

Pathways for financing the Sustainable Development Goals

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The United Nations (UN) has outlined 17 Sustainable Development Goals (SDGs) designed to tackle social, economic, and environmental challenges, fostering a worldwide shift towards sustainable development. Unfortunately, by 2023, the midway point toward the 2030 Agenda deadline, nearly half of the 140 assessable targets have significantly or moderately deviated from their expected trajectories and over 30% of these targets have either stagnated or regressed instead of progressing as anticipated (<https://unstats.un.org/sdgs/report/2023>).

Challenges in financing the SDGs have been intensified by global economic uncertainty and the repercussions of the COVID-19 crisis. The annual investment gap for the SDGs across all sectors has surged from \$2.5 trillion in

2014 to \$4 trillion in 2023 (https://unctad.org/system/files/official-document/wir2023_en.pdf). Notably, progress towards the SDGs reveals substantial disparities, with the financing gap in biodiversity (SDG14 and SDG15) estimated at \$598-824 billion annually, constituting 7.5% of the total gap.¹

António Guterres, Secretary-General of the United Nations, has advocated for an SDGs Stimulus plan to address the challenges. This plan entails a significant increase in finance, debt relief, and an expansion in contingency financing for countries in need (<https://unstats.un.org/sdgs/report/2023>). The current dysfunctional financial architecture is the major obstacle hindering the practical reorientation of financial capital towards SDGs projects, the risk and reward criteria of which is not clear and need more future research.²



Figure 1. The "PATH" (Pricing-Application Tools-Transparent Information Disclosure-High Tech) to the Sustainable Development Goals

The prevailing structure of the SDGs financing involves contributions from both the public and private sectors. Public sector financing includes sovereign borrowing, international development finance institutions (such as MDBs), and Official Development Assistance (ODA commitment). In contrast, private sector financing entails obtaining funds from financial institutions and individual investors. According to data from Total Official Support for Sustainable Development (TOSSD), as of 2021, public sector financing constitutes a significant majority, accounting for 91% of total SDGs financing, while private sector financing represents a more modest share at 9%.³

The substantial share of public sector financing makes SDGs investment vulnerable to economic uncertainty and limited fiscal space. Additionally, escalating debt further constrains SDGs investment, particularly in developing countries. Regarding private financing for the SDGs, despite the initiation of policies and principles such as the United Nations Environment Programme Finance Initiative (UNEP FI) and the Principles for Responsible

Investment (PRI), mobilizing private sector finance for global sustainable development remains challenging. Misaligned incentives and regulations, lack of awareness, and difficulties in identifying, measuring, pricing, and reporting impede investment in the SDGs on a large scale.

Structuring diverse sources of financial flows to achieve the SDGs demands a systematic and comprehensive approach. Addressing this requires improved risk measurement methods, efficient pricing mechanisms, and appropriate financial tools to channel capital. Transparent information disclosure, facilitated by technologies such as digital finance, is essential for all these components. It is crucial to emphasize that an effective structure for financing capital cannot function without considering stakeholders, including governments, financial institutions, companies, and households. Guiding them to make decisions aligned with the SDGs is crucial.

This article aligns with the Action Platform of the United Nations Global Compact (UNGC), advocating the exploration of innovative financial instru-

ments with the potential to steer finance towards crucial SDGs investment. This includes enhancing the risk/return profile significant to the source of capital. Concerning the structure of the UNGC Action Platform, this article introduces the "PATH" framework (Figure 1), integrating pricing mechanisms (P), allocation tools (A), transparent information disclosure (T), and high-tech (H). This framework takes into account its interaction with stakeholders.

PRICING MECHANISM: FACILITATING OPTIMAL PRICING TO MOBILIZE FINANCING

Establishing an effective pricing mechanism is crucial for mobilizing capital, which inherently pursues short-term profits. Over several decades, the emphasis on short-term investment goals and a sole focus on financial returns has often overlooked the long-term socio-environmental externalities that are not adequately accounted for. This has directed investment toward disruptive industries. Pricing mechanisms persistently neglect indirect costs, worsening the socio-environmental crisis. Challenges like biodiversity loss, greenhouse gas emissions, and rising pollution levels underscore the need for clarity concerning returns that support SDGs investment.

In contrast to traditional investment projects, SDGs investment features strong positive externality, high initial investment, and extended construction periods. However, financial resources need more adequate incentives to participate in SDGs investment if correctly priced. An efficient pricing mechanism is foundational for mobilizing financial resources. Although some countries have made commendable efforts, such as offering varied interest rates and subsidies for SDGs investment, the current mechanism is ineffective due to limited information disclosure.

Activating the pricing mechanism for SDGs investment requires encouraging financial and research institutions to adopt the latest tools and methodologies, incorporating SDGs-related risks and preferences.⁴ Traditional asset pricing models like CAPM or the FAMA five-factor pricing model need to be revised for the SDGs, especially given its nonlinearity and non-normally distributed risks. Balancing long-term benefits and short-term costs in pricing SDGs investment requires a proper valuation of SDGs-related risks. This enables financial institutions to adjust capital costs, make credit allocation decisions, and initiate financial flows toward suitable SDGs projects. For instance, integrating the scarcity of precious species into pricing models is crucial for investment in biodiversity protection.

