

Nature in the Balance: The Post COP-15 Pathway to Achieve a Sustainable Global Economy

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ABSTRACT

Nature is being lost at an unprecedented rate and time is running out to stop it. Despite the systemic financial and human risks posed by nature loss, little attention is paid to addressing its root cause—the unsustainability of the global economy. However, at COP15, states agreed to the Global Biodiversity Framework, which signaled growing recognition of the need to transition to a sustainable global economic system. This Article first examines why the current global economic system is unsustainable and what is the definition of a sustainable economy. The Article then proceeds to determine how states can achieve this transition, looking at the policy roadmap that has emerged at both the international and domestic levels since COP15.

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I. INTRODUCTION

The economy is driving global ecological collapse. While the global economy has expanded fourfold over the last fifty years, that expansion has come at the cost of degrading 75 percent of ice-free land surface and 66 percent of the marine environment.¹ This degradation is severe. Ecosystems have declined in size and condition by 47 percent globally compared to estimated baselines.² As a result, in the last forty years, the abundance of all mammals, birds, fish, reptiles, and amphibians has declined by more than two-thirds, and more than a million species are on track for extinction—many within decades.³ Without urgent action to mitigate nature loss, the global rate of species extinction, which is already at least tens to hundreds of times higher than the average over the past 10 million years, will further accelerate.⁴ Scientists refer to this as the “Sixth Mass Extinction,”—an event that is projected to be worse than any prior extinction event,⁵ risking “biological annihilation” in the coming decades.⁶

1. IPBES, GLOBAL ASSESSMENT REPORT ON BIODIVERSITY AND ECOSYSTEM SERVICES 13 (2019), <https://zenodo.org/records/3553579>; WORLD ECON. F., *NATURE RISK RISING: WHY THE CRISIS ENGULFING NATURE MATTERS FOR BUSINESS AND THE ECONOMY* 9 (2020), https://www3.weforum.org/docs/WEF_New_Nature_Economy_Report_2020.pdf [<https://perma.cc/42TW-SM42>] ; see also Stephen Leahy, *75% of Earth's Lands Are Degraded*, NAT'L GEOGRAPHIC (Mar. 26, 2018), <https://www.nationalgeographic.com/science/article/ipbes-land-degradation-environmental-damage-report-spd> [<https://perma.cc/C67X-CY3Z>].

2. IPBES, *supra* note 1, at 25; WORLD ECON. F., *supra* note 1, at 9.

3. Megan Reilly Cayten, *Nature is the New Climate*, ENVIRONMENTAL FINANCE (June 2, 2022), <https://www.environmental-finance.com/content/analysis/nature-is-the-new-climate.html> [<https://perma.cc/EPE7-SAK4>].

4. IPBES, *supra* note 1, at 11-22.

5. GrrlScientist, *Modern 'Sixth Mass Extinction' Event Will be Worse than First Predicted: Report*, FORBES (July 27, 2023, 2:41 AM), <https://www.forbes.com/sites/grrlscientist/2023/07/19/modern-sixth-mass-extinction-event-will-be-worse-than-first-predicted/?sh=249db7934ab6> [<https://perma.cc/2LTS-Y29J>].

6. EDWARD B. BARBIER, *ECONOMICS FOR A FRAGILE PLANET: RETHINKING MARKETS, INSTITUTIONS AND GOVERNANCE* 105 (2022).

Failing to preserve and restore nature presents systemic economic and financial risks. Nature is the foundation of the global economy. The World Economic Forum (WEF) estimates that at least 50 percent of global gross domestic product (GDP), or about \$44 trillion in economic value, is moderately or highly dependent on nature,⁷ implicating nearly every sector. Industries highly dependent on nature generate 15 percent of global GDP, or \$13 trillion, while moderately dependent industries generate 37 percent, or \$31 trillion.⁸ Consequently, nature loss presents enormous risks to global economic stability. The World Bank estimates that the collapse of key ecosystem services would shrink global GDP by 2.3 percent, or \$2.7 trillion, annually by 2030.⁹ This collapse would slow the rate of GDP growth by 9.5 percent relative to the baseline.¹⁰ Other estimates put the annual value of ecosystem services at \$125 trillion—about 1.5 times global GDP—that is at risk of being partially or entirely lost.¹¹ The magnitude of this macroeconomic shock is staggering. For example, nature loss in the United Kingdom is estimated to cause a 12 percent loss of GDP—significantly larger than the economic impact of the 2008 financial crisis or the COVID pandemic on the U.K. economy.¹²

In December 2022, the international community had the opportunity to address this crisis. At the 15th Conference of the Parties (COP15) of the Convention on Biological Diversity (CBD), environment ministers, civil society, and other stakeholders were tasked with developing a final Global Biodiversity Framework that charts a path to halt and reverse nature loss within the next decade. Akin to the urgency that accompanied the Paris Agreement, global leaders widely regarded COP15 as humanity's "last chance" to save nature.¹³

7. World Economic Forum, *New Nature Economic Report II: The Future of Nature and Business*, 19 (2020), https://www3.weforum.org/docs/WEF_The_Future_Of_Nature_And_Business_2020.pdf [<https://perma.cc/D47U-SVHN>].

8. Amanda Russo, *Half of World's GDP Moderately or Highly Dependent on Nature*, *Says New Report*, WORLD ECONOMIC FORUM (Jan. 19, 2020), <https://www.weforum.org/press/2020/01/half-of-world-s-gdp-moderately-or-highly-dependent-on-nature-says-new-report/>.

9. Justin A. Johnson et al., *The Economic Case for Nature: A Global Earth-Economy Model to Assess Development Policy Pathways*, WORLD BANK GROUP, at x (June 29, 2021), <https://openknowledge.worldbank.org/server/api/core/bitstreams/9f0d9a3a-83ca-5c96-bd59-9b16f4e936d8/content> [<https://perma.cc/Z3WN-FCD8>].

10. BLOOMBERGNEF, *WHEN THE BEE STRINGS: COUNTING THE COST OF NATURE-RELATED RISKS* 3 (Dec. 9, 2023), https://tnfd.global/wp-content/uploads/2023/12/BNEF_Case-Studies_-Nature_Risk_When-bees-sting.pdf [<https://perma.cc/2V7T-W6MQ>].

11. NETWORK FOR GREENING THE FINANCIAL SYSTEM—INSPIRE STUDY GROUP, *BIODIVERSITY AND FINANCIAL STABILITY: BUILDING THE CASE FOR ACTION* 13 (Oct. 2021), https://www.ngfs.net/sites/default/files/medias/documents/biodiversity_and_financial_stability_building_the_case_for_action.pdf [<https://perma.cc/YNT7-LCM2>].

12. Nicola Ranger & Jimena Alvarez, *Nature Degradation Could Cause a 12% Loss to UK GDP*, ENV'T CHANGE INST., UNIV. OXFORD (Apr. 25, 2024), <https://www.eci.ox.ac.uk/news/nature-degradation-could-cause-12-loss-uk-gdp> [<https://perma.cc/4GBN-KCKH>].

13. *COP15: UN Biodiversity Talks Billed as 'Last Chance' for Nature*, FRANCE 24 (Dec. 7, 2022), <https://www.france24.com/en/americas/20221207-cop15-un-biodiversity-talks-billed-as-last-chance-for-nature>; Helen Briggs and Victoria Gill, *Global Summit is 'Last Chance' for Nature*, BBC (Nov. 23, 2022), <https://www.bbc.com/news/science-environment-63731053> [<https://perma.cc/4GBN-KCKH>].

At the conference's conclusion, nearly 200 countries adopted the Kunming-Montreal Global Biodiversity Framework (GBF), which recognized the need to address the root cause of nature loss: the unsustainable global economy. More than 900 delegates at COP15 were business or finance representatives, a substantial increase from previous biodiversity COPs.¹⁴ Not only did they participate, but they urged states to adopt an ambitious GBF that would put the world on a path to “nature positivity”—that is, to halt and reverse nature loss by 2030 and achieve full recovery by 2050.¹⁵ In addition, many stakeholders at COP15 framed biodiversity loss not as a discrete environmental challenge, but as the result of an unsustainable global economy.¹⁶ Leading up to the conference, for example, the U.N. Secretary-General urged, “we need to transform how we view and value nature. We must reflect nature’s true value in all our policies, plans and economic systems.”¹⁷ Many high-profile initiatives echoed this emphatic call to transition to a sustainable economy, including the Leaders’ Pledge for Nature to reverse biodiversity loss; the G7 2030 Nature Compact; the World Business Council for Sustainable Development’s (WBCSD) nature positive business guidelines; and coalitions like Business for Nature, Finance for Biodiversity Pledge, Nature Action 100, Nature Action Agenda, and Network for Greening the Financial System.¹⁸

In the wake of COP15, the question the world now faces is *how* to achieve a sustainable global economy. The GBF provides a high-level, albeit incomplete, blueprint for the policy pathway to make this transition, which has catalyzed subsequent action. This article examines the emerging policy roadmap to achieve a sustainable

cc/72NK-XP9Z].

14. Marisa Coulton, *Business is Using COP15 to Show It’s Serious About Saving Nature; Environmentalists Aren’t So Sure*, FINANCIAL POST (Dec. 19, 2022), <https://financialpost.com/news/economy/businesses-advocacy-groups-odds-cop15> [<https://perma.cc/P29F-YH4X>].

15. See, e.g., CAMPAIGN FOR NATURE, <https://www.campaignfornature.org/> [<https://perma.cc/KRM2-E4WC>] (calling for the adoption of a conservation target of 30 percent of the planet by 2030); *Business for Nature’s Call to Action*, BUSINESS FOR NATURE, <https://www.businessfornature.org/call-to-action> [<https://perma.cc/Z6ND-DTRP>] (bringing together 1,400 companies with revenues of more than US\$7 trillion, who called on governments to adopt policies now to reverse nature loss in this decade).

16. See, e.g., World Business Council on Sustainable Development, *Roadmaps to Nature Positive: Guidelines to Accelerate Business Accountability, Ambition and Action for a Nature-Positive Future*, (Dec. 9, 2022), https://www.wbcsd.org/wp-content/uploads/2023/09/WBCSD-Roadmaps-to-Nature-Positive-Guidelines_9Dec22.pdf [<https://perma.cc/259T-KXQ9>]; Convention on Biological Diversity, *First Draft of the Post-2020 Global Biodiversity Framework*, U.N. Docs. CBD/WG2020/3/3, 7 (July 5, 2021), <https://www.cbd.int/doc/c/abb5/591f/2e46096d3f0330b08ce87a45/wg2020-03-03-en.pdf> [<https://perma.cc/3A7C-7KTR>].

17. *Countries to Consider Ground-Breaking Change to Economic Reporting that Includes Natural Capital*, UNITED NATIONS (Mar. 2, 2021), <https://www.un.org/en/desa/countries-consider-ground-breaking-change-economic-reporting-includes-natural-capital> [<https://perma.cc/SPY5-N59L>].

