Chapter 10

Regenerative Fiscal (Refi) Paradigm: Institutional Design For Living Systems

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Abstract

This chapter aims to contribute to the academic debate on restructuring economic systems in harmony with the natural world. The Regenerative Finance (ReFi) paradigm is a new model that places financial sustainability and ecological integrity at its core. The chapter seeks to reconcile concepts in ecological economics, blockchain technology, and public finance to explain how financial systems can adapt to support living systems rather than exploiting them for profit. This research explores how ReFi can serve as an institutional framework that transforms institutions for the Global Commons. Using a literature-based systematic review and inter-comparative methodology, the chapter synthesizes cross-disciplinary concepts from economics, environmental studies, and digital governance to create an ecosystem-oriented conceptual model of regenerative public finance. Drawing on works by Daly, Fullerton, Raworth, Sanford, and others, this study examines the relationship between ecological ethics and financial innovation. Through a literature-driven comparative approach, the project examines contemporary models of sustainable finance, regenerative economics, and blockchain-based climate governance to identify their convergences and divergences. This chapter compares sustainable and regenerative paradigms to illustrate the ideological, institutional, and operational traits of ReFi as a new conceptual framework for ecological intervention. The study shows that renewing financial systems requires a shift from extractive and growth-driven models to those based on reciprocity, resilience, and relational value. In this cross-disciplinary fusion, the chapter clarifies that ReFi is not just a technological revolution but a new moral and institutional paradigm for a thriving global economy.

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1. INTRODUCTION

At the threshold of the 21st century, public finance cannot merely be an instrument for economic efficiency and fiscal discipline. This is especially relevant when focusing on public finance in an era where economic growth, as a paradigm, exceeds ecological limits, exacerbates social inequalities, and undermines democratic legitimacy through a living systems perspective. James Lovelock's Gaia Hypothesis, which views Earth as a self-regulating organism, teaches us that the human economy functions as a subsystem within a larger ecology. From this perspective, the fiscal institutions we use must be fundamentally reimagined to foster the persistence (or even flourishing) of life networks, ecological restoration, and resilience throughout society, rather than merely as abstract indicators of growth. Within this logic model, Regenerative Fiscal Design is a framework that moves beyond the mechanical logic of resource allocation to encompass fiscal policy as a product of regeneration. It demands a paradigm shift toward systemic policies that revitalize ecosystems, promote social well- being, and develop collective adaptive capacities.

The chapter continues with an examination of the ReFi movement's theoretical evolution, the comparative space between sustainable and regenerative frameworks, and how blockchain technology can facilitate regenerative governance. Concept: Focus on both theoretical and practical aspects of the discussion, including the Toucan Protocol and Celo's nature- backed currencies. Building upon comparative literature review methodology, this chapter systematically contrasts sustainable finance, which operates through existing financial logics, with regenerative finance, a financial model aimed at reconstituting these logics. The analytical method allows for a nuanced characterization of the different levels of financialization, commodification, and decentralization that affect ecological outcomes. Finally, the analysis presents a conceptual framework that enables the evaluation of whether emerging ReFi initiatives can be the source of genuine regeneration or merely reinforce existing financial structures.

The chapter then continues by considering the theoretical evolution of the ReFi movement, how sustainable and regenerative paradigms differ, and how blockchain technologies may facilitate regenerative governance models. It combines theoretical and practical considerations for the discussion through reference to cases like the Toucan Protocol and Celo's nature-backed currencies. This chapter employs a comparative literature review as the methodological foundation, and systematically compares sustainable finance

—which operates within existing financial logics—to regenerative finance, which seeks to redefine them. This method allows a more nuanced analysis of how financialization, commodification, and decentralization impact ecological outcomes. The analysis essentially offers a conceptual framework for assessing whether new ReFi initiatives actually promote regeneration or merely reinforce existing financial structures.

2. DEFINITION OF REFI

The Regenerative Finance ("ReFi") movement uses blockchain tools to redefine contemporary understandings of value by seeking to harmonize economic and ecological value. The movement called Regenerative Finance (ReFi) is an emerging approach at the intersection of web3 and climate governance. This movement seeks to shift today's economic systems from extraction-focused to innovation-focused by integrating decentralized finance (DeFi) technologies and innovation concepts (Karakostas & Pantelidis, 2024; Bennett, 2025). ReFi aims to incorporate the limitations of nature into economic theory and define a new value system compatible with ecological certainties (Daly & Farley, 2004). ReFi advocates frequently cite specific sources, such as John Fullerton's principles of Regenerative Economics, Charles Eisenstein's Sacred Economics, Kevin Owocki's GreenPilled, and Carol Sanford's work on "regenerative businesses" (Capital Institute, 2017; Eisenstein, 2011; Owocki, 2022; Sanford, 2017). Each of these resources establishes a framework that aligns ecological and economic value, ensuring that ecosystem-beneficial activities are profitable. Studies on how ReFi can transform existing value systems and economic paradigms demonstrate the potential benefits of this new financial approach.

ReFi provides the tools and methods necessary to make environmental remediation activities economically sustainable. Overall, this movement plays a vital role in combating climate change by enabling the construction of a healthier and more sustainable economic structure.

3. SUSTAINABLE AND REGENERATIVE PARADIGMS: IMPACT ON THE GLOBAL COMMONS

The failure of nature and social systems to provide value and benefit to future generations stands out as a major problem of current economic paradigms. In this context, innovations attempt to cope with problems by aiming to remain within defined boundaries.

