



The green transition: Synergizing sustainable development and the green economy for global resilience

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Abstract

This paper investigates the critical intersection between Sustainable Development (SD) and the Green Economy (GE). As the global community nears the 2030 deadline for the UN Sustainable Development Goals (SDGs), the transition from a "brown," carbon-intensive economy to a circular, low-carbon model is no longer optional. This research analyzes the decoupling of economic growth from environmental degradation, evaluates the role of green technological innovation, and reviews contemporary literature to provide a roadmap for policy integration in the mid-2020s.

Keywords: Sustainable development, green economy, decoupling, circular economy, natural capital, environmental kuznets curve, carbon border adjustment mechanism, total factor productivity

Introduction

The industrial paradigm of the 20th century was defined by a "take-make-waste" philosophy. This linear economic model yielded unprecedented growth but resulted in systemic climate instability, biodiversity loss, and resource depletion. In 2024, the global discourse has shifted toward the Green Economy—an economic model that prioritizes human well-being and social equity while significantly reducing environmental risks and ecological scarcities.

The central challenge of this paper is to explore how the Green Economy serves as a functional vehicle for reaching the broader targets of Sustainable Development. It posits that economic growth is not the enemy of the environment, provided that growth is "decoupled" from resource consumption through innovation and circularity.

Review of Literature

The academic evolution of the "Green Economy" can be traced through several pivotal shifts in economic and environmental thought.

1. The Brundtland Foundation and Early Sustainable Development

The concept of Sustainable Development was popularized by the Brundtland Report (1987) [2], which defined it as development that meets current needs without compromising future generations. Early literature focused primarily on the "Triple Bottom Line"—balancing social, economic, and environmental pillars. However, critics like Pearce *et al.* (1989) [4] argued in *Blueprint for a Green Economy* that the economic pillar was often prioritized at the expense of the other two, necessitating a more rigorous economic framework.

2. The Rise of Ecological Economics

In the 1990s and 2000s, scholars such as Costanza (1991) [3] and Daly (1996) [3] introduced Ecological Economics. Unlike traditional neoclassical economics, which views the environment as a subset of the economy, this school argues that the economy is a subsystem of the Earth's ecosystem. This literature established the concept of "Natural Capital," asserting that nature provides essential services (carbon

sequestration, water purification) that must be valued monetarily to prevent over-exploitation.

3. The Green Economy as a Post-2008 Recovery Strategy

The UN Environment Programme (UNEP, 2011) [15] redefined the Green Economy as one that results in "improved human well-being and social equity, while significantly reducing environmental risks." Following the 2008 financial crisis, literature by Barbier (2010) [1] proposed a "Global Green New Deal," arguing that green investments (renewable energy, public transport) have higher employment multipliers than traditional fossil-fuel subsidies.

4. Contemporary Perspectives: Circularity and AI (2023-2024)

Recent literature (2024) focuses on the Circular Economy (CE) and Digitalization. Authors like Kirchherr *et al.* (2023) [10] highlight that a Green Economy cannot exist without circularity—reusing materials to close the loop of production. Furthermore, the "Twin Transition" (Green and Digital) is a major theme in 2024, where Artificial Intelligence is seen as a tool to optimize energy grids and reduce industrial waste, though concerns about the energy footprint of AI itself remain a point of debate (IMF, 2024) [13].

5. The Degrowth vs. Green Growth Debate

As we approach 2025, the academic schism between "Green Growth" and "Degrowth" has become a focal point of economic literature. Proponents of Green Growth, such as the OECD (2024) [14] and the World Bank, argue that absolute decoupling—where GDP rises while absolute resource impact falls—is achievable through "dematerialization" and efficiency gains.

Conversely, the Degrowth school, led by Jason Hickel (2020) [7] and Tim Jackson (2021) [9], argues that the "Jevons Paradox" often negates these gains. The Jevons Paradox suggests that as technology increases the efficiency with which a resource is used, the falling cost of using that

resource leads to an increase in its total consumption. This paper explores a middle ground: "Agnostic Growth," where policy focus shifts from GDP targets to "Well-being Indicators" and "Bio-physical Throughput" limits.