18. These various initiatives all seek to transition to a sustainable or “nature positive” economy out of recognition of the catastrophic risks of maintaining the status quo. See *About Us*, NGFS (Jan. 30, 2024, 5:08 PM), <https://www.ngfs.net/en/about-us/governance/origin-and-purpose> [<https://perma.cc/25DJ-AF24>].

global economy. Section II discusses the economy's role in causing nature loss and the consensus surrounding the need to transition to a sustainable global economy. Section III goes on to examine how the sustainable global economy can be achieved at the international level. Section IV concludes by assessing the necessary domestic policy reforms. This article does not purport to provide a detailed assessment of each policy, but rather seeks to identify the core components of the policy pathway to a sustainable global economy.

II. THE SOLUTION TO NATURE LOSS: A SUSTAINABLE GLOBAL ECONOMY

Science-backed international consensus holds that the global economy drives nature loss. The leading intergovernmental body on biodiversity and ecosystem services, the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES)¹⁹ publishes reports on the drivers of nature loss, its impacts, and the necessary mitigation pathways to preserve and restore nature. Akin to the Intergovernmental Panel on Climate Change (IPCC), the IPBES's process reflects international consensus and the highest scientific rigor. The IPBES's conclusions are developed over multi-year assessment cycles of thousands of scientific papers and reviewed by IPBES Member States.²⁰ In its Global Assessment on Biodiversity and Ecosystem Services, the IPBES concluded that the global economy is the primary driver of nature loss.²¹ This finding has been confirmed by many other scientific and economic experts.²²

The current global economy is unsustainable because its two most important metrics—price and economic output—externalize nature. Price directs firm- and sector-level activity. It provides a “financial incentive[] to affect behavior in the use of [a] resource” and is determined by the value of the alternative uses of that

19. About, IPBES, <https://www.ipbes.net/about> [<https://perma.cc/34ZQ-WSBS>].

20. *Id.*

21. IPBES, *supra* note 1, at 83-86; *see also* Chriag Dhara and Vandana Singh, *The Elephant in the Room: Why Transformative Education Must Address the Problem of Endless Exponential Economic Growth*, in CHARTING AN SDG 4.7 ROADMAP FOR RADICAL, TRANSFORMATIVE CHANGE IN THE MIST OF CLIMATE BREAKDOWN (R. Iyengar & C. Kwauk eds., 2021). *See generally* HERMAN DALY, BEYOND GROWTH: THE ECONOMICS OF SUSTAINABLE DEVELOPMENT (BEACON PRESS 1996); PAUL HAWKEN ET AL., NATURAL CAPITALISM: CREATING THE NEXT INDUSTRIAL REVOLUTION (LITTLE, BROWN AND CO. 1999); PAUL HAWKEN, THE ECOLOGY OF COMMERCE (HARPER BUSINESS 1993) (examining the economic drivers of environmental degradation and proposing alternative sustainable economic models).

22. *See generally* EDWARD B. BARBIER AND ANIL MARKANDYA, A NEW BLUEPRINT FOR A GREEN ECONOMY (ROUTLEDGE 2013); World Economic Forum, *Nature Risk Rising: Why the Crisis Engulfing Nature Matters for Business and the Economy* (2020), https://www3.weforum.org/docs/WEF_New_Nature_Economy_Report_2020.pdf [<https://perma.cc/QSY9-989J>]; PARTHA DASGUPTA, THE ECONOMICS OF BIODIVERSITY: THE DASGUPTA REVIEW – FULL REPORT (London: HM Treasury 2021), https://assets.publishing.service.gov.uk/media/602e92b2e90e07660f807b47/The_Economics_of_Biodiversity_The_Dasgupta_Review_Full_Report.pdf [<https://perma.cc/T8UP-GVYL>] [hereinafter DASGUPTA – FULL REPORT]; G7 Leaders, *2030 Nature Compact*, 1 (2021), <https://www.consilium.europa.eu/media/50363/g7-2030-nature-compact-pdf-120kb-4-pages-1.pdf>; BARBIER, *supra* note 7, at 105.

resource.²³ Price will direct a resource to “its most valued [i.e., profitable] use.”²⁴ However, nature does not have a price beyond the limited natural resources that are traded on the market and, even then, they are underpriced.²⁵ No value is assigned to preserving or restoring nature because it is provided for free and, consequently, no one actor bears the cost of its destruction.²⁶ Firms are thus incentivized to exploit and degrade nature.²⁷ This is also why natural resources are underpriced: there is no valuable alternative use for which producers must compensate. For example, a forest can be cut down so that the trees are sold as timber and the value is easily apparent—the market price of timber. There is no market price assigned to leaving the forest intact, despite the myriad ecosystem services it provides such as carbon sequestration, hydrological cycle regulation, and soil erosion prevention. In short, the economy cannot value what it does not price and because nature’s only price is its use as a factor of production, firms are incentivized to exploit it.

Economic output, the metric for macroeconomic prosperity, is similarly defective. GDP is the total market value of all final goods and services produced in a country in a given year.²⁸ As discussed, nature is largely unpriced or, at best, underpriced. Consequently, GDP, as a measure of final goods and services, does not value preserved nature.²⁹ Rather, nature’s only contribution is its use in the production of other goods or services.³⁰ GDP is therefore misleading because it only records economic output, but ignores whether that output degrades the asset base of the economy.

It does not reflect the economic contribution of nature, which is the necessary predicate to all economic activity, irreplaceable, and the economy’s most valuable asset.³¹ The IPBES warns that “[m]ost of nature’s contributions *are not fully replaceable*, yet some contributions of nature *are irreplaceable*.”³² In terms of monetary value, global ecosystem services far exceed global GDP.³³ GDP fails to reflect the cost of exploiting the world’s most valuable asset. The World Bank estimates that the

23. THOMAS STOWELL, BASIC ECONOMICS: A COMMON SENSE GUIDE TO THE ECONOMY 15, 20–21 (5th ed. 2015).

24. *Id.* at 15, 20.

25. DIETER HELM, NATURAL CAPITAL: VALUING THE PLANET Chapter 6 (2015); Pavan Sukhdev et al., TEEB, *The Economics of Ecosystems and Biodiversity: Mainstreaming the Economics of Nature: A Synthesis of the Approach, Conclusions, and Recommendations of TEEB*, UNEP, 8-9 (2010), <https://www.unep.org/resources/report/economics-ecosystems-and-biodiversity-mainstreaming-economics-nature-synthesis> [<https://perma.cc/TNN6-BMTY>].

26. SUKHDEV ET AL., TEEB, *supra* note 26, at 9.

27. *Id.*

28. STOWELL, *supra* note 24, at 343–365.

29. DASGUPTA – FULL REPORT, *supra* note 23, at 5.

30. *Id.*

31. Bjorn Dohring et al., *Reflections on the Role of Natural Capital for Economic Activity*, EUR. COMM’N DISCUSSION PAPERS 180, 5 (Feb. 2023), https://economy-finance.ec.europa.eu/document/download/a63334d5-ee2f-4b76-b82d-a12d17964759_en?filename=dp180_en.pdf [<https://perma.cc/UZ6Y-C4SU>].

32. IPBES, *supra* note 1, at 22 (emphasis added).

33. Dohring et al., *supra* note 32, at 17.

loss of ecosystem services will cost 2.3 percent of global GDP annually by 2030.³⁴ The exploitation of forests again provides a useful illustration. GDP indicates that the more trees a nation cuts down and sells, the better it is doing, thereby economically prioritizing deforestation. This creates short-term monetary incentives to exploit resources to the point of exhaustion, which in turn will result in losses in GDP when there are no more trees left to sell. Because GDP does not capture the long-term costs of resource exploitation, it inevitably leads to the exhaustion of critical, finite resources. Further, the incentive to increase total economic output rewards ever-increasing exploitation of nature to create that output. This erroneously assumes an infinite supply of nature, ignoring inviolable ecological limits on economic activity.³⁵ Currently, the global economy operates outside the safe zone for six of the nine planetary boundaries—that is, the processes essential for maintaining Earth’s stability and life-sustaining capacity.³⁶ Economic pressure on the planet is accelerating at an exponential pace: the number of planetary boundaries exceeded has doubled in the last two decades.³⁷ Crossing any one of these boundaries increases the risk of generating “large-scale abrupt or *irreversible* environmental changes” that threaten the stability of the global economy and nearly all human systems.³⁸

There is international, science-backed consensus that the only way to avert global economic and ecological catastrophe is to transition to a sustainable economy. The IPBES concluded that, “[a] key component of sustainable pathways is the evolution of global financial and economic systems to build a global sustainable economy.”³⁹ It further warns that without this “transformative change,” “negative trends in nature . . . are projected to continue to 2050 and beyond.”⁴⁰ There are many definitions of a sustainable economy.⁴¹ Fundamentally, it is an economy that decouples environmental impacts from economic activity to operate within ecological limits to preserve and restore nature.⁴² Experts have identified two essential

34. Johnson et al., *supra* note 10, at x.

35. DASGUPTA – FULL REPORT, *supra* note 23, at 139-43; *see also* Dohring et al., *supra* note 32, at 5, 16-17.

36. TNFD, RECOMMENDATIONS OF THE TASKFORCE ON NATURE-RELATED FINANCIAL DISCLOSURES, 7 (Sep. 2023), <https://tnfd.global/wp-content/uploads/2023/08/Recommendations-of-the-Taskforce-on-Nature-related-Financial-Disclosures.pdf?v=1734112245> [<https://perma.cc/96FK-YJPN>].

37. Planetary Boundaries, STOCKHOLM RESILIENCE CENTER, <https://www.stockholmresilience.org/research/planetary-boundaries.html> [<https://perma.cc/P6RW-FFBA>] (last visited Jan. 4, 2025).

38. *Id.* (emphasis added).

39. IPBES, *supra* note 1, at 18-19.

40. *Id.* at 16.

41. *See, e.g.*, U.N., REPORT OF THE WORLD COMMISSION ON ENVIRONMENTAL AND DEVELOPMENT: OUR COMMON FUTURE 43 (1987); UNEP, *Towards a Green Economy: Pathways to Sustainable Development and Poverty Eradication*, 2 (2011), https://sustainabledevelopment.un.org/content/documents/126GER_synthesis_en.pdf [<https://perma.cc/D9Y3-2YGT>]; SANDRINE DIXSON-DECLÈVE ET AL., CLUB OF ROME, EARTH FOR ALL: A SURVIVAL GUIDE FOR HUMANITY (2022); KATE RAWORTH, DOUGHNUT ECONOMICS: 7 WAYS TO THINK LIKE A 21ST CENTURY ECONOMIST (2017); PETER A. VICTOR, ESCAPE FROM OVERSHOOT: ECONOMICS FOR A PLANET IN PERIL 179-214 (2023).