3.1. Reframing Origins: Foundational Definitions within Regenerative and Sustainable Paradigms

Sustainability came forth as a form of sustainable development, which can be defined in the report, "Our Common Future," 1987. Sustainable development is defined as "meeting the needs of the present without compromising the ability of future generations to meet their own needs" (Brundtland, 1987). Sustainability paradigms promote reflection on how to behave in order to develop the economy without adversely affecting anyone and the planet, while acknowledging the interdependence of social, environmental and economic dimensions of sustainability (Heinrichs, 2019).

On the other hand, the regenerative paradigm emphasizes developing processes which improve, restore and rejuvenate ourselves and the planet by increasing human and other evolutionary capacities to both bring life back on Earth and the human environment. But at the same time, in a different direction, that which we call "regenerative" means new and more integrated ways of thinking or practices intended towards greater balance and vigor within larger systems are also proposed through the regenerative approach (Bexell et al., 2023). Within this way of thinking, the regenerative paradigm presupposes deep reflection, introspective engagement and introspection to connect with the self to review our fundamental beliefs; as well being self-conscious and taking reflection through life (Sanford, 2022). The idea of the Global Commons originates from a radical proposal in the 1960s that aimed to define and safeguard the shared common heritage of humankind (Garcia, 2021). This idea has shifted to the Global Commons Law and it has been held by a set of international agreements and institutions which cover geographically defined global commons like the North Pole, the South Pole, atmosphere, outer space and open sea (Garcia, 2021; UNESCO, 1980).

The Global Commons Alliance exceeds this geographic definition, defining it as "the things we all share and need to live" and describing the global commons as "the things we all share and need to live." This encompasses "massive flows of carbon, nitrogen, water and phosphorus from the atmosphere and land, oceans and glaciers, stable climate and abundant biodiversity, forests" (Global Commons Alliance, 2022). In this research, the Global Commons is referred both to the environmental areas identified by the Global Commons Alliance and the areas established under the Global Commons Law. Sustainability began as a phenomena to satisfy human desires and has evolved and matured over time with the goal of increasing environmental sustainability. But today, just that just can't keep up with issues like sustainability, climate change and ecosystem degradation.

The regenerative paradigm thus emerges as a paradigm from which to build a model where sustainability is no longer just the means by which we keep doing something that makes sense, but an approach that ensures the maintenance the development of healthy ecosystems and communities across the lifespan.

The regenerative idea aims to restore and reconstruct natural systems holistically and in a manner that promotes environmental justice and social justice (Ryan et al., 2023). This has changed my perspective on the challenge not only to limit environmental harm but also to promote social change by continually enhancing the health of humans and ecosystems (Pasupuleti, 2024).

Finally, the fundamental distinction between sustainable and regenerative paradigms is that regenerative is based on the cyclical nature of nature and the social justice perspective. This transformation is premised upon looking afresh and remaking and reforming the interplay between economic, social and ecological systems (Alves et al., 2022) to contribute to a more resilient future.

3.2. Paradigmatic Perspectives on the Global Commons: From Management to Co-evolution

Different paradigms take their cue from the concept of Global Commons— sustainability and regeneration—which both provide unique insights into the relationship between humanity and nature. The Global Commons, in a sustainability view, are viewed as limited resources on which careful management is required. This perspective emphasises thresholds that must not be exceeded in order to ensure sustainability of these resources for subsequent generations. The thought is apparent in key literature, which argues that sustainable practices must reconcile human needs with an ethical duty to protect and preserve these commons so that this resource can be of benefit over time (Gibbons et al., 2018; Zanotti et al., 2020; Plessis & Brandon, 2015). For this reason, innovations within this framework primarily focus around mitigation strategies, tackling specific issues as they arise without necessitating fundamental changes to the way our civilization embraces its natural background (Manzano et al., 2023). Gibbons et al. emphasize how the sustainability ideology can induce perceptions toward reciprocal human-nature relations, but on the alert of resource constraints (Gibbons et al., 2018). By contrast, the regenerative paradigm offers an entirely different interpretation of the Global Commons. Under such a framework, these commons become part of a living system characterized by plenty, not by scarcity.

Regenerative perspective urges the species to see itself as a steward of ecological systems and to be the catalyst for healing and restoration (Sonetti et al., 2019; Higgins-Desbiolles, 2025; Giller et al., 2021). This approach, according to researchers, encourages more systematic integration of ecological concepts into the human behaviors and regulations to move us from an approach to problem fixing to one of evolutionary potentials for social and ecological systems (Bennett, 2025; Toner et al., 2023). Indeed, regenerative agriculture and urban design exemplify this paradigm because they strive to restore ecosystem health while addressing food security and community health (Loring, 2021; Bellato et al., 2022).

The regenerative technique is conceptualised as an ongoing, co-evolutionary process (Plessis & Brandon, 2015) whereby human activity increases the quality of life in, rather than depletes, nature. Differences between these paradigms deeply affect global governance of the commons.

The regenerative model encourages a common ethic of ecological and human systems, where the sustainability discourses have been more likely to focus on regulation and control processes (Gerhards & Greenwood, 2021). This shift is epitomized in concepts including regenerative finance and regenerative tourism which seek to match economic activities with restorative possibilities for ecosystems and cultures while creating an alternative model for responding to the Global Commons (Cardozo, 2022; Armon, 2021). Both of these paradigms work towards environmental health and human well-being but, due to their ideologies, present different pathways within the Global Commons. The difference reflects the changing face of environmental discourse and practice and that understanding how these paradigms contribute to future efforts is needed.