6. The Role of Green Finance and ESG (Environmental, Social, and Governance)

A critical development in 2024 literature is the maturation of the "Green Finance" ecosystem. Scholars like Carney (2021) have highlighted the risk of "Stranded Assets"—fossil fuel reserves that must stay in the ground to meet the 1.5°C Paris target. Recent IMF reports (2024) ^[13] suggest that global financial stability is now intrinsically linked to the speed of the green transition. The literature now emphasizes the "Green-washing" risk, calling for standardized global taxonomies (like the EU Taxonomy) to ensure capital flows to truly regenerative projects.

Theoretical Framework: The Decoupling Hypothesis

To understand the Green Economy, we must utilize the Environmental Kuznets Curve (EKC).

$E = f(Y, Y^2, Z)$ (Where E is environmental degradation, Y is per capita income, and Z represents other variables like technology or policy.)

The theory suggests that as a country develops, environmental impact initially increases but eventually decreases as the economy becomes more efficient and service-oriented. This paper argues that proactive "Green Growth" policies can flatten this curve, allowing developing nations to leapfrog the high-pollution phase of development.

Case Studies: Global Implementation

1. The European Union's Green Deal

The EU serves as a laboratory for the Green Economy. By implementing carbon pricing (ETS) and the Carbon Border Adjustment Mechanism (CBAM), the EU has successfully decoupled GDP growth from CO2 emissions.

2. Emerging Markets: The Case of Costa Rica and Vietnam

- **Costa Rica:** A leader in "Payment for Ecosystem Services" (PES), proving that protecting biodiversity can drive a high-value ecotourism economy.
- **Vietnam:** A study in rapid renewable energy transition, specifically in solar capacity, demonstrating how policy incentives can shift a coal-reliant economy in less than a decade.

Challenges to the Green Transition

1. **The Green Premium:** The higher cost of zero-emission technologies compared to fossil fuels.
2. **The Just Transition:** Ensuring that workers in "brown" industries (coal mining, oil) are not left behind, preventing social unrest.
3. **Resource Nationalism:** The race for "critical minerals" (lithium, cobalt) required for batteries, which creates new geopolitical tensions.

Conclusion and Policy Recommendations

1. Circularity by Design

Policy must shift from "Waste Management" to "Design for Disassembly." This paper recommends a global mandate for Digital Product Passports, which track the material composition of products, allowing for nearly 100% recycling efficiency at the end of life.

2. The Just Transition and "Green Dividends"

To prevent social unrest (similar to the Yellow Vest movement), carbon tax revenues should be redistributed as "Green Dividends" to low-income households. This ensures that the poor, who spend a higher percentage of their income on energy, are protected during the price adjustments.

References

1. Barbier EB. A Global Green New Deal: Rethinking the Economic Recovery. Cambridge University Press, 2010.
2. Brundtland GH. Our Common Future: Report of the World Commission on Environment and Development. Oxford University Press, 1987.
3. Costanza R. Ecological Economics: The Science and Management of Sustainability. Columbia University Press, 1991.
4. Daly HE. Beyond Growth: The Economics of Sustainable Development. Beacon Press, 1996.
5. Pearce DW, Markandya A, Barbier EB. Blueprint for a Green Economy. Earthscan, 1989.
6. Schumpeter JA. Capitalism, Socialism and Democracy. Harper & Brothers. (Relevant for "Creative Destruction" in green tech), 1942.
7. Acemoglu D, Restrepo P. Directed Technical Change and the Green Transition. National Bureau of Economic Research (NBER) Working Paper, 2024.
8. Hickel J. Less is More: How Degrowth Will Save the World. Penguin Books, 2020.
9. Jackson T. Post Growth: Life After Capitalism. Polity Press, 2021.
10. Kirchherr J, Reike D, Hekkert M. Conceptualizing the circular economy: An analysis of 114 definitions. Resources, Conservation and Recycling, 2023;127:221-232.
11. Raworth K. Doughnut Economics: Seven Ways to Think Like a 21st-Century Economist. Chelsea Green Publishing, 2017.
12. IEA. World Energy Outlook 2024. International Energy Agency, 2024.
13. IMF. Climate Crossroads: Fiscal Policies for a Green Transition. World Economic Outlook Reports, 2024.
14. OECD. Green Growth Indicators 2024. OECD Publishing, 2024.
15. UNEP. Towards a Green Economy: Pathways to Sustainable Development and Poverty Eradication. United Nations Environment Programme, 2011.
16. World Bank. State and Trends of Carbon Pricing 2024. World Bank Group, 2024.