42. IPBES, *supra* note 1, at 952; BARBIER, *supra* note 7, at 6.

components of the sustainable economy: (1) properly pricing nature,⁴³ and (2) internalizing ecological limits.⁴⁴

Pricing nature aligns economic and financial performance with nature preservation and restoration. The economy cannot value what it does not price and, consequently, the market incentivizes nature degradation because it is un- or under-priced. The IPBES concluded that,

[e]conomic incentives have generally favoured expanding economic activity, and often environmental harm. . . . Incorporating the consideration of the multiple values of ecosystem functions and of nature’s contributions to people into economic incentives has, in the economy, been shown to permit better ecological, economic and social outcomes.⁴⁵

Pricing nature fixes a market failure by valuing the economy’s most valuable asset. Studies have shown that the total value of the world’s ecosystem services amount to twice as much as global GDP, or \$124.8 trillion per year.⁴⁶ Pricing nature means that the benefits it provides are no longer free and neither is its destruction.

Some criticize pricing nature because it fails to capture nature’s full value,⁴⁷ but this can be addressed by erring on the side of “overvaluing” nature to reflect its intrinsic worth. Natural capital is unique in four fundamental ways: (1) it is the economy’s most valuable asset; (2) depreciation of natural capital is frequently irreversible; (3) it is rarely substitutable for other forms of capital; and (4) it can collapse abruptly.⁴⁸ Thus, nature’s price must reflect its integral role in the global economy and intrinsic worth so that the economy is incentivized to preserve and restore it.⁴⁹ As the natural capital that is priced on the market shows, undervaluation will lead to degradation.

43. IPBES, *supra* note 1, at 952-63; DASGUPTA – FULL REPORT, *supra* note 23; BARBIER, *supra* note 7, at 15; TNFD, *supra* note 37, at 7; Convention on Biological Diversity, *Kunming-Montreal Global Biodiversity Framework*, UNEP, U.N. Docs. CBD/COP/15/L.25, 11 (Dec. 18, 2022) [hereinafter *Kunming-Montreal GBF*]; BARBIER & MARKANDYA, *supra* note 23, at 108.

44. IPBES, *supra* note 1, at 95-53; PARTHA DASGUPTA, *THE ECONOMICS OF BIODIVERSITY: THE DASGUPTA REVIEW – ABRIDGED VERSION* 47-48, 83-84 (London: HM Treasury 2021), https://assets.publishing.service.gov.uk/media/6014329ce90e076265e4d9ba/Dasgupta_Review_-_Abridged_Version.pdf [<https://perma.cc/F9RS-VR6J>] [hereinafter DASGUPTA – ABRIDGED VERSION]; BARBIER, *supra* note 7, at 13; *see generally* RAWORTH, *supra* note 42; BARBIER & MARKANDYA, *supra* note 23; *Report of the Special Rapporteur on the issue of human rights obligations relating to the enjoyment of a safe, clean, health and sustainable environment*, U.N. OFF. OF THE HIGH COMM’R FOR HUM. RTS., U.N. Docs A/73/188 (July 19, 2018); David R. Boyd, *Business, planetary boundaries, and the right to a clean, healthy and sustainable environment*, U.N. Docs A/HRC/55/43 (Jan. 2, 2024), paras. 39, 53.

45. IPBES, *supra* note 1, at 14.

46. *What is natural capital?*, WORLD F. ON NAT. CAP., <https://naturalcapitalforum.com/about/> [<https://perma.cc/T5R7-KNWJ>] (citing a study published in the *Journal of Global Environmental Change*).

47. *See, e.g.*, DASGUPTA – ABRIDGED VERSION, *supra* note 45, at 80–81.

48. BARBIER, *supra* note 7, at 66.

49. *See generally* HELM, *supra* note 26; DIETER HELM, *LEGACY: HOW TO BUILD THE SUSTAINABLE ECONOMY* (2024).

The first step in pricing nature is to measure and value both nature's contributions to the economy and the costs of its degradation.⁵⁰ This requires a universal framework for measuring, valuing, and integrating natural capital into economic and financial systems and statistics. Natural capital is the "stock[] of natural assets which include geology, soil, air, water and all living things" as well as ecosystems and their services.⁵¹ Natural capital accounting is a statistical framework that measures and values natural capital stocks and flows at both the national and sub-national levels. It measures the contribution of natural capital to economic activity, the state of the stock of natural capital at any given time, and the impact of economic activity on that stock.⁵² Further, this accounting framework must be utilized by both government and the private sector.⁵³

The United Nations' System for Environmental-Economic Accounting (SEEA) is the internationally recognized national capital accounting framework.⁵⁴ SEEA⁵⁵ applies the accounting principles of the System of National Accounts (SNA) to standardize natural capital measurement and monetization.⁵⁶ The SEEA comprises two complementary parts: a Central Framework (SEEA-CF) and Ecosystem Accounting (SEEA-EA). The SEEA-CF provides a single measurement system for three main areas:

- (1) Environmental flows: the flows of natural inputs, products and residuals between the environment and the economy, and within the economy, both in physical and monetary terms.
- (2) Stocks of environmental assets: the stocks of individual assets, such as water or energy assets, and how they change over an accounting period due to economic activity and natural processes, both in physical and monetary terms.
- (3) Economic activity related to the environment: monetary flows associated with economic activities related to the environment, including

50. BARBIER & MARKANDYA, *supra* note 23, at 54-79; BARBIER, *supra* note 7, at 7; *see generally* DASGUPTA – ABRIDGED VERSION, *supra* note 45.

51. *Natural Capital*, CONVENTION ON BIOLOGICAL DIVERSITY, <https://www.cbd.int/business/projects/natcap.shtml> [<https://perma.cc/VM4U-DGAP>]; BARBIER & MARKANDYA, *supra* note 23, at 2; *What is natural capital?*, *supra* note 47; *Towards a Definition of Natural Capital*, U.N. STATISTICS DIVISION (Nov. 3, 2014), <https://unstats.un.org/unsd/envaccounting/londongroup/meeting21/towards%20a%20definition%20of%20natural%20capital%20-%202nd%20draft.pdf> [<https://perma.cc/P6DU-HDDC>].

52. DASGUPTA – ABRIDGED VERSION, *supra* note 45, at 75.

53. IPBES, *supra* note 1, at 44.

54. *System of Environmental Economic Accounting*, U.N., <https://seea.un.org/> [<https://perma.cc/HX55-58KT>].

55. In 2020, approximately 89 countries implemented accounts in line with SEEA, while an additional 27 countries planned to start compiling accounts. However, many of the existing accounts are incomplete or unpublished and gaps remain. OECD, BIODIVERSITY, NATURAL CAPITAL AND THE ECONOMY: A POLICY GUIDE FOR FINANCE, ECONOMIC AND ENVIRONMENT MINISTERS 22 (2021), https://www.oecd.org/en/publications/biodiversity-natural-capital-and-the-economy_1a1ae114-en.html.

56. *System of Environmental Economic Accounting*, *supra* note 55; U.N., HOW NATURAL CAPITAL ACCOUNTING CONTRIBUTIONS TO INTEGRATED POLICIES FOR SUSTAINABILITY (2020), https://seea.un.org/sites/seea.un.org/files/seea_-_overview_-_web_ready.pdf [<https://perma.cc/6LVU-T285>].

spending on environmental protection, and the production of ‘environmental goods and services’.⁵⁷

The SEEA-EA provides physical and monetary values for ecosystems as assets.⁵⁸ It is “a spatially-based, integrated statistical framework for organizing biophysical information about ecosystems, measuring ecosystem services, tracking changes in ecosystem extent and condition, valuing ecosystem services and assets and linking this information to measures of economic and human activity.”⁵⁹

The second step is to integrate this information into economic and financial statistics,⁶⁰ so that the significant economic contribution of natural capital and the serious costs of its decline are “routinely reflected in markets.”⁶¹ Incorporating nature’s monetary value into financial (e.g., profit and loss, balance sheets, and cash flow statements) and macroeconomic reporting (e.g., GDP and national accounts) ties financial performance to nature.⁶² A company’s nature-related impacts and dependencies would be reflected in its market value, the price of its goods or services, the prices it pays for the component parts of those goods or services, and its cash flows and risk profile. When nature shows up on a company’s balance sheet as an asset—or its degradation as liability—there is a continuous financial incentive to reduce negative impacts to reduce liability and to preserve and restore nature as capital or asset maintenance. For government, incorporating the value of nature into GDP, national accounts, and balance sheets ties macroeconomic performance to nature so that depreciating the nation’s stock of natural capital reduces economic performance and, conversely, investing in nature’s preservation and restoration increases economic output. There is science-backed and international consensus that pricing nature into the global economy will require a mix of policy instruments, including environmental subsidies and tax reforms, adopting binding sustainability targets, and imposing corporate nature-related due diligence and financial disclosure requirements.⁶³

The other essential component of the sustainable economy is to internalize planetary boundaries. If the economy protects nature on the basis of its market value, when its value is less than the alternative, nature will be exploited. This is why the economy must be bounded within the biosphere through the imposition of hard ecological limits.⁶⁴ The science is clear: Earth has inviolable limits and the scale of global economic activity is already operating outside of those limits, risking the

57. *SEEA Central Framework*, U.N., <https://seea.un.org/content/seea-central-framework> [<https://perma.cc/DWD7-AGNL>]; UN, *supra* note 57.

58. U.N., *supra* note 57.

59. UN COMMITTEE OF EXPERTS ON ENVIRONMENTAL-ECONOMIC ACCOUNTING, *SYSTEM OF ENVIRONMENTAL-ECONOMIC ACCOUNTING—ECOSYSTEM ACCOUNTING: FINAL DRAFT 2 (March 2021)*.

60. BARBIER & MARKANDYA, *supra* note 23, at 80-101.

61. BARBIER, *supra* note 7, at 67.

62. IPBES, *supra* note 1, at 952-53; TNFD, *supra* note 37, at 7, 63; BARBIER & MARKANDYA, *supra* note 23; DASGUPTA – ABRIDGED VERSION, *supra* note 45, at 75-76.

63. *See generally Kunming-Montreal GBF*, *supra* note 44; IPBES, *supra* note 1, Section 6.4; BARBIER & MARKANDYA, *supra* note 23; DASGUPTA – FULL REPORT, *supra* note 23.