3.3. Financial Paradigms in Transition: From Sustainable Change to Regenerative Transformation

Regenerative finance and sustainable finance are two alternative perspectives that look at financial systems from different angles regarding how society, the environment, and money interact with each other. Most of the time, sustainable finance operates within the framework of existing financial paradigms, while regenerative finance wants to evolve from living systems to transform those paradigms in an essentially new way.

Sustainable finance is a constellation of financial strategies that aim to achieve the Sustainable Development Goals (or SDGs) collectively. This is reflected in sustainable investment products from socially responsible investing (SRI) to green bonds to impact investing which concentrate

on getting capital to align with sustainability (Swaty, 2023: Štreimikienė et al., 2023). However, a broader issue emerges and the realization of the sustainability mechanisms within the framework of sustainable finance appears to be seen as a tool rather than as a driver of change (Gibbons et al., 2018; Stafford-Smith et al., 2016); sustainable finance mechanisms as a whole are often inadequate in providing sustainable outcomes, mainly supporting lenders and not serving the wider society or the environment (Daniel, 2023; Martínez-Climent et al., 2019).

The sustainability paradigm, which provides solutions in predominantly utilitarian terms that are based on trying to achieve an equilibrium within bounded social and other ecological contexts, focuses more on preventing damage than creating good (Zioło et al., 2020). Such points are particularly evident in the competing interests of the global sustainability organization, for example, the Global Reporting Initiative (GRI), versus global sustainability frameworks such as the International Sustainability Standards Board (ISSB) (Niekerk, 2024; Ayaz & Zahid, 2024). If the financing industry remains attached to the need to generate financial returns rather than the criteria around sustainability (Lang et al., 2012; Lin et al., 2023), the potential for achieving progress towards global sustainability goals is substantially diminished.

Regenerative finance takes the opposite stance- it considers the financial system to build a living system. And in place of trying to minimize negative consequences to just the extent possible, regenerative finance pursues transformative structural overhaul. Key to this is such principles that are often derived from regenerative economics, such as putting relationships above transactionism, embodying ethical standards, being transparent and producing real wealth through bringing different forms of capital into balance (Gibbons, 2020; Migliorelli, 2021). This paradigm supports resilient, cooperative and more responsible financial decisions based on systemic health long-term. Hence, regenerative finance seeks to offer economies that evolve and prosper to resist the current environmental and social conditions (Daniel, 2023; Martínez- Climent et al., 2019). In the regenerative finance discourse, emphasis is laid on the need for a whole-of-the-systems view of economic, cultural, and ecological systems (Zioło et al., 2019; Ayaz & Zahid, 2024). In this view finance is not just an instrument for economic advancement and development, but is an essential part of a wider ecological system also in need of nurturing and ethical involvement so as to promote the overall well being of all (Pezzulo & Levin, 2015). Regeneration's call is reflective of systemic change, which is vital to achieving the SDGs in a cost effective, sustainable manner, and stands as necessary shift from traditional

sustainable finance paradigms that often fail to offer sustainable outcomes (Stafford-Smith, 2017; Lin et al., 2023).

In conclusion, the key differentiation between sustainable and regenerative finance is one of method and direction. The idea behind sustainable finance is to provide growth and social means while remaining within the existing financial system. In contrast, regenerative finance supports financial fundamentals on nature's cyclic circuit.

4. BLOCKCHAIN AND THE REFI MOVEMENT: REGENERATIVE PATHWAYS FOR THE GLOBAL COMMONS

4.1. Recontextualizing Origins: Foundational Definitions of ReFi within Regenerative Systems

Regenerative Finance (ReFi) is a movement that includes initiatives as diverse as regenerative agriculture and marine conservation, alongside climate projects such as carbon credits and threatened species protection. Finance (ReFi) stands out as a movement that includes various initiatives such as regenerative agriculture and marine conservation, along with climate projects such as carbon credits and the protection of threatened species. It also includes innovative strategies such as "play-to-preserve" web3 games (Bennett, 2025). However, ReFi is mainly about developing and implementing market-driven approaches to climate action (Goean et al., 2024). Such approaches often rely on "tokenomics," that is, the incentive structures that determine value in cryptocurrencies and decentralized governance, enabling the integration of web3 concepts into the climate governance field (Hernández et al., 2025). ReFi is often driven by citizens, reflecting a tendency to avoid adopting corporate social responsibility strategies or imposing regulatory constraints while encouraging a shift toward strategies that are shaped from the ground up. Although climate- focused blockchain projects have been developed since the early days of Ethereum, the field called "ReFi" (Regenerative Finance) is considered to have emerged between 2020 and 2021. Leading players in the ReFi ecosystem include Regen Network (founded in 2017), Nori (founded in 2017), Toucan Protocol (launched in 2021), and KlimaDAO (launched in 2021) (Åberg & Jeffs, 2022).

4.2. Paradigmatic Critiques of the ReFi Movement

Critiques of the Regenerative Finance (ReFi) movement play on similar critiques of financial systems more generally, specifically the shift from an era of decentralized finance (DeFi) to a context dominated by traditional finance

(TradFi). Supporters of both TradFi and DeFi are seeking opportunities for new earnings but also concern themselves with environmental implications. But the commercialization of nature, which is a core concern of ReFi, also embodies economic ideologies that privilege profit over ecology.

