which is to improve the well-being of the environment and meet social needs. The analysis takes into account axiological, economic and social aspects, emphasising the importance of the planetocentric approach and the role of interdisciplinarity in designing innovative solutions, especially in cities.

The text stresses that the planetocentric axiology of the transformation requires a departure from traditional economic growth in favor of harmony with ecosystems, focusing on the quality of life, social equality and ecological health. Concepts such as degrowth, zero-growth or the donut economy indicate the need for a profound change in values and development goals, integrating the aforementioned environmental, social and economic goals. Regenerative urban ecosystems and a transdisciplinary approach are key to effective transformation.

The idea of regenerative development has a tradition of over a hundred years. Initially, it was associated with the development of urban and rural spaces, and today it is understood as active support for biodiversity and the complexity of living systems. Regenerative design replaces anthropocentrism with a biocentric model, striving for synergy between different areas of human activity to preserve the planet's evolutionary capabilities. By exploring the axiological, practical, and theoretical foundations of this shift, the article aims to provide a basis for further reflection and action towards a more sustainable and regenerative future. The text is a voice in the discussion on the need to change management paradigms to planet-centric ones, preventing crises and serving a more just future.

**How to cite:** Kucner, A. (2025). From Sustainability to a Regenerative Economy – Planet-Centric Transformation in the Face of Contemporary Challenges. *Olsztyn Economic Journal*, *20*(2), 137-156. https://doi.org/10.31648/oej.11388

# OD ZRÓWNOWAŻONEGO ROZWOJU DO REGENERACYJNEJ GOSPODARKI – PLANETOCENTRYCZNA TRANSFORMACJA W OBLICZU WSPÓŁCZESNYCH WYZWAŃ

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Kody JEL: Q2, Q56, Q57.

Słowa kluczowe: ekonomia regeneracyjna, paradygmat planetocentryczny, zrównoważony rozwój, zielona transformacja, postwzrost.

Abstrakt

Tekst poświęcono idei regeneratywnego rozwoju, stanowiącej odpowiedź na wyzwania kryzysu klimatycznego, wyczerpywania zasobów naturalnych i nierówności społecznych, wykraczającej poza tradycyjne podejście zrównoważonego rozwoju. Regeneratywność jest traktowana jako przesłanka aktywnego naprawiania i odbudowy systemów przyrodniczych i społecznych na rzecz ich dalszej ewolucji i wzmacniania. Przedstawiono przeobrażenia celów zielonej transformacji, od gospodarki ekologicznej przez zrównoważoną, aż po regeneracyjną, której celem jest poprawa dobrostanu środowiska i zaspokojenie potrzeb społecznych. Analiza uwzględnia aspekty aksjologiczne, ekonomiczne i społeczne, z podkreśleniem znaczenia podejścia planetocentrycznego oraz roli interdyscyplinarności w projektowaniu innowacyjnych rozwiązań, zwłaszcza w miastach.

W tekście podkreślono, że planetocentryczna aksjologia transformacji wymaga odejścia od tradycyjnego wzrostu gospodarczego na rzecz harmonii z ekosystemami, z podkreśleniem jakości życia, równości społecznej i zdrowia ekologicznego. Takie koncepcje, jak dewzrost, zero growth czy ekonomia obwarzanka, wskazują na potrzebę głębokiej zmiany wartości i celów rozwojowych, łączą wspomniane cele środowiskowe, społeczne i gospodarcze. Regeneratywne ekosystemy miejskie oraz transdyscyplinarne podejście są kluczowe w skutecznej transformacji.

Idea regeneratywnego rozwoju ma ponad stuletnią tradycję. Początkowo była ona związana z rozwojem przestrzeni zurbanizowanych i wiejskich, a dziś jest rozumiana jako aktywne wspieranie różnorodności biologicznej i złożoności systemów ożywionych. Regeneratywne projektowanie zastępuje antropocentryzm modelem biocentrycznym, dąży do synergii między różnymi obszarami działalności człowieka w celu zachowania zdolności ewolucyjnych planety. Autor artykułu, analizując aksjologiczne, praktyczne i teoretyczne podstawy tej zmiany, ma na celu stworzenie podstaw do dalszej refleksji i działań na rzecz bardziej zrównoważonej i regeneracyjnej przyszłości. Tekst stanowi głos w dyskusji nad koniecznością zmiany paradygmatów gospodarowania na planetocentryczne, zapobiegające kryzysom i służące bardziej sprawiedliwej przyszłości.