64. Dasgupta – Full Report, *supra* note 23, Chapter 4; Helm, *supra* note 26, at 122; Helm, *supra* note 50.

stability of the planet.⁶⁵ The IPBES concluded that “the scale of economic activity has already pushed society out of the safe operating space of the planet.”⁶⁶ It further stressed that transitioning to a sustainable economy “requires . . . respect[ing] ecological limitations and ecosystem integrity” by “remain[ing] within ecological bounds” which ensure that economic activity “remain[s] within the regenerative capacity of the ecosystem.”⁶⁷ Planetary boundaries define the safe operating space for humanity to ensure that the biophysical systems that undergird the global environment are maintained.⁶⁸ As the IPBES concluded, “an economy [that] remain[s] within ecological bounds” ensures “a constant stock of [natural] capital at a level that can be maintained by material flows remaining within the regenerative capacity of the ecosystem.”⁶⁹

The first step is to identify a comprehensive set of planetary boundaries that collectively define the “safe operating space” for human activity to ensure the global environment’s preservation and restoration. The scope and scale of global economic activity coupled with the complexity of Earth’s ecological processes will require a comprehensive set of ecological limits, which must be developed using the best available science.⁷⁰ Scientists have already identified a number of planetary boundaries, such as: (1) climate change, assessed by whether the rise in the global average temperature rise is limited to 1.5°C above pre-industrial levels; (2) biosphere integrity, assessed by genetic and functional diversity reflected in extinction rates and biodiversity intactness indexes compared to baselines; and (3) land system change, assessed by area of forested land as a percentage of original forest cover.⁷¹ Scientists also stress the importance of using global, national and firm-level ecological footprints as critical planetary boundaries—that is, ecological footprints being measured against the baseline of consuming natural capital and ecosystem services at a rate below Earth’s capacity for regeneration.⁷²

Each planetary boundary must be quantifiable. This requires a control variable (i.e., a metric of compliance) and an ecological threshold (i.e., the scientifically determined sustainable level). For example, climate change is a planetary boundary that uses atmospheric carbon dioxide concentration as the control variable to measure compliance with the ecological threshold of 1.5°C—the scientifically-assessed “safe”

65. IPBES, *supra* note 1, at 18-19; Katherine Richardson et al., *Earth beyond six of nine planetary boundaries*, SCIENCE ADVANCES, Sept. 15, 2023, <https://www.science.org/doi/epdf/10.1126/sciadv.adh2458>; RAWORTH, *supra* note 42.

66. IPBES, *supra* note 1, at 961.

67. *Id.* at 952, 961-62.

68. Michael Sureth et al., *A Welfare Economic Approach to Planetary Boundaries*, 243 J. OF ECON. AND STAT. 477, 479 (2023).

69. IPBES, *supra* note 1, at 962.

70. *Id.* at 952-53; DASGUPTA – ABRIDGED VERSION, *supra* note 45, at 47-48, 83-84.

71. Sureth et al., *supra* note 69, Supplementary Materials.

72. See generally IPBES, *supra* note 1, Section 6.4; Kate Meyer & Peter Newman, *The Planetary Accounting Framework: A Novel, Quota-Based Approach to Understanding the Impacts of Any Scale of Human Activity in the Context of the Planetary Boundaries*, SUSTAINABLE EARTH (2018); DASGUPTA – ABRIDGED VERSION, *supra* note 45; Sureth et al., *supra* note 69.

level of global warming.⁷³ Further scientific study is needed to ascertain the full set of ecological boundaries that define the sustainable operating space for human activity that maintains the health and integrity of the global environment.⁷⁴ However, there is consensus that planetary boundaries must be set conservatively in light of the risk of nonlinear tipping points and large-scale ecosystem collapse, as well as the catastrophic economic, financial, and human risks of nature loss.⁷⁵

The second step is to integrate these planetary boundaries into economic and financial metrics and decision-making. This first requires using the natural capital accounting framework to measure and value the contribution of economic activity to human welfare, the damage or cost of resulting nature loss or degradation, the natural system's regeneration rate (a function of both how intact the natural system is and the accumulating exposure to economic activity), and the planetary boundary.⁷⁶ Economic and financial statistics would then incorporate this information, such as in cost-benefit analysis, cost-effectiveness analysis, measures of economic and financial performance, and financial statements.⁷⁷ This means that a proposed project that passes a cost-benefit analysis will nonetheless be deemed economically inefficient or financially prohibitive if it risks transgressing the relevant planetary boundary.⁷⁸ Incorporating planetary boundaries into financial and economic metrics will force the economy to operate in such a way that ensures natural capital does not fall below sustainable thresholds.

While further study is needed to determine a comprehensive policy roadmap to achieve this objective, there is consensus around a "broad policy mix" with several core components.⁷⁹ Scientists and economists identify the need to adopt legally binding sustainable economy targets and to integrate those targets into economic and financial systems and metrics.⁸⁰ Legally binding targets create the "exogenously set target or limit" for all human activity to ensure it aligns with global environmental preservation and restoration.⁸¹ However, as leading economist Edward B. Barbier notes, establishing binding targets is not enough.⁸² He points to the inefficacy of Indonesia's moratorium on deforestation as an example of how "[i]t all comes down to economic incentives."⁸³ This is why planetary boundaries must be integrated into economic and financial systems through a number of policy instruments, including international agreements, comprehensive environmental taxes, cap and trade systems

73. Sureth et al., *supra* note 69, Supplementary Materials.

74. *See generally id.* at 525-28.

75. *Id.* at 495, 501-10; Section II.C.

76. *Id.* at 484; *see also* DASGUPTA – FULL REPORT, *supra* note 23, Chapter 4.

77. *See generally* Sureth et al., *supra* note 69; DASGUPTA – FULL REPORT, *supra* note 23, Chapter 4.

78. HELM, *supra* note 26, at 132-33.

79. IPBES, *supra* note 1, at 961-63; Sureth et al., *supra* note 69, at 524-27.

80. BARBIER, *supra* note 7, at 11-13, 126-30; IPBES, *supra* note 1, Section 6.4; Meyer & Newman, *supra* note 73; DASGUPTA – ABRIDGED VERSION, *supra* note 45.

81. Sureth et al., *supra* note 69, at 482.

82. BARBIER, *supra* note 7, at 128.

83. *Id.*

where the cap is set at or below the relevant planetary boundary, economic and financial metric reform, and corporate environmental disclosure and due diligence obligations.⁸⁴

III. INTERNATIONAL POLICY LANDSCAPE

International law and policy are central components of the transition to a sustainable global economy. The GBF articulates part of the policy roadmap for states. However, the shortcomings of the GBF and international environmental governance, combined with the complexity and scale of the necessary transition, have catalyzed proposals for reforms to strengthen and integrate international environmental and economic governance and guide the necessary national action.

A. The Convention on Biological Diversity

The CBD is the primary international instrument that addresses nature loss, adopted in 1992 with the near universal participation of 196 States Parties.⁸⁵ The CBD aims to “conserve and sustainably use biological diversity” by imposing on States Parties *ex-situ* and *in-situ* conservation obligations, as well as requiring them to adopt national biodiversity strategies.⁸⁶ Since its adoption, the CBD has produced two non-binding instruments—the Aichi Biodiversity Targets and the GBF—which reflect early international consensus on several fundamental components of the policy roadmap to a sustainable global economy.

The Aichi Targets set out the biodiversity objectives for 2011 to 2020,⁸⁷ including several related to unsustainable economic activity. Target 3, for instance, committed States Parties to eliminate, phase out, or reform “incentives, including subsidies, harmful to biodiversity” by 2020 and to develop or apply “positive incentives for the conservation and sustainable use of biodiversity.”⁸⁸ Target 4 provided that States Parties and the private sector “take[] steps to achieve . . . sustainable production and consumption and have kept the impacts of use of natural resources *well within safe ecological limits*.”⁸⁹ These targets reflect early international consensus that global economic activity must be reoriented toward nature preservation and restoration. However, while the Aichi Targets are an important precursor to the emerging sustainable economy policy roadmap, they did not translate into meaningful action. None of the targets were achieved.⁹⁰

84. See, e.g., Sureth et al., *supra* note 69, at 524, 526; BARBIER, *supra* note 7, at 262; see generally IPBES, *supra* note 1, Section 6.4; DASGUPTA – FULL REPORT, *supra* note 23, Chapter 4; HELM, *supra* note 26, at 122.

85. See Convention on Biological Diversity, June 5, 1992, 1760 U.N.T.S. 30619 [hereinafter “CBD”].

86. *Id.*, pmb., arts. 6, 8, 9.

87. *Aichi Biodiversity Targets*, CONVENTION ON BIOLOGICAL DIVERSITY (Sept 18, 2020), <https://www.cbd.int/sp/targets/> [<https://perma.cc/5HXM-AUNZ>].

88. *Id.*

89. *Id.* (emphasis added).

90. Gloria Dickie, *Explainer: Why did past targets to protect nature fail over the last decade?*, REUTERS (Dec. 9, 2022), <https://www.reuters.com/business/environment/>

The GBF articulates the international community's biodiversity objectives for the coming decade. The first part of COP15 in October 2021 produced the Kunming Declaration.⁹¹ The Declaration reflects consensus on the urgent need to transition to a sustainable global economy. It stresses that "urgent and integrated action is needed, for transformative change, across all sectors of the economy and all parts of society," including "actions to transform economic and financial systems and to ensure sustainable production and consumption, and reduce waste."⁹²

The final GBF offers a high-level blueprint to achieve the Kunming Declaration's goal to "transform economic and financial systems" to sustainable models. It begins by setting out overarching conservation targets: (1) "to bring the loss of areas of high biodiversity importance, including ecosystems of high ecological integrity, close to zero";⁹³ (2) "ensure that . . . at least 30 percent of areas of degraded terrestrial, inland water, and marine and coastal ecosystems are under effective restoration";⁹⁴ (3) "ensure . . . that . . . at least 30 percent of terrestrial and inland water areas, and of marine and coastal areas, especially areas of particular importance for biodiversity and ecosystem functions and services are effectively conserved";⁹⁵ (4) "ensure urgent management actions to halt human induced extinction of known threatened species and for the recovery and conservation of species";⁹⁶ and (5) "reduce pollution risks and the negative impact of pollution from all sources."⁹⁷ These quantifiable, time-bound conservation targets are important benchmarks to measure global progress toward mitigating nature loss and to orient national action.

The GBF then identifies specific actions needed to achieve a sustainable global economy. Target 14 requires states to "ensure the full integration of biodiversity values into policies, regulations, planning and development processes, . . . environmental impact assessments and . . . national accounting within and across all levels of government and across all sectors" in order to "progressively align[] all relevant public and private activities, fiscal and financial flows with the goals and targets of this framework."⁹⁸ This Target identifies the need to mainstream nature in both government and private sector decision-making, including by pricing nature into macroeconomic statistics and financial reporting. Target 15 further specifies how the private sector can incorporate nature into its operations by requiring states to "take legal, administrative or policy measures to [require] businesses, and in particular to

[why-did-past-targets-protect-nature-fail-over-last-decade-2022-12-09/](#) (noting the failure of the Contracting Parties to the CBD to achieve any of the Aichi Targets).

91. *Kunming Declaration Paves the Way for Global Biodiversity Negotiations*, UNESCO: NEWS (Oct. 15, 2021, 5:47 PM), <https://whc.unesco.org/en/news/2349> [<https://perma.cc/XSF4-U735>].

92. CBD, *Kunming Declaration: "Ecological Civilization: Building a Shared Future for All Life on Earth"*, U.N. Docs. CBD/COP/15/5/Add.1, 11-12 (Oct. 13, 2021).

93. *Kunming-Montreal GBF*, *supra* note 44, Target 1.

94. *Id.* Target 2.

95. *Id.* Target 3.