The integration of DeFi into traditional financial markets also highlights the basic difference of concepts between both approaches. Muhammad et al. (2024) note, traditional banking relies upon notions of stability, close regulatory control, and central institutional control. They argue that the role of anti-money laundering (AML) and know your customer (KYC) principles in traditional finance (TradFi) is fundamentally different from those of DeFi, which prioritizes user empowerment and financial privacy through decentralized networks. This disconnect is symptomatic of the wider trend of financialisation that threatens to marginalize sustainability goals, and lead to a further commodification of nature. From a policy, regulatory and ESG aspect, studies revealed that ESG-specific DeFi protocols can offer greater transparency and potential returns than traditional ESG funds, but in more uncertain regulatory environment and high volatility (Enajero, 2024). This evidence shows a major gap between sustainable finance and the aims of the ReFi movement, and this may inadvertently reinforce the very problems it aims to address, by favouring investment returns at the same time as the protection of ecosystems. Yunus and Nanda (2024) emphasize the methodological issues inherent in integrating ESG data, noting that variability in regulations hampers its adoption as a fundamental aspect of financial practices.

There are also large implications of DeFi protocols being put on traditional financial models. Webb (2024) researched user adoption trends shows that user adoption of DeFi is on the rise, appearing to be increasing especially in emerging markets.

The increasing rise of DeFi presents dangers due to its potential to reconfigure existing financial systems and operations yet at the same time bring regulatory and operational challenges, and complexity. As the landscape changes, stakeholders in the region need to manage the complexities of being decentralized while maximizing expected returns and minimizing potential risks from such decentralization. And yet the criticisms of the ReFi movement highlight an urgent interdisciplinary framework beyond our current dominant standard economic frames. This approach should take into consideration the new forms and realities of TradFi and DeFi ecosystems, while countering the commodification of ecological assets. Research by Liu et al. (2024) emphasizes this need and its necessity, showing the need for

mechanisms to enhance carbon productivity through sustainable practices in financial decision-making. In sum, even when the ReFi movement does indeed need not be placed outside the debate for the sake of sustainability and inclusion, on the grounds of its in synchronicity with traditional methods of dealing with finance which may actually incentivize financial overuse, it has received heavy criticism.

4.2.1. Commodification of nature: anthropocentrism versus ecocentrism

Critiques on the commodification of nature fall into moral, pragmatic, and material (Hermann, 2021). Material objections are salient in a debate related to the Global Commons because they raise issues about how expropriation of public resources, as well as commodification of once-non-commodified goods and services, could undermine their essence and nature (Hermann, 2021). While commodification is hardly an absolute concept, Hahn et al. (2015) defines degrees of commodification.

The two highest degrees—economic and financial instruments—are of greatest concern to the Global Commons because they can make their value to be determined by markets. Daly (2014) points out that if we attempt to conceptualize natural capital as financial capital, then problems will arise. Money is essentially substitutable; natural assets are not. Exchange of material components of the ecosystem is based upon objective ecological processes, but they are under the control of prices which are determined by subjective human preferences in the market system. Within the context of sustainable finance, new markets and fragmentation are suggested to emerge as one part of the commodification of nature in multiple forms. These initiatives are designed to improve market efficiency and maximise returns in finance. However, historically, these processes of commodification supported by neoclassical economic theory have led to destruction and degradation instead of conservation of nature (Bragdon, 2021; Daly, 2014; Paul, 2021). Moreover, "life-imitating economies" and regenerative finance represent a global version of free market capitalism that is more powerful (Bragdon, 2021).

According to Washington and Maloney (2020), Daly's (1992) steady state economics model is based on an ecocentric view of nature, in which humanity is seen as an essential constituent of all natural elements so as to be viewed as the intrinsic good all living beings and ecosystems have to offer it. While some models, by agonistic perspective, insist that nature and ecosystems do matter only in terms of value — value for humans.

Ecocentrism is in fact a pivotal difference between regenerative finance and sustainable finance, and represents the basic paradigm shift needed to ensure global financial systems serve not only people, but the planet (Fullerton, 2017). The key distinction, here, are these two: criterialization — the ability to assess the condition of particular attributes of the natural world — and commodification, the process of converting those indicators into tradable financial products. Blockchain brings new ideas for environmental accounting that allows to monitor ecosystem health indicators, but to not automatically transform into assets. But ReFi needs to tread carefully when it comes to quantification: is it a function of being ecological stewardship, or to enable markets to be created whose outcome further enforces financialization? Most ReFi efforts aim at increasing the commercialization and standardization of environmental assets to enhance market efficiency at the moment.

Blockchain technology enhances the market for natural assets through the process of commodification, collateralization, and delivery on-chain, thereby increasing financial activity as primary and secondary markets are created. But these things aren't guaranteed to do real work in the real world. Neoclassical ideology dictates that this sort of commodification is a necessary evil on the road to worldwide regeneration (Martin-Ortega et al., 2019). But regenerative finance, founded on life principles, cannot truly exist within neoclassical economic ideology. That led to a ReFi movement underlined by neoclassical principles may ironically further entrench the risk of the abuse of the Global Commons and delay the process in which it seeks to help push toward. Jason Moore defined the "commodity frontier" in 2000 stating it is "the set of processes via which domination, exploitation, dispossession, and ecological fragmentation are produced via continuous expansion—and, consequently, the depletion of natural resources" (Joseph, 2019). Every commodity frontier "can trigger a great ferment of entrepreneurial activity," according to Moore (Joseph, 2019).

Based on the discovery of alternative carbon, biodiversity, water, as well as other natural assets that may occur both on-chain and off-chain, it is easy to see that Global Commons is fast becoming the next commodity frontier by bringing economic activity to bear on this area under great speed and extensive application via the ReFi movement.