ALLOCATING TOOLS: DESIGNING EFFECTIVE TOOLS TO CHANNEL FINANCING

After accurately pricing SDGs investment, it becomes imperative to develop allocation tools. Currently, tools for financing SDGs investment predominantly aim at providing low-cost financial resources. Nevertheless, these tools frequently lack a strong link between actual SDGs performance and cost, neglecting the term structure characteristics inherent in SDGs investment. In this context, governments and financial institutions should adhere to two principles when designing effective instruments for SDGs investment: being market-driven, and incorporating a term structure design that aligns with the cash flow of SDGs projects.

For instance, biodiversity-linked bonds are structured to tie the coupon rate in the fifth year directly to the attainment of biodiversity performance targets. This motivates issuers to reach their planned biodiversity goals. If the target is achieved during the assessment period, the sustainability performance target is considered met; otherwise, adjustments, such as a 20BP increase in the coupon rate, are activated.

Subsidy-based loans linking governments and financial institutions mitigate the time gap and financial circulation challenges related to the early stages of SDGs investment. Governments offer subsidies to encourage financial institutions to back SDGs investment. However, there is a need for a synthetic ecosystem data exchange platform to ensure the efficient redirection of financial resources. This underscores the necessity for timely, high-quality data to address fundamental issues in financing SDGs investment.

TRANSPARENT INFORMATION DISCLOSURE: CONSISTENT DISCLOSURE SHAPES THE ACCESSIBILITY OF FINANCING

Transparent information disclosure plays a pivotal role in reducing information asymmetry in SDGs investment, bridging the gap between the supply and demand sides of financial flows, and mitigating the risk of "greenwashing."

According to the Influence Map report, out of the 593 ESG funds reviewed,

70% are not aligned with the climate goals of the Paris Agreement, with a substantial number still supporting companies in the fossil fuel sector. Improving the targeting and accessibility of authentic SDGs projects hinges on an effective transparent information disclosure mechanism. However, the current one could be more effective.

The major issue lies in the unstandardized and irregular disclosure of sustainable performance information. Companies need a globally recognized disclosure framework, scope, and methods, making it challenging to meet external investors' demands for consistent and comparable sustainable development information, despite efforts made by rating agencies. To address this, collaboration across sectors is essential to prevent issues like varying caliber and granularity in SDGs investment information. Moreover, the absence of a synthetic ecosystem data exchange platform remains a barrier to efficient financial resource channeling, underscoring the necessity for a platform to facilitate prompt interaction between the financial market and ecosystem data.

HIGH-TECH EMPOWERMENT: DIGITAL FINANCE ENHANCES EFFICIENCY IN FINANCING

Technological innovation plays a key role in accelerating the realization of the SDGs by providing the means and tools to achieving the SDGs, and its inclusiveness ensures that even the most marginalized groups can enjoy the benefits.⁵ Digital finance employs technological tools such as big data, artificial intelligence, and play a pivotal role in advancing SDGs investment. Maria Ramos, Co-Chair of the UN Secretary General's Task Force on Digital Financing of the SDGs, highlights that digital finance expands financial inclusion, empowering households to manage their money as investors and extending financial accessibility in remote areas. For example, for photovoltaic projects in deserts, digital financing enables individuals to perform the monitoring, reporting, and verification (MRV) process remotely to manage their allocation of financial assets allocation.

The innovation brought by digital financing gradually extends financial services to small and medium-sized enterprises upstream and downstream of the industrial chain, facilitating the financing requirements of the SDGs transformation. Additionally, the implementation of an ecosystem data exchange platform necessitates efficient integration technology, including large-scale high-performance computing, cloud computing, and intelligent computing.

CONCLUDING REMARKS

This article aims to create a framework redirecting consistent and stable capital towards SDGs investment. Providing the first holistic perspective on finance pathways for SDGs investment, the proposed "PATH" framework seeks to alleviate concerns over SDGs investment risk and reward profile by mitigating information asymmetry. Acknowledging the structural dimensions of the financing gap for SDGs investment, often neglected in current research, requires more specialized financial tools to mobilize capital effectively. Future research could focus on the development of biodiversity financial products grounded in the scarcity of nature.

REFERENCES

1. Deutz, A., Heal, G.M., Niu, R., et al. (2020). Financing nature: Closing the global biodiversity financing gap. The Paulson Institute, The Nature Conservancy, and the Cornell Atkinson Center for Sustainability, https://www.nature.org/content/dam/tnc/nature/en/documents/FINANCINGNATURE_FullReport_091520.pdf.
2. Starks, L.T., 2023. Presidential Address: Sustainable Finance and ESG Issues— Value versus Values. *The Journal of Finance* 78, 1837–1872. <https://doi.org/10.1111/jofi.13255>
3. TOSSD (2023). TOSSD Visualisation Tool. TOSSD Online, <https://tossd.online/>.
4. Baker, S.D., Hollifield, B., and Osambela, E. (2022). Asset prices and portfolios with externalities. *Rev. Financ.* 26(6): 1433–1468. DOI: 10.1093/rof/rfac065.
5. Guo H., Luo L., Wang H., et al., (2023). The STEP to facilitate achieving Sustainable Development Goals. *The Innovation Geoscience* 1(3), 100037.

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DECLARATION OF INTERESTS

The authors declare no competing interests.