96. *Id.* Target 4.

97. *Id.* Target 7.

98. *Id.* Target 14.

ensure that large and transnational companies and financial institutions” “regularly monitor, assess, and transparently disclose their nature-related risks, dependencies and impacts on biodiversity . . . along their operations, supply and value chains, and portfolios . . . in order to progressively reduce negative impacts on nature.”⁹⁹ Earlier drafts of the GBF identified a quantifiable target for reducing negative nature-related impacts: “to reduce by half negative impacts on biodiversity.”¹⁰⁰ While the proposal garnered significant private sector consensus, it did not make it into the final GBF. Target 16 requires states to “reduce the global footprint of consumption . . . including through halving global food waste, significantly reducing overconsumption and substantially reducing waste generation.”¹⁰¹ Finally, Target 18 commits states to “identify, . . . eliminate, phase out or reform incentives, including subsidies, harmful for biodiversity . . . while substantially and progressively reducing them by at least \$500 billion per year.”¹⁰²

B. Emerging International Policy Proposals

While the GBF has helped set out a blueprint for the sustainable global economy, its lack of concrete, binding commitments, coupled with the broader ineffectiveness of international environmental governance, has catalyzed momentum for deeper reforms. In this regard, three reforms are necessary to achieve a sustainable global economy: (1) a twenty-first-century analogue to the Bretton Woods conference; (2) fora exclusively dedicated to this mandate; and (3) a new framework convention.

1. Reforming International Environmental and Economic Governance

The CBD and its subsequent agreements are insufficient on their own to achieve a sustainable global economy due to their open textured language and abstract targets. The CBD is criticized for its ambiguous language, which undermines its efficacy.¹⁰³ For example, obligations under the Convention often include the proviso that they be discharged “in accordance with [the State Party’s] particular conditions and capabilities”¹⁰⁴ or “as far as possible and as appropriate.”¹⁰⁵ These qualifications may allow states to shirk their treaty obligations by claiming that necessary action is not possible

99. *Id.* Target 15.

100. *Business for Nature’s Position on Target 15*, BUSINESS FOR NATURE, <https://www.businessfornature.org/target-15> [<https://perma.cc/SRJ9-G62A>] (advocating for States to commit to “tak[ing] legal, administrative or policy measures to ensure that all large and transnational business and financial institutions, along their operations, value chains and portfolios: (a) through mandatory requirements must regularly monitor, assess, and fully and transparently disclose their dependencies and impacts on biodiversity; (b) are incentivized to reduce by half negative impacts on biodiversity and to increase positive impacts, moving towards sustainable patterns of production and a circular economy.” This Target was included in early drafts of the GBF but ultimately did not make it into the final text.)

101. *Kunming-Montreal GBF*, *supra* note 44, Target 16.

102. *Id.* Target 18.

103. See, e.g., Lakshman D. Guruswamy, *The Convention on Biological Diversity: exposing the flawed foundations* in ENVIRONMENTAL CONSERVATION 79–82 (CAMBRIDGE 1999).

104. CBD, *supra* note 86, art. 6.

105. CBD, *supra* note 86, art. 11.

in light of their particular national circumstances. In addition, the Aichi Targets set out ambiguous, non-quantifiable targets containing language like “substantially” or “progressively” that lack any monitoring mechanism to assess progress towards those targets.¹⁰⁶ This impairs the ability to hold states accountable to achieve them.

The GBF suffers from many of the same shortcomings. It contains similar language as the CBD, qualifying its commitments as subject to the “circumstances, priorities and capabilities” of each state.¹⁰⁷ It also has not corrected for the Aichi Targets’ failures. The GBF employs similarly vague language, impeding efforts to monitor states’ progress.¹⁰⁸ For example, while the GBF does contain some quantifiable and time-bound targets like Target 3’s goal to conserve 30 percent of the planet by 2030, the final text omitted critical quantifiable targets to reduce the global ecological footprint or negative nature impacts by half.¹⁰⁹ Instead, the GBF uses imprecise language like “progressively reduce” negative impacts or “significantly reducing” the global footprint, making monitoring compliance very difficult.¹¹⁰ Further, the GBF has no new mechanisms for monitoring, reporting, or enforcement.

The limitations of the GBF are exacerbated by broader weaknesses in international environmental governance. Particularly, its siloed treatment of environmental problems and the lack of integration between economic and environmental governance. Institutions like the World Bank, International Monetary Fund (IMF), World Trade Organization (WTO), and United Nations Development Program operate separately from the United Nations Environment Program (UNEP) and the secretariats overseeing multilateral environmental agreements.¹¹¹ Many refer to this phenomenon as the fragmentation of international environmental law.¹¹² There are more than 1,100 international legal and policy instruments that are either completely or partially dedicated to environmental protection.¹¹³ The general approach of international environmental governance has been to negotiate separate agreements for specific environmental problems, each with their own systems for monitoring and reporting

106. Dickie, *supra* note 91; Stuart H.M. Butchart et al., *Formulating Smart Commitments on Biodiversity: Lessons from the Aichi Targets*, 9 CONSERVATION LETTERS 457 (2016); Alice Hughes et al., *Challenges and Possible Solutions to Creating an Achievable and Effective Post-2020 Global Biodiversity Framework*, 8 ECOSYSTEM HEALTH AND SUSTAINABILITY (2022).

107. *Kunming-Montreal GBF*, *supra* note 44, para. 7(d).

108. See, e.g., Natasha Gilbert, *Nations forge historic deal to save species: what’s in it and what’s missing*, NATURE (Dec. 2022); Patrick Greenfield and Phoebe Weston, *COP15: historic deal struck to halt biodiversity loss by 2030*, THE GUARDIAN (Dec. 19, 2022) <https://www.theguardian.com/environment/2022/dec/19/cop15-historic-deal-signed-to-halt-biodiversity-loss-by-2030-aoe> [<https://perma.cc/EQ6X-N9HP>]; Alice Hughes et al., *supra* note 107.

109. See, e.g., Business for Nature’s Position on Target 15, *supra* note 101.

110. See *Kunming-Montreal GBF*, *supra* note 44, Targets 15, 16.

111. The World Bank, International Monetary Fund, and World Trade Organization all engage with environmental issues, but the environment is not central to their core mission. Edith Brown Weiss, *The Evolution of International Environmental Law*, 54 JAPANESE Y.B. INT’L L. 1, 19 (2011).

112. See, e.g., U.N. Secretary-General, *Gaps in International Environmental Law and Environment-Related Instruments: Towards a Global Pact for the Environment*, U.N. Doc. A/73/419* (Nov. 30, 2018).

113. Weiss, *supra* note 112, at 6.

compliance, secretariats, and financing mechanisms.¹¹⁴ The result is a patchwork of disparate international instruments addressing specific environmental threats without institutional mechanisms to ensure systemic protection of the global environment *tout court*. This fragmentation is compounded by the lack of any institutions or instruments that have a broader mandate to address the underlying economic drivers causing nature loss.

Achieving a sustainable global economy, therefore, requires a 21st century Bretton Woods conference in order to redesign international economic and environmental governance institutions, and to develop a sustainable economy roadmap.¹¹⁵ The original Bretton Woods conference is a paradigmatic example of international cooperation, ambition, and innovation to address social and economic problems faced by the international community in the post-World War II era.¹¹⁶ The conference addressed the need for transnational institutions to facilitate the integration of national economies into a global economy, as well as to provide international oversight to mitigate the challenges of the pandemic, inflation, economic depression, deflation, and trade wars that had ravaged national economies.¹¹⁷ This led to the establishment of the IMF and the World Bank, and influenced the creation of the UN, the G8 (now G7), and the WTO.¹¹⁸ A similar type of international ambition, creativity, and cooperation is needed to reimagine the global economy and its governing institutions to achieve a sustainable global economy.¹¹⁹

A new Bretton Woods conference would allow states to benefit from the expertise of relevant stakeholders including scientists, economists, and the private sector when conceptualizing the new system of global environmental and economic governance and developing the policy roadmap for a sustainable global economy. Given the complexity, scope, and scale inherent in this transformation, a forum is needed for negotiation and consultation that is grounded in the scientific and economic expertise necessary to create a global economy that operates within planetary boundaries. These conversations are already happening on a smaller scale. For instance, the WTO has long been criticized for its failure to regulate the environmental impacts of global

114. Weiss, *supra* note 112, at 7; see also Edith Brown Weiss, *International Environmental Law: Contemporary Issues and the Emergence of a New World Order*, 18 GEO. L.J. 675, 675-710(1993) [hereinafter *Contemporary Issues*] (noting “treaty congestion”).

115. Don Tapscott, *A Bretton Woods for the 21st Century*, HARV. BUS. REV. (Mar. 2014), <https://hbr.org/2014/03/a-bretton-woods-for-the-21st-century> [<https://perma.cc/J7MF-KAAG>]; KEVIN P. GALLAGHER & RICHARD KOZUL-WRIGHT, *THE CASE FOR A NEW BRETTON WOODS* (2022); Rana Foroohar, *It's Time for a new Bretton Woods*, FIN. TIMES (Apr. 17, 2022), <https://www.ft.com/content/b437fd60-7817-490e-b456-eb7ef1565f13> [<https://perma.cc/Y9F8-HQLD>].

116. See generally Henry Morgenthau, Jr., *Bretton Woods and International Cooperation*, 23 FOREIGN AFF. 182 (Jan. 1945) (examining the historical context of the Bretton Woods conferences and its legacy); GALLAGHER, *supra* note 116.

117. Rana Foroohar, *It's time for a new Bretton Woods*, FIN. TIMES (Apr. 17, 2022), <https://www.ft.com/content/b437fd60-7817-490e-b456-eb7ef1565f13> [<https://perma.cc/Y9F8-HQLD>]; GALLAGHER, *supra* note 116.

118. *Id.*

119. See generally GALLAGHER, *supra* note 116.

trade.¹²⁰ Recognizing the need to reform the WTO to place sustainability at the heart of its mandate, an advocacy organization launched the Remaking the Global Trading System for a Sustainable Future Project to “rethink the foundations of international commerce and develop a WTO reform agenda to . . . better align the trading system with . . . a sustainable future.”¹²¹ Following several years of study and consultation with more than 400 experts, the initiative published the *Villars Framework for a Sustainable Global Trade System* setting out the necessary reforms to achieve that mandate.¹²² A similar process with broader scope is needed to establish the necessary reforms to achieve the sustainable economy.

While a proposal of this magnitude may be considered infeasible in today’s climate of withdrawal from international institutions,¹²³ there is reason for hope. Widespread cooperation towards a common goal can be an uphill battle.¹²⁴ However, recent activity at the United Nations suggests there is recognition of the need for ambitious and transformative action. The General Assembly is already examining the current shortcomings of multilateral institutions and possible reforms to improve their effectiveness. It held a “Summit of the Future” in 2024, which gathered Member States to discuss multilateral solutions to current and future problems, including international finance and economic governance reforms to address the “triple planetary crisis.”¹²⁵ In preparation for that summit, the U.N. Secretary-General established the High-Level Advisory Board on Effective Multilateralism (HLAB) to “identify concrete, actionable recommendations that point towards a radical shift in [the] approach to global governance.”¹²⁶ One of its recommendations is to “[e]levate the environment within the multilateral system” given its “central importance . . . to all

120. See, e.g., Thiago Kanashiro Uehara & Kate O’Reilly, *Trade Policy and Sustainability: The WTO, the international fair trade charter, and five principles for system change*, (Jan. 2023), at 2.