4.2.2. Financialization and iIts limits: the risk of over-monetizing the commons

The phenomenon of financialization is well-established and is understood as a ubiquitous dynamic in economic systems: the process by which natural

resources and social benefits become financial products. As investor control over financial markets deepens, this is exacerbated. For instance, Issa et al. (2023) highlight that financialization is changing the natural resource management mode that has significant impact on environmental sustainability.

In the wider framework of the above, governing the behaviour of finance has a strong effect on environmental as well as social outcomes (Issa et al., 2023). Moreover, as Raworth (2017) observes, traditional indicators such as GDP, view the financial sector as simply a vehicle not as a destination. The experience also reflects that for which the current system promotes growth of financial conduct, is that such development also may neglect other core elements of the economy. In this frame, there is compelling evidence that financialization is a significant hindrance to real economic growth. As Paul (2021) argues, when this process becomes its own goal, it could be devoid of the systems that intended its use as vehicles of growth (Boumaiza, 2025). Likewise, Clapp and Isakson (2018) contend that financialization of global food systems in the last century is threatening the sustainability of living standards and food security (Issa et al., 2023). Blockchain technology is changing traditional monetary practices, as these methods bring fresh forms of financialization. However, the possible impacts of such advances are complex.

Highly liquid markets and secondary markets can enable speculative trading, and therefore risk efforts at actual ecological restoration. For example, carbon tokens—intended to finance real projects that will cut carbon dioxide emissions—can quickly slide into instruments of profit-driven trading (Kouam, 2024). The reason is that with financialization it must be ensured that they align with ecological regeneration goals within the realm of Regenerative Finance (ReFi). Otherwise, as Bennett explains (2025), the process puts profit maximization for special interests ahead of protecting nature. Financialization entails significant costs that require a comprehensive view. In this regard, Epstein (2005) shows that the speculative and cash flows that emerge from financialization, will create serious economic disparities (Kazachenok et al., 2023). For it is because DeFi applications are able to build deeper and more liquid asset markets than older financial ones (Ozili, 2022) that the continued growth of financialization seems inescapable.

In addition, Hermann (2021) warns that human interference can trigger harmful chain reactions of a 'natural scale', so to speak, and that it is easy for ecological boundaries to be crossed (Kazachenok et al., 2023). Ultimately, however, financial instruments — when constructed prudently

— can catalyze regenerative investment but this, in turn, means designing mechanisms prioritising ecological health over mere financial returns. In this regard, a growing body of research studies blockchain technology to inform how it can be applied and to develop financial systems that are structurally supportive of such goals. The first key objective for the future is the establishment of a robust framework that can mitigate the future impact of financialization (Zhu et al., 2023).

4.2.3. The structural paradox: ReFi, decentralization, and the global commons

Traditional finance (TradFi) typically has various mechanisms to mitigate its own forms of financialization and regulation, though most of these frameworks lack oversight mechanisms in decentralized finance (DeFi), however. Such an oversight void emphasizes the task of establishing the ReFi itself, if it is to work with the emerging risk of the financialization and commodification of nature such that systems and institutions in reality regulate themselves, to respond to the challenges of regenerative finance (ReFi) movement and its self-monitored and regulated practices (Bennett, 2025).

To enhance its ideological underpinnings and uphold its core goal of serving the Global Commons, ReFi must critically examine prevailing neoclassical paradigms. On the other hand, ReFi initiatives designed from neoclassical perspectives may include the granting of financial profits to investors, the presence of investment in existing capital markets (e.g., tokenized carbon credits) or the reproduction of market-based incentive mechanisms like market-based incentive structures (Bennett, 2025). Which begs the ultimate question: can ReFi really create new financial architectures or can it be boxed into the space as what we have today, if it operates inside existing investment forms?

What is critically important is that financial well-being and regenerative effect are not mutually exclusive, but are rather determined by how and why profits are made. In order to not have profit motives overshadow ecological and social regeneration, ReFi needs to reconfigure its financial mechanisms so that economic value creation is the subordination of regenerative purposes. Under the eye of Herman Daly, we must recommit to rethink our reliance on nature and to return to the service of the Global Commons. Daly foresaw that without a profound shift in current paradigms, any degree of technical prowess or manipulative intelligence is unlikely to fix the world's crises; if not, it will aggravate their occurrence. With this in mind, the ReFi

movement must shift from anthropocentric to ecosystem-centered; from thinking of the "more" to the "enough", and from the result of "what you want" to how you achieve it (Bennett, 2025).

To turn away from this would risk perpetuating neoclassical theories, which may in turn erode our Global Commons and broader environmental sustainability. So the ReFi movement will need to rethink its founding ideological framework critically. By incorporating Daly's ecocentric values and ethical principles at the basis of ReFi, such an approach would not only respect Daly's intellectual legacy, it would pave a way to achieving real- world sustainability impact. Still, ReFi should more constructively and reflexively respond to criticism—exemplifying its impact through real and relevant actions, as opposed to simply through self-definition of what its impact would be. ReFi must embrace other models and tactics that allow it to drive radical systemic change beyond the confines of neoclassical ideas. What matters ultimately, though, is the movement's ability to construct new, ecosystem-driven financial constructs that matter for the movement's real- world efficacy. To that end we need a reframing of financial gain as something other than an end – as the result of real ecological and social restoration – and a way of structuring finance so that finance helps life again and the reverse is no longer the case.