## Introduction

In the face of escalating challenges posed by the climate crisis, the depletion of natural resources, and increasing manifestations of social inequality, it has become imperative to seek new models of development and change management that extend beyond the traditional confines of sustainable development. The idea of regenerative development represents a response to the direction and nature of these transformations, encompassing key sectors of the economy, patterns and

modes of designing, consumption, models of resource management, and processes of resource utilisation (Reed, 2007, p. 675; Edwards, 2010, p. 91; du Plesis, 2012, p. 15; Mang & Reed, 2017). Regenerativity, as a concept, embodies an abstract value that highlights the restorative, renewing, or reconstructive purpose of undertaken actions aimed at addressing depleted resources. The broadly intended outcome is the restoration of balance within economic ecosystems, aligned with the demands of these global challenges. In contrast to strategies that primarily aim to minimise environmental damage, the regenerative approach focuses on proactive efforts to drive economic transformation and to rebuild natural and social systems, thereby enabling their further evolution and strengthening (Lyle, 1994, p. 10; Reed, 2007, p. 676; Wahl, 2016).

This text presents the evolution of the green transformation concept, illustrating the transition from an ecological economy, through a sustainable one, to a regenerative model. The regenerative economy seeks not only to preserve but also to enhance the well-being of the natural environment, restore its regenerative capacity, and meet essential social needs (Čegar *et al*., 2024, p. 7; Khan *et al*., 2025, p. 10; Sánchez-Canón *et al*., 2025, p. 12). The analysis covers selected axiological, economic, and social aspects of these changes, which determine the effectiveness of the transformational strategies being designed and implemented. Special attention is given to the concepts of regenerative urban ecosystems and the use of inter- and transdisciplinary approaches in the design of innovative solutions in areas such as urban planning, management, production, consumption, and social services.

This introduction to the notion of regenerativity invites reflection on a shift in economic paradigms – one that prioritises planet-centricity within the hierarchy of civilisational values. Regenerative development requires a switch in paradigm: from the old linear way of metabolism to a new one – circular. Regenerative development of urban and rural areas seeks to mimic the natural systems (Lyle, 1994, p. 10). By exploring the axiological, practical, and theoretical foundations of this shift, the article aims to provide a basis for further reflection and action towards a more sustainable and regenerative future. The text is a voice in the discussion on the need to change management paradigms to planet-centric ones, preventing crises and serving a more just future.

Understanding this concept and applying it in practice may contribute to the creation of systems that not only respond to crises but also prevent them, thereby laying the groundwork for a more equitable and sustainable future. The research question posed is: What directions and methods for implementing transformation result from shifts in key values and development priorities? How effective can a paradigm shift be in the context of comprehensive urban and rural development?

## Literature Review

The literature review was conducted in two directions. The first serves to present a descriptive and theoretical understanding of the concept of regenerativeness. It constitutes a development goal and determines the methods for its implementation within the context of emerging development strategies (Del Borghi *et al.*, 2024). Regenerative development is understood as encompassing means and methods of action that create a holistic framework for understanding place and developing strategic systems thinking capabilities. This requires the engagement of stakeholders who ensure maximum impact and systemic support for regenerative processes. The goal is a sustainable state of equilibrium, which refers to the health, adaptive capacity, and evolutionary potential of the global social-ecological system so that it can regenerate itself (Mang & Reed, 2012, p. 2; Gibbons *et al.*, 2018, p. 5).

It is significant that the idea of regenerativeness, despite repeated demands for a holistic understanding, is usually approached from the perspective of separate disciplines and, as a result, is fragmented and contextualised. Regenerativeness then serves as a conceptual hallmark of selected theories in economics, management, demography, sociology, urban planning, architecture, ecology, and philosophy (Newman *et al.*, 2009; D'Alisa *et al.*, 2014; Gibbons *et al.*, 2018; Fayed *et al.*, 2018; Attia, 2018; Nowacki & Foissac, 2022; Vince, 2022). Research approaches oscillate between anthropocentric, biocentric, and planetocentric approaches (Daly, 2005; Raworth, 2021). Urban studies associate regenerativeness with urban solutions that are friendly to people and the natural environment and serve as an alternative to modernism and functionalism (Farr, 2008; Gehl, 2017; Mehaffy & Salingaros, 2017; Rose, 2019; Sim, 2020). In turn, forsight studies understand regenerativeness as a way of conceptualising and managing future change. It defines development goals, sources, and conditions, shapes the view of reality and time, indicates methods of implementation and measurement, and focuses on processes (Camrass, 2020; 2023, p. 91). In the philosophical and ethical dimensions, regenerativeness is a value and obligation treated as a postulated and broadly justified goal of the necessary economic, social, and political transformation (Bińczyk, 2018; Green, 2021; Egmose *et al.*, 2021; Bińczyk, 2024). In the face of the fundamental nature of change, accompanied by a diversity of approaches and fragmentation of issues and ways of understanding, regenerativity requires a systematic and synthetic approach as an important determinant and pattern of development.