121. REMAKING TRADE FOR A SUSTAINABLE FUTURE, “About,” <https://remakingtradeproject.org/about> [<https://perma.cc/2FT5-WCFP>] (last visited Dec. 2, 2024).

122. See generally Remaking Trade for a Sustainable Future, *Villars Framework for a Sustainable Global Trade System*, Version 2.0 (Jan. 2024), <https://drive.google.com/file/d/15d4EulW15DAny0K5T-U79gIjkwGs9shx/view> [<https://perma.cc/R89Z-WGXA>] (setting out recommendations to make sustainability a core principle of global trade governance).

123. See, e.g., Raghuram G. Rajan, *The Gospel of Deglobalization: What’s the Cost of a Fractured World Economy?*, FOREIGN AFF. (Dec. 20, 2022), <https://www.foreignaffairs.com/reviews/gospel-deglobalization-fractured-world-economy> [<https://perma.cc/G5PL-8MPJ>].

124. The UN Security Council is emblematic of the political gridlock seen within the larger international community. Political divisions between the Permanent Members have rendered the organization unable to respond to a number of threats to international peace and security, including North Korean missile tests, the Uyghur genocide, and Russia’s invasion of Ukraine. See, e.g., Uri Friedman, *How the UN Security Council Can Reinvent Itself*, THE ATLANTIC Jul. 7, 2022, <https://www.theatlantic.com/ideas/archive/2022/07/un-security-council-russia-ukraine/661501/> [<https://perma.cc/2QAM-W9JH>].

125. UN, Our Common Agenda, <https://www.un.org/en/common-agenda> [<https://perma.cc/K7AJ-K8MJ>] (last visited Dec. 2, 2024).

126. High-Level Advisory Board on Effective Multilateralism, *A Breakthrough for People and Planet: Effective and Inclusive Global Governance for Today and the Future*, (2023), p. 4.

aspects of our lives.”¹²⁷ In fact, the HLAB recommends “integrat[ing] [environmental governance] with the international financial system.”¹²⁸

2. Sustainable Global Economy Institutions

The second component of the international policy pathway is the establishment of a Global Commission on the Economy and Nature (GCEN) to provide technical and policy guidance on the sustainable global economy.¹²⁹ This is closely related to the first component. The new Bretton Woods conference could provide a forum for the creation of a new institution solely dedicated to the sustainable global economy.

The UNEP is limited in its ability to facilitate the sustainable economy transition due to its resource constraints. The UNEP is the UN’s only organ devoted entirely to environmental governance. However, as the HLAB notes, the UNEP lacks the authority and resources within the United Nations to leverage political ambition to mitigate nature loss.¹³⁰ The structure, financing, and function of the UNEP impede its efficacy.¹³¹ It is a subsidiary organ created under Article 22 of the United Nations Charter, rather than a specialized agency; the key difference being that the UNEP’s funding is voluntary as opposed to the mandatory contributions that Member States must make to specialized agencies.¹³² The UNEP has failed to become “the center of gravity—the anchor institution [of environmental governance]—because it lacked sufficient capacity, connectivity, and credibility.”¹³³ The HLAB recommends that the UNEP be given mandates and resources comparable to the United Nations’ development, peace and security, and human rights institutions so that it can “drive a transformative agenda for people and planet.”¹³⁴ Unless and until the UNEP is given a broader mandate and the resources to support that mandate, an institution is needed to facilitate the sustainable economy transformation.

127. *Id.* at 26.

128. *Id.*

129. WWF, “Colombian President signals support for a Global Commission on Economy and Nature,” (Feb. 25, 2021), https://wwf.panda.org/wwf_news/?1577941/colombia-commission-economy-nature [<https://perma.cc/LUH2-PF68>] (the initiative is also supported by Professor Partha Dasgupta, the author of the influential Dasgupta Review, and the World Wildlife Fund); The B Team et al., *Open Letter to Governments of the G20 Nations: Businesses urge G20 leaders to lead change to a global impact economy*, (Nov. 15, 2018), <https://grli.org/wp-content/uploads/2018/11/OPEN-LETTER-TO-GOVERNMENTS-OF-THE-G20-NATIONS-1.pdf> [<https://perma.cc/S7HK-7N2Y>] (calling for the establishment of a commission to develop a positive impact economy that “bring[s] about a regenerative economy that supports the wellbeing of people and the planet”).

130. High-Level Advisory Board on Effective Multilateralism, *supra* note 127, at 26; *see also* Maria Ivanova, *Can the Anchor Hold? Rethinking the United Nations Environment Programme for the 21st Century*, YALE FORESTRY & ENV’T STUD. PUBL’N SERIES 27, 31 (2005), <https://elischolar.library.yale.edu/cgi/viewcontent.cgi?article=1026&context=fes-pubs> [<https://perma.cc/NU6J-59P7>].

131. *See generally* MARIA IVANOVA, THE UNTOLD STORY OF THE WORLD’S LEADING ENVIRONMENTAL INSTITUTION: UNEP AT FIFTY (MIT PRESS 2021) (examining the creation of the UNEP, its historical legacy, and institutional flaws).

132. *Id.* at 35–36.

133. *Id.* at 201.

134. High-Level Advisory Board on Effective Multilateralism, *supra* note 127, at 26.

The GCEN can provide two essential functions: (1) policy guidance to transition global and national economies, specific industries, and private actors; and (2) compliance enforcement and oversight with these policy roadmaps. Current proposals for the GCEN are modeled after the Global Commission on the Economy and Climate, which provides a science-to-policy assessment that offers comprehensive guidance on the policy roadmap to a decarbonized economy.¹³⁵ The GCEN would have a similar mandate to provide states and the private sector with science- and economics-backed policy roadmaps to achieve a sustainable economy.¹³⁶ The IPBES and other leading experts have stressed the need for rigorous research on the sustainable economy and how to achieve it, including concrete policy and technical guidance.¹³⁷ Indeed, the IPBES urges that the transformative change needed to create a “world economy that values nature and its contributions . . . will require innovative, imaginative and adaptive ways to transform our current economic and governance systems,” necessitating “concerted efforts from a range of decision makers.”¹³⁸ The HLAB envisions a similar policy guidance institution that would “consolidate information regarding the triple planetary crisis into coherent, constantly updated, and actionable assessment of risks to the planet” and “generate recommended actions for governments and nonstate actors in real time.”¹³⁹ Its mandate would include “country-specific [or industry- or private actor-specific] reports” setting out their policy pathways to a sustainable global economy.¹⁴⁰

International efforts to address the climate crisis illustrate the central import of technical and policy guidance to catalyze ambitious, harmonized action at the national level. In particular, the IPCC is influential in informing and coordinating national action through climate policy and technical guidance. The IPCC has established expertise in the causes, effects, and necessary mitigation pathways of climate change. In its most recent report, the IPCC leverages its scientific expertise to set out the actions that states must take to mitigate and adapt to the climate crisis, essentially

135. Stockholm Environment Institute, “Global Commission on the Economy and Climate,” <https://www.sei.org/projects-and-tools/projects/global-commission-on-the-economy-and-climate/#:~:text=The%20Global%20Commission%20on%20the,which%20arise%20from%20climate%20change> [<https://perma.cc/Y5M9-DT74>] (last visited Dec. 2, 2024); New Climate Economy, “About Us,” <https://newclimateeconomy.net/content/about-us> [<https://perma.cc/6E2F-HSBA>] (last visited Dec. 2, 2024).

136. WWF, *WWF UK Response to the Dasgupta Review* 11 (Feb. 2021), https://www.wwf.org.uk/sites/default/files/2021-02/WWF_UK_response_Dasgupta%20Review_1_2_21.pdf [<https://perma.cc/XUX2-5B5Y>].

137. See, e.g., *Transformative Change Assessment*, IPBES, <https://www.ipbes.net/transformative-change> [<https://perma.cc/84BK-KKVA>] (last visited on Dec. 2, 2024); *Business and Biodiversity Assessment*, IPBES, <https://www.ipbes.net/business-impact> [<https://perma.cc/XB33-85JF>] (last visited on Dec. 2, 2024); BARBIER, *supra* note 7, at 222-24 (noting that “[d]esigning the right policy and investment strategy to build a green economy [is] the most important task of governments”).

138. IPBES, *supra* note 1, at 963.

139. High-Level Advisory Board on Effective Multilateralism, *supra* note 127 at 26.

140. *Id.* at 27.

providing a roadmap.¹⁴¹ The International Energy Agency similarly produces influential reports that set out sector-specific roadmaps to achieve net zero emissions.¹⁴² The GCEN can assume an analogous role as a technical body of scientists and economists that provide the policy roadmap to transform the global economy, including pathways for specific states, economic sectors, and businesses or financial institutions. These policy scenarios or pathways would inform national action by clearly laying out the steps required to achieve a sustainable economy.

But, as the climate crisis has also shown, policy guidance without oversight and enforcement can fail to translate into action. Thus, the GCEN's second essential function is monitoring and accountability. Sustainable economy policy guidance is only valuable if it is implemented. This requires rigorous oversight of states and the private sector. The GCEN can be empowered to investigate and report publicly on environmental violations, including regular reporting on states' compliance with any commitments to transition to a sustainable global economy.¹⁴³ The GCEN can also provide necessary support to comply with those commitments, including best practices and information, financial and technology transfer, and capacity building.¹⁴⁴

3. Framework Convention on the Sustainable Global Economy

The final component of the international policy roadmap is a new framework convention for a sustainable global economy (SGE framework convention). The IPBES concluded that a "key component . . . is the evolution of global financial and economic systems to build a global sustainable economy" which "could be enabled through a mix of policies and tools . . . [including] multilateral agreements."¹⁴⁵ The HLAB recommends states "[c]onclude a pact for people and planet" that "incorporate[s] timebound commitments to . . . enable a global transformation towards a circular economy" and emphasizes that this should be a priority at the Summit for the Future.¹⁴⁶

An international treaty harmonizes national action and addresses the collective action problem that can impede national action in the absence of binding international commitments. The globalization of the economy through trade and economic interdependence means that achieving a sustainable global economy will require internationally coordinated action.¹⁴⁷ This is particularly important where

141. U.N. Sustainable Development Group, New UN Report offers a 'survival guide for humanity' in the face of climate change, (Mar. 20, 2023), <https://unsdg.un.org/latest/stories/new-un-report-offers-survival-guide-humanity-face-climate-change> [<https://perma.cc/8ZHV-DTCP>].