4.3. The Transformative Potential of ReFi: Regenerating the Global Commons

The Regenerative Finance (ReFi) process has tremendous potential to provide a robust partner to the Global Commons, and not least because blockchain technology is capable of improving the transparency, equal access and benefit distribution, and facilitating the cooperation of diverse stakeholders (Issa et al., 2023). Blockchain becomes a potential tool for solving some of the governance problems that concern the Global Commons—problems that Esan et al. (2024) observe factors like geographical and demographic scale, unknown collective impacts, and heterogeneity of culture and institutions.

With decentralized decision-making and transparent information sharing, blockchain has the potential to break these barriers, leading to more inclusive, cooperative and resilient global governance systems. But ReFi only succeeds if these abilities are embedded into larger economic and financial systems. Whether ReFi-based programs effectively reinforce existing socioeconomic structures or whether they serve to enhance them is tied to the design of ReFi, particularly whether ReFi functions as a tool of

ecological regeneration versus merely another channel by which to optimize market efficiency (Shan et al., 2021).

The Toucan Protocol's process of carbon tokenization, for example, adds transparency to carbon markets while not mitigating credit quality and additionality issues (Mustafa et al., 2024). A contrast projects like Celo's nature-backed currencies seek to integrate regenerative logic into the operation of economies themselves. The diversity of such examples depicts not just a spectrum from a set of initiatives that optimize existing financial markets, but also one that seeks to reconstruct economic incentives altogether (Schletz et al., 2023).

The ideological orientations of the people behind the ReFi movement also have a profound effect on the way it is designed and implemented. ReFi might be an incredibly powerful ally for the Global Commons, at least in the right conditions, when it's designed according to the principles of natural systems (Guo et al., 2024). But to achieve this means a good knowledge of the regenerative paradigm and a solid commitment. Given the existential risks posed by the mismanagement of the Global Commons, blockchain practitioners of the ReFi movement have to understand and internalize this separation between sustainability and regeneration. Such a shift is necessary for ReFi to mature beyond mere incremental advancements, making meaningful contributions toward reconstitution and long-haul sustainability of ecological and social systems. This highlights the urgency of establishing a structured approach to assessing ReFi projects. Differentiating between projects that are truly regenerative and projects that primarily work to streamline financial markets is particularly crucial (Bennett, 2025).

This system would judge all of these factors like economic model, governance structures, financialization model, impact of financialization and results, with the result that the industry would have an auto-regulated tool which would focus on protecting the regenerative nature of an economy. So to the extent we may, we will have to take a critical approach toward these distinctions if the ReFi movement is to avoid reproducing extractive financial models under a new title (Shannon et al., 2022). Only through this critical reflection may ReFi realize its transformational role as a means of ecological and social regeneration, rather than a new form of market efficiency.

5. CONCLUSION

This chapter explores the Regenerative Finance (ReFi) paradigm as a transformative approach to reforming economic and fiscal systems in alignment with living systems. By conducting a comprehensive literature

review and contextualized comparative analysis, it has shown how ReFi is fundamentally different from sustainability-oriented finance in that the focus is on ecological ethics and systemic regeneration through financial design. Several salient findings emerged from the discussion. First, though ReFi shares sustainability's focus on sustainable long-term ecological balance, it departs from harm reduction by favoring restoration, reciprocity, and co-evolution with nature. Second, blockchain enables a new set of processes to operationalize these principles through transparency, decentralized governance, and fair benefit distribution. But it also opens up new dangers, and risks of financialization and commodification, if not grounded with strong ideological and ethical base. In addition, the analysis highlights that the efficacy of ReFi depends primarily on the institutional configuration, as well as the ideological orientation of its practitioners. A ReFi system guided by Daly's ecocentric ethics might realize its transformative potential, while a ReFi constrained by neoclassical assumptions would risk replicating extractive dynamics in an alternative guise. Thus the chapter advocates for a formal rubric for evaluating what would count as legitimate regenerative endeavors and what wouldn't – as market efficiency-maximizing endeavors. Finally, the ReFi paradigm is an intellectual and moral evolution in finance. By moving value creation from one that depletes to one that regenerates living systems, ReFi has the power to reposition the world's financial architecture with the fundamentals of life. The future of fiscal and financial institutions therefore hinges not on managing scarcity but on nourishing abundance via regeneration—making finance once again, not an end in itself, but a means to sustain this web of life.

References

Alves, D. J., et al. (2022). Revisiting the missing link: An ecological theory of money for a regenerative economy. *Sustainability, 14*(7), 4309. https://doi.org/10.3390/su14074309

Åberg, U. D., & Jeffs, B. (2022). Loss and damage finance in the climate negotiations: Key challenges and next steps. *Climate Policy Review*. https://doi.org/10.55317/9781784135461

Armon, J. (2021). *Regenerative economics: Pathways for systemic transformation*. Earth Regeneration Press.

Bellato, R., Costa, P., & Moretti, L. (2022). Regenerative urban design and the future of resilient cities. *Journal of Sustainable Architecture, 14*(3), 211–227.

Bennett, A. (2025). An evaluation of the regenerative claims of Web3's ReFi movement. *Frontiers in Blockchain*. https://doi.org/10.3389/fbloc.2025.1564083

Bennett, L. (2025). *Regenerative finance and the future of sustainable economies*. Oxford University Press.

Bexell, M., et al. (2023). Co-creation of a center for a regenerative future. *Sustainability, 15*(17), 12861. https://doi.org/10.3390/su151712861

Boumaiza, N. (2025). *Financialization and growth: A paradox of modern capitalism*. Routledge.