The second direction refers to the practical significance of the concept of regenerativeness, thus having application and evaluative significance. The proto-regenerative nature of solutions and their measurable regenerative effect can serve as a measure of solutions and an evaluation tool. It can refer to existing sustainable natural and human-created systems, both currently and in the future (Ayadi & Sessa, 2023, p. 14). Given the scale of urbanisation

processes, regenerativeness depends primarily on the transformation of urban metabolism. This will mainly determine the possibilities and success of the necessary change in environmental, climatic, economic, social, technological, and political aspects (Cole *et al*., 2013, p. 241; Woo *et al*., 2014; Rose, 2019, p. 45; *Urban Regeneration as a Tool for Inclusive and Sustainable Recovery*, 2022). Regenerativeness is a measure that allows for the assessment of the consequences of planned and implemented actions in the development of cities, districts, or even individual objects (Conte & Monno, 2016, p. 13; Attia, 2018; Dumitrescu *et al*., 2021, p. 14). It is also becoming a distinguishing feature of a design orientation focused on pursuing effective organisational solutions and strategies (Godelnik, 2021), technological (*RENEW. A manifesto for regenerative design and engineering*, 2025), and social (Gibbons, 2020a; Buckton *et al*., 2023). An attempt at a comprehensive systematisation of theoretical approaches and their practical verification was undertaken by Gibbons (2020a, p. 23). Their systematic study seems necessary, as it allows for the capture of the dynamics of transformation and the assessment of the level of acceptance and use of the planetocentric paradigm.

The aim of the literature selection was to show the complexity of transformation problems and to capture the evolution in the ways of understanding them. They are visible both in the proposed review and in the deepening conviction about the need to create comprehensive solutions, which the authors of individual works are trying to achieve. In this case, it is important to link the goals, tasks and transformation activities with a coherent set of values justifying the need for regenerative change. Due to the number and variety of approaches, the literature devoted to the issue of green transformation is a separate research problem (Khan *et al*., 2025; Čegar *et al*., 2024).

## Methodology

This article provides a theoretical analysis of the discourse surrounding paradigm shifts currently under discussion in economics, management sciences, and philosophy. The content analysis focuses on the assumptions and conclusions of regenerative economics and the degrowth concepts (Hickel, 2021; Raworth, 2021; Regenerative Economics, 2025).

Two issues require clarification. First, the concept of a paradigm encompasses scientific views and beliefs recognised and applied by researchers in specific historical, social, and civilisational realities. A paradigm explains the state of consensus within individual scientific disciplines, which guarantees coherence of research practices, interpretation of phenomena and processes, and the possibility of verifying acquired knowledge. A prevailing paradigm is therefore a metatheoretical arrangement that allows for coherence, understanding the key

premises, and content of accepted knowledge, important for individual scientific disciplines (Kuhn, 2001, p. 314). Among the proponents of a single paradigm, there is agreement regarding the fundamental assumptions used in research and defining the boundaries of so-called "normal science" that is, research practices accepted and recognised in a given place, time, and discipline.

Secondly, the concept of a paradigm can be referred to the process of shaping a cognitive consensus that accompanies research practices. This second meaning refers to situations leading to a change in fundamental assumptions and cognitive beliefs that determine accepted theories. The values and goals accepted by researchers in specific disciplines influence the practical outcomes of existing scientific theories, the limits of their application, and the results achieved (Kuhn, 2001, p. 320). The process of paradigm shift indicates the social, historical, and cultural context of scientific development. The factors determining alternative paradigms result from both the heuristic development of science (new facts and theories) and new needs and challenges. In the long term, they lead to a new consensus that determines the validity of scientific knowledge.

Kuhn's philosophical findings on the theory of science have explanatory potential for the approach currently used in economics. This paradigm shift points to the need to incorporate factors of change that have not previously been fundamental in theoretical and practical research. These include large-scale climate change, environmental change, and constraints on the availability and use of resources.

Paradigm transformation is a multi-level phenomenon. It is co-constituted by abstract values, goals, and principles explained philosophically. It is shaped through scientific, theoretical elucidations of environmental, climatic, economic, and social processes and phenomena. The third component comprises practical, designed, and implemented solutions that serve the realisation of the aforementioned objectives. Philosophical reflection on transformation takes the form of a hermeneutic interpretation of change, wherein parts determine the understanding of the whole, and a coherent understanding of the whole, in turn, defines the possibilities for comprehending the parts (Gibbons *et al.*, 2018; du Plessis, 2022).