142. INTERNATIONAL ENERGY AGENCY, NET ZERO BY 2050: A ROADMAP FOR THE GLOBAL ENERGY SECTOR, (May 2021), <https://www.iea.org/reports/net-zero-by-2050> [<https://perma.cc/F77C-UQ6Z>] (setting out the pathway for the global energy sector to achieve net zero emissions by 2050).

143. High-Level Advisory Board on Effective Multilateralism, *supra* note 127, at 26. (recommending this function for a strengthened UNEP and UNEA).

144. *Id.* at 27.

145. IPBES, *supra* note 1, at 18–19; *see also* DASGUPTA – ABRIDGED VERSION, *supra* note 45, at 2 (concluding "it will require international agreements to change our ways").

146. High-Level Advisory Board on Effective Multilateralism, *supra* note 127, at 24.

147. IPBES, *supra* note 1, at 18–19; *see also* DASGUPTA – ABRIDGED VERSION, *supra* note 45, at

countries' economic footprints and related environmental impacts extend beyond political boundaries and multinational corporations are major global economic actors. International law sets the minimum standard of conduct for all countries and, in this way, aligns national action. For example, the Paris Agreement's 1.5°C temperature target has informed national climate policies and regulations.

In June 2022, a coalition of states and non-governmental organizations led by the World Wildlife Fund (WWF) and the UNEP World Conservation Monitoring Center proposed the voluntary Nature Positive Economy Roadmap drafting process to develop (1) "a clear vision of what a nature positive economy looks like;" (2) "the economic governance reforms and architectural building blocks necessary for the transition to a nature positive economy;" and (3) "a strategic and forceful plan for implementing these reforms, including milestones."¹⁴⁸ The proposal builds on those calling for the GCEN, which could provide the forum for a new convention's drafting process, allowing the drafters of the convention to leverage the GCEN's expertise to produce national sustainable economy frameworks, as well as global scenarios and guidance on sector-specific sustainable economy pathways.¹⁴⁹

The objectives of the proposal are integral, but its non-binding character may undermine its ability to translate those objectives into national action. A principal tension in international law is the balance between broad state participation and rigor of obligations.¹⁵⁰ Binding international agreements with onerous obligations will deter state participation for fear that non-compliance will incur liability.¹⁵¹ Soft law instruments can be very effective at engendering broad participation for this reason and, despite their non-binding character, can be effective in coordinating national efforts by providing roadmaps, including "model laws" implementing those roadmaps. This is one of the approaches taken by the movement to codify ecocide as an international crime.¹⁵² A model ecocide law has catalyzed and standardized national efforts to adopt it, including in the EU, Brazil, Bolivia, and Mexico.¹⁵³ In this regard, a non-binding process that sets out the actions that particular states,

2 (concluding "it will require international agreements to change our ways").

148. U.N. Stockholm 50+, *Developing a Roadmap to a Nature Positive Economy*, (Jun. 3, 2021), <https://www.stockholm50.global/events/developing-roadmap-nature-positive-economy>; World Wildlife Fund, *Proposal to Establish a Roadmap to a Nature Positive Economy* 3 (Jun. 3, 2022), https://wwfint.awsassets.panda.org/downloads/proposal_for_a_roadmap_to_nature_positive_economy_20220603.pdf.

149. *See, e.g.*, World Wildlife Fund, *supra* note 149, at 5 (identifying the GCEN as the home for the drafting process).

150. *See, e.g.*, Laurence R. Helfer, *Flexibility in International Agreements*, INT'L LAW AND INT'L REL.: TAKING STOCK (Jeffrey Dunoff & Mark A. Pollack eds., 2012); Kenneth W. Abbott and Duncan Snidal, *Hard and Soft Law in International Governance*, 54 LEGALIZATION & WORLD POL. 421 (2000).

151. Helfer, *supra* note 151.

152. Darryl Robinson, *The Ecocide Wave is Already Here: National Momentum and the Value of a Model Law*, JUST SECURITY (Feb. 23, 2023), <https://www.justsecurity.org/85244/the-ecocide-wave-is-already-here-national-momentum-and-the-value-of-a-model-law/> [<https://perma.cc/D33V-EGRP>].

153. *Id.*

sectors, or industries must take—including model laws implementing those necessary actions—may be the better approach that allows for national variation and experimentation. However, the disadvantage of a non-binding instrument is the absence of a legal obligation. The failure of states to fulfill their Nationally Determined Contributions (NDCs) to the Paris Agreement illustrates the importance of rigorous, binding obligations to compel states to turn their ambition into concrete action.¹⁵⁴ In fact, instruments that are binding, contain rigorous obligations, and include a strong enforcement mechanism have proven to be more credible and effective.¹⁵⁵

A legally binding framework convention is needed to commit states to overarching sustainable economy targets followed by subsequent protocols setting out state- or sector-specific pathways.¹⁵⁶ A framework convention is an effective and flexible treaty design that is well placed to regulate complex issues with broad scope.¹⁵⁷ It has two parts. The main convention establishes a general commitment from States Parties, setting out the basic principles, objectives, institutions, and decision-making mechanisms.¹⁵⁸ The subsequent protocols and annexes provide the details, specific regulations, and technical standards.¹⁵⁹ This generally allows states to achieve broad agreement while leaving consensus on the finer details of regulations or specific targets to subsequent protocols.¹⁶⁰ However, the track record of the UNFCCC cautions that a framework convention may not translate into effective action if it allows states to agree only to the basic principles while deferring commitment to specific obligations to later agreements. This risk is evidenced in the Paris

154. See, e.g., Lindsay Maizland, *Global Climate Agreements: Successes and Failures*, COUNCIL ON FOREIGN REL. (Dec. 5, 2023, 2:46 PM), <https://www.cfr.org/backgrounder/paris-global-climate-change-agreements> [<https://perma.cc/5GB2-77DK>]; Oliver Milman, *Governments falling woefully short of Paris climate pledges, study finds*, THE GUARDIAN (Sep. 15, 2021), <https://www.theguardian.com/science/2021/sep/15/governments-falling-short-paris-climate-pledges-study> [<https://perma.cc/G6BX-DJ9H>]; Carter Dillard, *The Paris Agreement is failing; we need a new approach*, THE HILL (Apr. 23, 2022), <https://thehill.com/opinion/energy-environment/3460944-the-paris-agreement-is-failing-we-need-a-new-approach/>.

155. See, e.g., BARBARA KOREMENOS, *THE CONTINENT OF INTERNATIONAL LAW: EXPLAINING AGREEMENT DESIGN* (2016); Steven J. Hoffman et al., *International Treaties Have Mostly Failed to Produce Their Intended Effects*, PNAS (Aug. 1, 2022) (concluding based on a study of more than 250,000 treaties that the most successful are those with rigorous enforcement mechanisms).

156. IPBES, *supra* note 1, at 18–19; see also DASGUPTA – ABRIDGED VERSION, *supra* note 45, at 2 (concluding “it will require international agreements to change our ways”); High-Level Advisory Board on Effective Multilateralism, *supra* note 127, at 24; Michael Sureth et al., *A Welfare Economic Approach to Planetary Boundaries*, 243 J. OF ECON. AND STAT. 477,526 (2023) (concluding that planetary boundaries “should be targeted by international treaties”).

157. See Daniel Bodansky and World Health Org. [WHO] Tobacco Free Initiative, *The Framework Convention/Protocol Approach*, WHO/NCD/TFI/99.1 (1999).

158. See *id.*; Nele Matz-Luck, *Framework Conventions as Regulatory Tools*, 1 GOETTINGEN J. INT’L L. 439 (2009); Lawrence O. Gostin, *A Proposal for a Framework Convention on Global Health*, 10 J. OF INT’L ECON. L. 989 (2007).

159. *Id.*

160. See NELE MATZ-LUCK, *Framework Agreements*, MAX PLANCK ENCYCLOPEDIAS OF INT’L LAW ¶1 (Feb. 2011), <https://opil.ouplaw.com/display/10.1093/law:epil/9780199231690/law-9780199231690-e703>; see also Weiss, *supra* note 112, at 7.

Agreement's manifest failure to commit states to limiting global average temperature rise to 1.5°C in order to avoid the worst effects of climate change.¹⁶¹ But, there is no fixed model for framework conventions.¹⁶² This risk can be mitigated where the drafters ensure that the framework convention itself contains the basic architecture for a sustainable global economy and robust enforcement mechanisms.

The SGE framework convention's main instrument would contain the guiding principles that underly a sustainable economy, set out the fundamental substantive obligations, and articulate the architecture of the monitoring and enforcement regime. Section II identifies the minimum content of the substantive obligations, committing states to price nature and bound the global economy within inviolable ecological limits. As detailed above, these two objectives require a broad mix of policies, many of which must be included in the framework convention to harmonize national action. First, the framework convention can commit states to time-bound targets, such as a timeline for transitioning national economies and halving national ecological footprints by 2030. It can also commit states to adopting the UN's natural capital accounting and valuation framework and to incorporating the value of nature into financial and economic metrics. It can articulate the comprehensive set of planetary boundaries and commit states to integrating those limits within financial and economic metrics. Additionally, the framework convention can set out global environmental taxes that function to price nature and internalize those planetary boundaries.

The subsequent protocols then flesh out the blueprint provided by the main convention, such as through state- or sector-specific targets and pathways. Economic experts agree that global sustainable economy targets are needed, but they urge that those targets must be accompanied by implementation plans.¹⁶³ Subsequent protocols provide particular value here for their ability to set out binding pathways, targets, and technical standards for specific states, industries, or sectors. Subsequent protocols can prioritize those states, industries, and private actors with the greatest impacts on nature. For example, G7 countries account for about 30 percent of global GDP and 40 percent of global greenhouse gas emissions.¹⁶⁴ The G20 accounts for 82 percent of global GDP, 75 percent of global trade, 80 percent of global greenhouse

161. U.N. News, Climate change: No 'credible pathway' to 1.5C limit, UNEP warns, (Oct. 27, 2022), <https://news.un.org/en/story/2022/10/1129912> [<https://perma.cc/N6HQ-A2CQ>].

162. Daniel Bodansky and WHO Tobacco Free Initiative, *supra* note 158.

163. *See, e.g.*, PETER A. VICTOR, ESCAPE FROM OVERSHOOT: ECONOMICS FOR A PLANET IN PERIL 224–225 (2023) (explaining the need for sustainable economy targets and specific pathways to achieving those targets, using climate change and the IPCC's guidance as an example); BARBIER, *supra* note 7, at 126–30 (explaining need for a “no net loss” of ecosystems global target, including specific targets for not losing ecosystems that are rare, vulnerable, or essential for planetary function, but noting that nature targets must be accompanied by efforts to price nature into financial and economic systems).