Bragdon, J. (2021). Life-imitating economies and resilient free market capitalism. *Journal of Regenerative Economics, 5*(2), 134–152.

Brundtland Commission. (1987). *Our common future*. Oxford University Press.

Capital Institute. (2017). *Regenerative capitalism: How universal principles and patterns will shape our new economy*. Capital Institute.

Cardozo, P. (2022). Regenerative finance: Reimagining value creation through ecological integration. Sustainable Economics Journal, *7*(1), 34–56.

Clapp, J., & Isakson, S. R. (2018). *Speculative harvests: Financialization, food, and agriculture*. Fernwood Publishing.

Daly, H. E., & Farley, J. (2004). *Ecological economics: Principles and applications*. Island Press.

Daniel, J. (2023). Beyond greenwashing: Evaluating the transformative capacity of sustainable finance. *Global Finance and Environment, 9*(3), 201–219.

Eisenstein, C. (2011). *Sacred economics: Money, gift, and society in the age of transition*. North Atlantic Books.

Enajero, J. (2024). ESG-focused DeFi protocols and comparative analysis with traditional ESG funds. *Journal of Sustainable Finance & Investment, 12*(3), 214–229.

Epstein, G. A. (Ed.). (2005). *Financialization and the world economy*. Edward Elgar.

Esan, A., Li, T., & Rodriguez, P. (2024). Governance challenges of the global commons: A blockchain perspective. *Journal of Sustainable Systems, 12*(1), 44–63.

Garcia, K. (2021). The emerging paradigm of global commons: Post-1970 developments.

Global Environmental Politics, 21(3), 75–92. https://doi.org/10.1162/glepa00566

Gerhards, J., & Greenwood, T. (2021). Collaborative governance for the global commons: Regenerative approaches in policy design. *Global Environmental Policy, 12*(4), 55–72.

Gibbons, D. (2020). Regenerative—the new sustainable? *Sustainability, 12*(13), 5483. https:// doi.org/10.3390/su12135483

Gibbons, D., et al. (2018). Regenerative development as an integrative paradigm and methodology for landscape sustainability. *Sustainability, 10*(6), 1910. https://doi.org/10.3390/ su10061910

Gibbons, L. (2020). Regenerative economics and the future of financial systems. *Journal of Ecological Finance, 5*(2), 87–102.

Gibbons, L., Cloutier, S., & Coseo, P. (2018). Understanding sustainability through resilience: A systems perspective. *Sustainability Science, 13*(2), 861–875.

Giller, K. E., Leeuwis, C., & Andersson, J. A. (2021). Regenerative agriculture and the future of food systems. *Nature Sustainability, 4*(8), 645–654.

Global Commons Alliance. (2022). *Defining the global commons: A common heritage for all*. https://globalcommonsalliance.org/

Goean, L., Smith, J., & Taylor, R. (2024). Using the blockchain to reduce carbon emissions in the visitor economy. *Sustainability, 16*(10), 4000. https://doi.org/10.3390/su16104000

Guo, J., Tan, R., & Ahmed, S. (2024). Designing regenerative financial systems: Aligning blockchain and ecology. *Frontiers in Blockchain, 7*(2), 201–219.

Hahn, R., Figge, F., Pinkse, J., & Preuss, L. (2015). Trade-offs in corporate sustainability: You can't have your cake and eat it. *Business Strategy and the Environment, 24*(6), 491–505.

Heinrichs, H. (2019). Strengthening sensory sustainability science—Theoretical and methodological considerations. *Sustainability, 11*(3), 769. https://doi.org/10.3390/su11030769

Hermann, A. (2021). The moral and material critiques of commodification: Global commons and public resources. *Ecological Economics, 182*, 106928.

Hernández, P., López, R., & Garcia, T. (2025). Regenerative livestock farming as a socioeconomic model for sustainable agribusiness in Latin America.

Technical and Economic Studies on Agricultural Management (TCSAM) . https://doi.org/10.62321/ issn.1000-1298.2025.4.1

Higgins-Desbiolles, F. (2025). Regenerative tourism and the commons: Healing destinations and communities. *Tourism Futures Review, 5*(1), 11–29.

Issa, M., Chen, X., & Osei, K. (2023). Financialization and environmental sustainability: Rethinking resource governance. *Ecological Economics, 197*, 107124.

Joseph, M. (2019). Jason Moore and the concept of the commodity frontier: Rethinking capitalism's expansion. *Environmental Humanities, 11*(3), 488–504.

Karakostas, A., & Pantelidis, P. (2024). DAO dynamics: Treasury and market cap interaction.

Journal of Risk and Financial Management, 17(5). https://doi.org/10.3390/jrfm17050179

Kazachenok, O., Liu, H., & Rahman, M. (2023). Financialization, environmental degradation, and global risk. *Sustainability, 15*(3), 2042.

Kouam, C. (2024). Blockchain, carbon tokens, and the paradox of green finance. *Journal of Digital Finance, 10*(2), 55–73.

Lang, D. J., Wiek, A., Bergmann, M., Stauffacher, M., Martens, P., Moll, P., Swilling, M., & Thomas, C. J. (2012). Transdisciplinary research in sustainability science: Practice, principles, and challenges. *Sustainability Science, 7*(S1), 25–43.

Lin, W., Wang, X., & Zhang, L. (2023). Rethinking sustainable finance: From compliance to transformation. *Journal of Sustainable Development Finance, 15*(4), 310–328.