The first part of the discussion is dedicated to changes in the understanding of the scale and scope of economic transformation. It was conducted in the form of a comparative analysis, aimed at demonstrating key turning points in the development of awareness regarding increasing developmental constraints. The subsequent section addresses the concept of planetocentric axiology. This part was undertaken as a retrospective analysis of selected concepts and an examination of related ideas. The objective is to highlight the interdisciplinarity of the approach and the need for a holistic interpretation of the transformation processes oriented towards the creation of urban ecosystems that utilise solutions from circular and regenerative economies, as well as social and technological innovations focused on inclusivity and resilience.

## Evolution in the Understanding of the Transformation Concept

Initially, transformation at the level of action was primarily associated with selective efforts to reduce environmental damage, aimed at minimising the negative impact of the economy on the natural environment. Over time, economic activities began to align with the idea of sustainable development (du Plessis, 2012, p. 8). However, in both cases, these actions were not regarded as constituting a global systemic change (Rogall, 2010, p. 39). Signals emerging from theoretical research on the goals and scope of transformation were notably broader, with roots tracing back to the 1970s and 1980s (Meadows *et al.*, 1972; *Report of the World Commission…*, 1987).

By the mid-1990s, visionary proposals had emerged advocating for a fundamental transformation and the creation of a new approach centered around green design, reduced production, and the promotion of sharing practices and shared access to goods and services (Rifkin, 2003, p. 122). These propositions stemmed from an awareness of the limits to growth, global inequalities and paradoxes, and increasing economic stratification in an increasingly globalised world (Papanek, 2021, p. 14, 202, 256). Over time, this initial orientation was replaced by a model of development aimed at a sustainable economy (Senge *et al.*, 2008, p. 103).

A turning point in achieving a transformational consensus came with the United Nations' adoption of the global 2030 Agenda for Sustainable Development (*Transforming Our World…*, 2015). This marked not only a limited political agreement on the international stage but also a means of institutionalising and globalising the issue of negative changes in the climate, environment, society, and economy at that stage of civilisational development. Observing a decade of the Agenda's implementation reveals numerous indications of insufficient progress (*The Sustainable Development…*, 2023, p. 8; Lee & Romero (Eds.), 2023, p. 25). The monitoring of its outcomes and growing pressures from ongoing climate change, alongside increasing knowledge of their determinants, provided the impetus for the development of a restorative, and subsequently regenerative, economy. Both concepts now reflect new goals, narratives, and, in practice, innovative projects and forms of cooperation (Morseletto, 2020, p. 764).

These approaches emerged from the transformation of three successive models: from sustainable, to restorative, to regenerative (Brown *et al.* (Eds.), 2018, p. 91). The hallmark of the first was the reduction of negative impact and the pursuit of a balance point where the level of environmental resource use is offset by what is recovered and reused in production and consumption. The second focused on healing social and ecological systems. The third seeks to enable these systems to maintain their health and to continue evolving (Brown *et al.* (Eds.), 2018, p. 16).

The evolution of the green transformation idea – from a sustainable to a regenerative economic model – permanently integrates environmental, social, and strictly economic dimensions (du Plesiss, 2022, p. 3). It facilitates the creation of new quality in resource management, spatial planning, and human collaboration. It also underscores the importance of transdisciplinarity, regenerative urban ecosystems, and planet-centricity as key determinants of future transformational efforts. By exploring the axiological, practical, and theoretical foundations of this shift, the article aims to provide a basis for further reflection and action towards a more sustainable and regenerative future (Camrass, 2023, p. 95).

## Planetocentric Axiology of Transformation

Signals indicating the need for a profound, systemic shift in approaches to economic activity and resource management have emerged repeatedly over the past half-century (Cunningham, 2002, p. 17). The logic behind this change can be explained by a growing awareness of the exhaustion of the rational and utilitarian foundations of the existing economic order and its theoretical justification. This has resulted in heightened expectations driven by the consequences of problematic manifestations of growth – growth that lacks economic and social justification and unfolds under conditions of environmental and climate crisis (Daly, 2005, p. 101; Hickel, 2021, p. 48; Raworth, 2021, p. 73; du Plessis, 2022, p. 3).

The new approach calls for a broader understanding of the effectiveness of economic activity – one that incorporates environmental and climate imperatives. It is characterised by holism, an ecosystemic orientation, and a focus on achieving regenerative outcomes. These actions are evaluated not solely from an economic standpoint but also from environmental and social perspectives, moving beyond human-centered economic expectations and narrowly defined utility.