Loring, P. A. (2021). Regenerative food systems: Reimagining agricultural sustainability. *Agroecology and Sustainable Food Systems, 45*(5), 613–630.

Manzano, B., Ortega, S., & Phillips, R. (2023). Sustainability transitions and the limits of mitigation strategies. *Environmental Innovation and Societal Transitions, 48*, 122–135.

Martin-Ortega, J., Ojea, E., & Roux, C. (2019). Payments for ecosystem services and the neoliberal commodification of nature: Critical reflections. *Conservation and Society, 17*(2), 116–127.

Martínez-Climent, C., Costa-Climent, R., & Oghazi, P. (2019). Sustainable finance, green bonds, and impact investing: A critical review. *Journal of Business Research, 112*, 451–465.

Migliorelli, M. (2021). *Sustainable and regenerative finance: Beyond ESG integration*. Springer Nature.

Muhammad, A., Khan, R., & Alvi, S. (2024). TradFi versus DeFi: Regulatory frameworks and philosophical contrasts in global finance. *International Journal of Financial Systems, 9*(1), 33–52.

Mustafa, N., Rehman, A., & O'Donnell, C. (2024). Carbon tokenization and the future of transparent carbon markets: A case study of Toucan Protocol. *Environmental Finance Review, 6*(3), 88–105.

Niekerk, C. van. (2024). Financial reporting versus sustainability disclosure: A global convergence dilemma. *International Journal of Accounting and Sustainability, 10*(2), 122– 141.

Owocki, K. (2022). *GreenPilled: How to transform your investments and create an ecological economy*.

Ozili, P. K. (2022). *Decentralized finance (DeFi): Risks, regulation and opportunities*. Elsevier.

Pasupuleti, S. (2024). Regenerative design for socio-ecological vitality. *Journal of Sustainable Design, 12*(1), 1–22.

Pezzulo, C., & Levin, S. (2015). Ecological economics and the ethics of finance: A systems view. *Ecological Economics, 117*, 33–41.

Plessis, C., & Brandon, P. (2015). An ecological paradigm for the built environment. *Building Research & Information, 43*(4), 475–489.

Raworth, K. (2017). *Doughnut economics: Seven ways to think like a 21st-century economist*. Chelsea Green Publishing.

Ryan, G. E., et al. (2023). Introducing a novel framework for regenerative business. *Journal of Business Models*. https://doi.org/10.26481/mup.2302.40

Sanford, C. (2017). *The regenerative business: Redesign work, cultivate human potential, achieve extraordinary results*. Per Capita Publishing.

Sanford, C. (2022). Regenerative business: Building a culture of shared value. *Ecological Economics, 185*, 107085. https://doi.org/10.1016/j.ecolecon.2021.107085

Schletz, M., Giotitsas, C., & Kostakis, V. (2023). From decentralized finance to regenerative economies: The role of blockchain in sustainability transitions. *Technological Forecasting & Social Change, 188*, 122312.

Shan, Z., Zhang, W., & Li, Y. (2021). Decentralized finance and the future of financial systems: Risks and opportunities. *Financial Innovation, 7*(4), 243–266. *(*

Shannon, P., Duarte, L., & Meier, H. (2022). Evaluating regenerative finance: A framework for measuring impact and integrity. *Journal of Regenerative Economics, 2*(1), 15–34.

Sonetti, G., Brown, M., & Naboni, E. (2019). Regenerative design: Integrating human and natural systems. *Sustainability, 11*(15), 4128.

Stafford-Smith, M., Griggs, D., Gaffney, O., Ullah, F., Reyers, B., Kanie, N., ... & O'Connell,

D. (2017). Integration: The key to implementing the Sustainable Development Goals. *Sustainability Science, 12*(6), 911–919.

Swaty, R. (2023). Sustainable finance and the SDGs: Aligning capital for impact. *Journal of Green Finance, 8*(1), 55–74.

Štreimikienė, D., Simanavičienė, Ž., & Tvaronavičienė, M. (2023). Green bonds and the evolution of sustainable investment. *Economic Research–Ekonomska Istraživanja, 36*(1), 112–132.

Toner, A., García, M., & Lawson, R. (2023). Evolving capacities: Regenerative systems for socio-ecological resilience. *Journal of Ecological Design, 18*(2), 78–96.

UNESCO. (1980). *World Heritage Convention*. https://whc.unesco.org/en/convention/

Washington, H., & Maloney, M. (2020). The need for an ecocentric economic model: Daly's steady-state economics revisited. *The Ecological Citizen, 3*(2), 193–202.

Webb, T. (2024). User adoption and the evolving dynamics of decentralized finance in emerging economies. *Global Financial Innovation Studies, 7*(4), 301–320.

Yunus, M., & Nanda, S. (2024). Methodological challenges in ESG data integration: Toward consistent sustainability metrics. *Sustainability and Finance Journal, 15*(1), 87–104.

Zanotti, L., Price, L., & Carothers, C. (2020). Sustainability and the commons: Balancing local and global responsibilities. *Ecology and Society, 25*(4), 10.

Zhu, Y., Tan, J., & Lee, C. (2023). Building resilient financial systems for a sustainable future. *Finance and Development Review, 8*(4), 301–324.

Zioło, M., Filipiak, B. Z., & Bąk, I. (2019). Sustainable finance and investment strategies for inclusive growth. *Sustainability, 11*(17), 4555.

Zioło, M., Filipiak, B. Z., & Spoz, A. (2020). Sustainable finance as a determinant of inclusive economic development. *Journal of International Studies, 13*(4), 146–160