Following more than two decades of evolution, the green transformation reflects a growing awareness of the necessity for systemic coordination of objectives and the monitoring of changes aimed at counteracting climate change (Mariussen *et al.*, 2021, p. 21). This means that, among various activities, environmental and climate goals are increasingly prioritised over strictly economic ones. Analysing the current system, Raworth (2021, p. 31) emphasised the need for a deep, comprehensive transformation that integrates environmental, social, and economic objectives. In her "doughnut economics" framework, she advocated for an agnostic approach to the idea of long-term GDP growth as a defining economic and political metric in the modern world (Raworth, 2021, p. 35, 114). Rejecting the mythologised cult of growth, Raworth stressed intergenerational

responsibility and the resulting axiom that the needs of the present must be met without compromising those of future generations. The economy should operate in harmony with ecosystems, without the imperative of maximising production and consumption (Raworth, 2021, p. 233). Economic success might instead be understood in terms of quality of life, social equity, or ecological health. Climate change and pandemics further justify an agnostic view of growth.

However one defines the alternative development path – be it post-growth, zero-growth, degrowth, or a growth – it is first and foremost a transformation in the realm of values, transcending the limits of strictly economic thinking (Skrzypczyński, 2020, p. 9). The intended outcomes of this transformation are regenerative for the natural environment and compensatory for society. This means that the economy should undergo a metamorphosis primarily oriented towards non-economic, planetary goals, taking place simultaneously across many areas of human activity in the direction of degrowth, and most significantly, on a scale that has not previously been attempted (D'Alisa *et al*. (Eds.), 2020, p. 50).

Among the calls for systemic change is the proposal to permanently integrate planetarily understood environmental objectives with changes at the level of the economy (Geordan *et al*., 2022, p. 84, 87). This highlights the necessity of pursuing actions that go far beyond the conventional sustainable, anthropocentric model of development (Hickel, 2021, p. 238).

Planetocentricity is understood as an approach to developmental goals and as a model of hierarchy for cultural, economic, social, and civilisational values. It implies a postulate of degrowth – consumption that is conscious, responsible, shared, and limited, or replaced in the future by alternative forms such as the fulfilment of essential needs, access to goods and services, and sharing in the spirit of a presumption economy (Bińczyk, 2018; Hickel, 2021; Dujarier, 2016).

Planetocentricity, as an approach, is not merely an alternative to the previous model. Firstly, it requires interdisciplinary analysis and an understanding of change, which means the simultaneous planning and implementation of actions across several distinct yet interrelated perspectives. Secondly, transformation involves engaging with entirely new problem areas where no ready-made or proven solutions, tools, or interpretations of change exist. At the intersection of these areas lie values and objectives that are essential for determining the significance of planned and undertaken actions (*The Post Growth Encyclopedia*, 2024). They require transdisciplinarity as an orientation in both research and solution development – an approach in which, faced with new challenges and problems, it becomes essential to cognitively and creatively (e.g., through design) connect numerous distinct disciplines, along with their respective methods and tools. Transdisciplinarity is also an inherent attribute of the values being developed and the ways in which these values are applied, particularly in contexts where complex phenomena and processes are assessed and where their impacts are simultaneously relevant across multiple domains of change: environmental, social, economic, and technological.

The values created and utilised in this context are simultaneously relative and regulative, employed in a transdisciplinary manner, and their significance is contingent upon the context in which they emerge (Pascual *et al*., 2023, p. 815). In each case, these are instrumental values – that is, they primarily serve as tools to convey the meaning and outcomes of undertaken actions, rather than being ends or objectives in themselves.

The idea of regenerative development, initially understood within the context of design, is not new; it has a history spanning over a century (Howard, 2015, p. 33; Geddes, 1915). Originally conceived under vastly different environmental, social, and economic conditions, it referred to a proposed model for the development of both urban and rural spaces. It aimed at integrally combining economic development with the potential of natural environmental resources. Over time, its defining feature became the concept of building functional ecosystems. These ecosystems were to facilitate the use of existing conditions and to bring together stakeholders in the transformation process. Within this concept, not only the creation of favorable conditions and the development of cooperation were vital, but also achieving synergy.

Nearly 90 years ago, Tansley (1935) used the term "ecosystem" to describe the interactive relationships of living organisms within their inanimate environment. He assumed that ecosystems allow for a better understanding of the complexity of mutual interactions and the role of humans within them. Today, the ecosystem approach has gained prominence, particularly in the context of research on urban systems (Pickett *et al*., 2009), as well as in the development of regenerative pathways for rural areas, food production and distribution, education, management, and comprehensive interdisciplinary concepts for implementing regenerativity (Buckton *et al*., 2023, p. 824).

Today, regenerative development – alongside associated regenerative design and innovations for regenerativity – is understood as an approach that surpasses the idea of sustainable development. It does so by actively creating the conditions necessary for and supporting the development of complex living systems, biodiversity, and species-level anti-expansiveness. Over the final three decades of the twentieth century, several design practices emerged in response to natural environmental conditions (notably by I. McHarg, B. Mollisson, D. Holmgren, R. Rodale, D. Orr, F. Capra, among others). Regenerative solution design and change management replace the anthropocentric model with a complex biocentric framework, leading to the creation of regenerative ecosystems (Mang & Reed, 2020, p. 14). These ecosystems are understood both as a prerequisite and a goal of development.

They focus on "enhancing the capacity of living beings to co-evolve so that the planet possesses potential in terms of diversity, complexity, and creativity". In practical terms, this broad formulation requires harmonising disparate areas of human activity to ensure the continuity of life processes at the planetary scale – especially at a time when biodiversity indicators are declining rapidly.

According to the regenerative approach, actions taken by humans should be oriented towards positive environmental outcomes, which, through synergy, ultimately generate other beneficial results as well (Mang & Reed, 2020, p. 2). According to Gibbons, "regenerative sustainability, the next wave of sustainability, is based on a holistic worldview and aims for thriving whole living systems. It integrates inner and outer realms of sustainability and focuses on shifting deep leverage points in systems for transformational change across scales" (Gibbons, 2020b, p. 4).

Ultimately, regenerative design concepts act as catalysts for the development of social activism and innovation, aiming to implement pro-environmental initiatives at the local level (Gibbons, 2020a, p. 32). An example of this is the Regenesis Group initiative, which promotes the design and implementation of regenerative solutions locally and in a planetocentric manner. This approach and its scale appear unprecedented and are not easily understood through analogies with various historical practices. Thus, the values and principles shaped under past conditions are no longer suitable for adequately assessing current and future challenges (Mang & Reed, 2020, p. XIX).

For this reason, new approaches are being sought and applied in accordance with local conditions and a dynamic understanding of regenerativity. Among the transformation-oriented practices are also those that use speculative design as predictive, exploratory tools, producing future scenarios focused on selected aspects of the co-existence of humans and non-human species in urban environments (Edwards & Nilstad Pettersen, 2023, p. 4). This is particularly relevant as we face the third century of urbanisation, making the challenge of regeneratively developing cities on a global scale one of the most decisive tasks of the green transition (Barber, 2014).

In conceptual terms, regenerative urban ecosystems should be oriented towards (Rose, 2019; Sim, 2020, p. 181):

– dynamic, balanced coherence in the organisation and use of urbanised space;

– a circularly organised metabolism in the management of available resources, particularly water;

– resilience derived from green, regenerative infrastructure, with expanding urban green spaces serving as habitats for numerous animal species;

– community-oriented development, understood as fostering opportunities through building social networks, trust, locality, synergy creation, the dissemination of activism, shared values, and a sense of agency;

– empathy as a universal approach to recognising and understanding the needs of other beings – opening spaces and relationships to diverse needs and integration, striving for wholeness and participatory governance.

Among various conceptual frameworks, several key values of future urbanism are consistently emphasised. These relate to a prudent and efficient approach to managing available resources so that the city can be both ecologically and

economically sustainable, while accommodating the needs of both human and non-human life. In the regenerative urban model, the principle of full circularity is adopted with regard to water, energy, food, raw materials, and waste.

A socially significant value of future urbanism is accessibility, understood as the development of solutions that embrace diversity, inclusiveness, and equality – regardless of age, individual capabilities, religious beliefs, wealth, origin, sexual orientation, gender identity, or political views. The aim is to ensure equal and fair access to urban amenities, employment, business opportunities, social services, education, culture, heritage, sports and recreation, and natural resources.

The pursuit of inclusivity has a practical dimension – it is linked to access to affordable housing and home ownership. This process should be participatory, accompanied by transparent governance and support for the development of local communities. Sharing is a core value of future cities, reflecting a sense of community, collaboration, and co-action. It enhances spaces designed for social interaction through shared facilities, public spaces, coworking and co-living environments, and public transport. It also encompasses intangible values such as sharing skills, access to mobile technologies, and initiatives aimed at strengthening social connections.

Security is a value of the future city, derived from resilience – defined as the capacity to withstand climate change, extreme weather events, and flooding. Enhancing the sense of safety for all is also linked to crime prevention and efforts toward reintegration. The objective is to ensure a clean and healthy environment and access to essential resources (food, water), shelter, care, and to promote the physical and mental well-being of residents through access to healthcare and green spaces.

The city of the future is one desired by its inhabitants, scaled to human dimensions (Gehl, 2017, p. 29). It is the ”15-minute city” (Moreno *et al.*, 2021, p. 96), one that encourages activity, sparks curiosity and wonder, and inspires exploration – buzzing with life in public space and offering access to cultural goods, the arts, physical activity, relaxation, and learning opportunities (*The Ideal City…*, 2021, p. 9). Examples of coherent, conceptual approaches to this complex shift include the transformation strategies of Copenhagen (*Urban Green Transition…*, 2023), Amsterdam (*New Amsterdam Climate*, 2021), Paris (*Paris Resilience Strategy*, 2018), and other cities.

Practices over the past several years have demonstrated that cities are not only a possible but also a desirable and effective arena for green transformation, with agency residing with both their administrators and residents in legal, social, economic, and political terms. According to Barber, the rationale for this lies in the privatised, hegemonic, and monopolised character of globalisation. The value of inter-city cooperation serves as an alternative to the inefficacies of national-level politics and the operations of global, transnational corporations. “Cities, embedded in the fabric of an informal cosmopolis, may become, as the

polis once was, new incubators of democracy – this time on a global scale" (Barber, 2014, p. 28).

In foresight analyses, the role of future cities is to develop as complex local organisms and communities – centers of green, grassroots democracy oriented toward planetary goals and ecosystem-based solutions (Schuring & Turan, 2021, p. 166). Among many contemporary urban concepts, it is perhaps not surprising that favelas are increasingly viewed as anticipatory models for the desired future path of urban development. This is because the solutions commonly found in such environments most closely reflect the idea of a sustainable city – one that operates under conditions of scarcity and respects resource limits. Their defining features include short distances, human scale, high density of buildings and population, widespread use of small-scale water retention systems, low energy needs, use of recycled materials, diversity, low living costs, direct interpersonal relations, a tangible sense of community, and local forms of governance (Hosey, 2021, p. 158).

As living ecosystems, favelas embody what may become the goal of a desired, minimalist urbanisation in the future. Numerous developmental parallels can also be seen in the transformations of cities in India and Peru, as well as in the enclaves and unique solutions being created there (Szczęsny, 2023). This interpretation of urban development is gaining significance in light of the challenges facing the cities of tomorrow – challenges related to expansion, densification, multiculturalism, mobility, and resilience (Sim, 2020, p. 244).

## Discussion

Transformational change involves more than just a temporary shift in social and economic terms. To better elucidate this, it is useful to refer to T. Kuhn's concept of paradigm shifts in the foundations of science. According to Kuhn's central theses, science is simultaneously a cultural, cognitive, and social phenomenon. The values, theories, cognitive patterns, and operational rules that prevail within it arise from dominant behaviors, social needs, and the epistemic consensus reached among researchers (Kuhn, 2001, p. 33, 63).

The historical development of knowledge is not a cumulative expansion of existing understanding but a replacement of previous theories with new ones – those better suited to emerging needs and challenges. As cognitive shifts occur, social changes follow: new research groups emerge, along with new supporters of their theories and new stakeholders. The essence of this process can be explained through the necessity of adapting to change and the urgent search for tools that respond to new challenges, living conditions, and societal needs.

Kuhn's universally relevant perspective lends itself to understanding current transformational challenges (Kuhn, 2001, p. 167). Such analogies are particularly apt, for example, in contexts where transformation occurs from a linear

to a circular, and then to a regenerative economic model. J. Fullerton explained the core of this change as a shift from one era to another – an evolution that is inevitably accompanied by chaos and the gradual emergence of an alternative system. He sought the foundations of this system in the universal order of the natural world: "Universal patterns and principles that the cosmos uses to build stable, healthy, and sustainable systems throughout the real world can and must be used as a model for designing economic systems" (Fullerton, 2015, p. 8).

Here, we may set aside the range of ontological assumptions regarding the existence of cosmic order and equilibrium as a blueprint for an economic system. More important are the arguments for the need for a holistic understanding of the necessary economic changes. Fullerton's assumptions are primarily rooted in analogical thinking. In explaining the regenerative capitalism model, he draws on the concept of organicism, emphasising the role of multi-level interdependencies and outlining the key requirements for a future system.

The development of such a system is guided by the following general principles:

– abandoning the anthropocentric paradigm and rejecting the notion of human opposition to the biosphere. Fullerton advocates replacing the current approach with the recognition of the universality of connections and mutual interactions between humans and nature;

– a holistic understanding of wealth, seen as well-being across economic, social, cultural, and existential dimensions, where the real value is defined by the weakest link in the web of interdependencies;

– conditioning change on the use of innovation, the degree of adaptability achieved, and other measurable outcomes;

– enhancing social participation as a means of engagement, relationship-building, and fostering awareness of the part–whole dynamic, while simultaneously enabling contribution and creating space for individual needs;

– recognising community and place as correlates of collective values – encompassing history, beliefs, and attachment to place – as factors that build healthy, unique communities;

– striving to achieve abundance at the system's margins, where differing components meet, and conditions exist that foster creativity and synergy. This generates abundance, cooperation across differences, cross-boundary collaboration, innovation, shared benefits, and a growing disposition towards change;

– maintaining a robust circulatory system – i.e., the flow of financial resources, exchange of information, and constant, repeated use of materials – to ensure the functioning of a healthy economic organism;

– pursuing a state of balance, not as a static equilibrium, but as a harmonisation of multiple parts, replacing the goal of optimising individual components.

Fullerton (2015, p. 8) concludes, "Regenerative Economics seeks balance: between efficiency and resilience, cooperation and competition; diversity and coherence, as well as between small, medium, and large organizations and needs". According to him, the necessary changes involve replacing liberal capitalism

with solutions derived from the aforementioned principles. The transformation must be fundamental, given the critical juncture at which humanity currently finds itself. The aim of his concept is to outline the conditions for long-term prosperity, and the actions he advocates are intended to ensure and maximise the enduring health of society and the planet. Thus, they are not mere reactive measures against the negative consequences of change. Where necessary, Fullerton allows for systemic intervention to balance the interaction of antagonistic factors. He views the resolution of social, economic, and environmental crises as a means of enhancing profitability and economic well-being (Fullerton, 2015, p. 106).

The concept of regenerative capitalism can be regarded as a set of ideas situated within the philosophy of economics – an abstract vision of economic development that outlines the framework, objectives, and core values that give meaning to the entire system. On the one hand, as a project, it constitutes a constructive response to the visible symptoms of crisis (environmental, climate-related, and social); on the other hand, it can be interpreted as one of the alternative narratives to neoliberal capitalism. Significantly, Fullerton associates regenerativity with a capitalist system. While he recognises the most important systemic causes of economic pathologies, his thinking remains largely reformist. He sees his view as an alternative to both liberal and conservative approaches, necessary in the face of 21st-century challenges and as a framework for discussions about future development.

His proposal is compelling enough to have found further development in the theory of Green Swans – an optimistic vision of deeply reformed economic, social, and environmental development (Elkington, 2021, p. 152). However, it does not represent a radical departure akin to the thinking of Raworth, Hickel, or Kallis, who argue for a profound systemic overhaul, requiring an alternative such as degrowth (or post-growth) as the defining metric of a new economic, social, and political order.

## Summary and Conclusions

This article has outlined the transformative evolution of the idea of sustainable development towards a regenerative model, which responds to the contemporary environmental, social, and economic challenges. The green transformation, historically understood as a process of gradually reducing the negative human impact on the environment, is giving way to an approach that not only repairs damage but also actively restores ecosystems and supports their evolution. A central element of this shift is the planetocentric axiology, which redefines development priorities by placing harmony between humanity and nature at the forefront.

The article emphasises the necessity of a transdisciplinary approach in designing innovative solutions that integrate various perspectives – social, economic, technological, and ecological. Particularly significant is the role of regenerative urban ecosystems, which can serve as laboratories for sustainable living, promoting values such as inclusivity, resilience, and circularity. Future cities have the potential to become key hubs of green transformation through the synergy of local communities, civic activism, and technological innovation.

Key conclusions from the analysis:

1. Holistic approach to transformation – green transformation requires an interdisciplinary and holistic perspective that brings together environmental, social, and economic dimensions. The regenerative model offers a framework for harmonising these areas.

2. Planetocentricity as a core value – integrating planetary environmental objectives into mainstream economic, social, and urban planning decisions is essential for addressing the effects of climate and societal crises.

3. Regenerative urban ecosystems – cities play a vital role in advancing the idea of regenerativity. Through urban and social innovations, they can become models of sustainable living.

4. Importance of local actions and global cooperation – achieving the goals of regenerative development requires international collaboration while accounting for local specificities.

5. Need for new tools and narratives – effective transformation demands the development of new research, design, and communication tools that enable better understanding and implementation of regenerative economies.

The analysis indicates that while regenerative transformation is ambitious and demanding, it presents a significant opportunity to build a more just, sustainable, and resilient world. Its realisation calls for the engagement of all stakeholders – from governments and institutions to local communities and individuals.

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