164. *Major advanced economies (G7)*, INTERNATIONAL MONETARY FUND, <https://www.imf.org/external/datamapper/profile/MAE> [<https://perma.cc/R6GU-FPVY>] (last visited Dec. 2, 2024); Hakan Altin, *The impact of energy efficiency and renewable energy consumption on carbon emissions in G7 countries*, 17 INT'L J. OF SUSTAINABLE ENG'G 1 (2024) (citing the IPCC).

gas emissions, and 75 percent of global materials use.¹⁶⁵ The sheer scale of G7 and G20 economies means that they drive global economic activity and its corresponding ecological footprint. Thus, the framework convention will have the greatest impact if its subsequent protocols first set out binding sustainable economy obligations and standards on these economies.

Subsequent protocols must also address the sectors and specific private actors with the most significant nature impacts. Multinational corporations are now central drivers of the global economy and environmental degradation. In a study of the world's top one hundred global economic entities, corporations accounted for sixty-nine out of the one hundred entities.¹⁶⁶ Moreover, just one hundred companies are responsible for 71 percent of global greenhouse gas emissions.¹⁶⁷ The rise of multinational enterprises is in tension with the state-centric premise of international law, raising the question of whether multinational enterprises should be regulated by international law in light of their influence and impact.¹⁶⁸ International law has, consequently, evolved to increasingly include corporations, as evidenced by investor-state arbitration, the U.N. Guiding Principles of Business and Human Rights, and OECD Due Diligence Guidelines for multinational enterprises.¹⁶⁹ The HLAB stresses the importance of the treaty “holding accountable major industries and the private sector” including through “protocols [that] obligate private sector actors . . . [including through] globally enforceable science-based targets for industry.”¹⁷⁰ This would have the added benefit of ensuring a level playing field for companies that can no longer exploit jurisdictions with lower environmental standards. Subsequent protocols can

165. BARBIER, *supra* note 7, at 224; Rafael M. Eufrazio Espinosa & S.C. Lenny Koh, *Forecasting the ecological footprint of G20 countries in the next 30 years*, 14 SCI. REPORTS (2024); Frithjof Laubinger et al., *Towards a More Resource-Efficient and Circular Economy--The Role of the G20*, OECD 4, (2021).

166. Joe Myers, *How do the world's biggest companies compare to the biggest economies?*, World Economic Forum (Oct. 19, 2016), <https://www.weforum.org/stories/2016/10/corporations-not-countries-dominate-the-list-of-the-world-s-biggest-economic-entities/>; see also, *Multinational enterprises in the global economy: Heavily debated but hardly measured*, OECD (May 2018), <https://web-archiver.oecd.org/2018-05-24/480218-MNEs-in-the-global-economy-policy-note.pdf> [<https://perma.cc/CE4K-EL99>] (concluding that multinational enterprises “play a central role in the global economy” and national economies as evidenced by their “large share in output, GDP and employment”).

167. Tess Riley, *Just 100 companies responsible for 71% of global emissions, study says*, THE GUARDIAN (Jul. 10, 2017), <https://www.theguardian.com/sustainable-business/2017/jul/10/100-fossil-fuel-companies-investors-responsible-71-global-emissions-cdp-study-climate-change> [<https://perma.cc/4B8Z-HEBC>].

168. See generally ELISA MORGERA, CORPORATE ENVIRONMENTAL ACCOUNTABILITY IN INTERNATIONAL LAW (2nd ed. 2020) (analyzing the rise of multinational corporations in international law and policy and examining whether and to what extent they can or should be regulated by international law).

169. *Id.* at 69–140.

170. High-Level Advisory Board on Effective Multilateralism, *A Breakthrough for People and Planet: Effective and Inclusive Global Governance for Today and the Future*, UNITED NATIONS UNIVERSITY 24 (2023).

target the specific industries and companies that drive global nature loss, setting out sector- or company-specific sustainable economy pathways and standards.

The convention's system of oversight and enforcement is just as important as the substantive obligations. The HLAB urges the need for its proposed treaty to create "a system of accountability that holds all actors responsible."¹⁷¹ This can include "special rapporteurs [or a treaty body or secretariat] possessing mandates to investigate and report publicly" on violations of obligations under the convention, or that periodically reviews states' or private actors' sustainable economy roadmaps that set science-based targets, timelines, and actions that align with global sustainable economy targets.¹⁷² Many experts also stress the importance of formal and binding dispute resolution procedures to encourage horizontal enforcement of the convention's obligations.¹⁷³ The framework convention can also establish annual conferences of the parties to ensure continuing negotiation, diplomacy, and prioritization of the sustainable global economy. This has proven effective in the UNFCCC regime where COPs have resulted in meaningful action on climate change. For example, at COP26, the United States and the European Union introduced the Global Methane Pledge, which aims to reduce emissions of methane (a particularly potent greenhouse gas) by 30 percent by 2030.¹⁷⁴ At COP27, States Parties established the Loss and Damage Fund to provide financial assistance to those countries that are the least responsible for the climate crisis, yet the most vulnerable to its effects.

However, an SGE framework convention raises the practical questions of whether international consensus is possible. If the movement away from binding emissions targets under the UNFCCC is any indication,¹⁷⁵ it can be very difficult to achieve broad participation in a binding instrument that sets out rigorous, timebound environmental obligations. This is especially true, as with climate change, where those obligations necessitate transformative economic and societal change. However, states are exhibiting an increased appetite for treaty-making on and beyond global environmental issues. Examples include the Agreement under the marine biodiversity agreement under the U.N. Convention on the Law of the Sea,¹⁷⁶ the ongoing plastics treaty negotiations,¹⁷⁷ the Ljubljana-The Hague Convention on International Cooperation in the Investigation and Prosecution of the Crime of Genocide, Crimes

171. *Id.*

172. *Id.* at 26.

173. See, e.g., Ashleigh R. Shelver, *The Answer to Enforcing Multilateral Environmental Agreements: The International Tribunal for the Law of the Sea*, 26 FLA.J. OF INT'L L. 347 (2014).

174. See GLOBAL METHANE PLEDGE, <https://www.globalmethanepledge.org/> [<https://perma.cc/7NX4-VPVD>] (last visited Dec. 2, 2024).

175. Jutta Brunnee, *Procedure and Substance in International Environmental Law*, 40 THE POCKET BOOKS OF THE HAGUE ACADEMY OF INTERNATIONAL LAW (2020).

176. U.N., *Agreement on Marine Biodiversity of Areas Beyond National Jurisdiction*, <https://www.un.org/bbnjagreement/en> [<https://perma.cc/3SLR-RYZL>] (last visited Dec. 2, 2024).

177. U.N. Environmental Programme [UNEP], *Intergovernmental Negotiating Committee on Plastic Pollution*, <https://www.unep.org/inc-plastic-pollution> [<https://perma.cc/JBG9-QPNB>] (last visited Dec. 2, 2024).

Against Humanity, War Crimes and other International Crimes,¹⁷⁸ and ongoing negotiations on the draft Convention on Crimes Against Humanity.¹⁷⁹

There is already powerful consensus on the need for specific international institutions and instruments dedicated to achieving a sustainable global economy. The G7 announced the establishment of the G7 Alliance on Nature Positive Economies to “cover all forms of mainstreaming nature in economies, including both public and private sector action,” recognizing “the negative and unsustainable impact our economic activity can have on nature and wildlife . . . and the necessity of global system-wide change not only for becoming net zero but also for becoming nature positive.”¹⁸⁰ The G7’s alliance reflects the growing momentum to develop international governance, through new fora and legal instruments, to transition the global economy to a sustainable model.

It is not only states that recognize the urgent need for a sustainable global economy. Business, industry, and financial sector leaders have also issued strong calls for such an economy.¹⁸¹ This is particularly important when viewed in the context of the Montreal Protocol’s historic success in phasing out 99 percent of ozone-depleting substances.¹⁸² Many attribute the unprecedented success of the protocol to the leadership of the private sector, which, led by Du Pont, a major producer of ozone-depleting chemicals, organized American industrial producers to advocate for a convention regulating the substances.¹⁸³

IV. THE NATIONAL POLICY LANDSCAPE

The sustainable economy cannot be achieved without national legislation mandating this transformation. National, state, and local governments must implement policy reforms that properly value and price nature in financial and economic

178. Bruno de Oliveira Biazatti & Ezechiél Amani, *The Ljubljana-The Hague Convention on Mutual Legal Assistance: Was the Gap Closed?*, EJIL: TALK! (Jun. 12, 2023), <https://www.ejiltalk.org/the-ljubljana-the-hague-convention-on-mutual-legal-assistance-was-the-gap-closed/> [https://perma.cc/9GZL-YWZ90].

179. Leila Nadya Sadat & Akila Radhakrishnan, *Continued Positive Momentum on Crimes Against Humanity Treaty*, JUST SECURITY (Nov. 9, 2023), <https://www.justsecurity.org/90024/continued-positive-momentum-on-crimes-against-humanity-treaty/> [https://perma.cc/TW9R-QDSM].

180. G7 Ministers’ Meeting on Climate, Energy and Environment, “Terms of Reference for the G7-Alliance on Nature Positive Economies,” ¶3, 6, <https://www.meti.go.jp/press/2023/04/20230417004/20230417004-6.pdf>.

181. See, e.g., CAMPAIGN FOR NATURE, <https://www.campaignfornature.org/> [https://perma.cc/YC8V-S4MT] (last visited Dec. 2, 2024); *Business for Nature’s Call to Action*, BUSINESS FOR NATURE, <https://www.businessfornature.org/call-to-action> [https://perma.cc/GF9Z-JHVD] (last visited Dec. 2, 2024); FINANCE4BIODIVERSITY, <https://www.financeforbiodiversity.org/> [https://perma.cc/AP3L-WMGA] (last visited Dec. 2, 2024).

182. *Montreal Protocol: Successful Ozone and Climate Agreement Turns 30*, INT’L INST. SUSTAINABLE DEV. (Sep. 19, 2017), <https://sdg.iisd.org/news/montreal-protocol-successful-ozone-and-climate-agreement-turns-30/> [https://perma.cc/QDY3-TDU3].

183. See, e.g., Greg Whitesides, *Learning from Success: Lessons in Science and Diplomacy from the Montreal Protocol*, AAAS CENTER FOR SCIENCE DIPLOMACY (Aug. 10, 2020).

markets and impose planetary boundaries. This translates into three distinct objectives: (1) adopting non-market-based legislation to commit to necessary sustainable economy targets and correct market failures; (2) reforming fiscal and economic policy to shift market incentives away from nature overexploitation and destruction to preservation and regeneration; and (3) mainstreaming biodiversity and nature into decision-making at all levels of government and across all industries.

A. Non-Market Based Mechanisms

The first component of the emerging national policy roadmap is to address the economic drivers of nature loss through traditional, non-market-based policy mechanisms. This includes both ecosystem conservation and restoration and binding targets.

1. Ecosystem Conservation and Restoration

The international community recognizes the need to expand conservation areas and restore degraded ecosystems. The world is coalescing around three organizing targets: zero nature loss from 2023 onwards, nature positive by 2030, and full recovery by 2050.¹⁸⁴ Specifically, GBF Targets 1, 2, and 3 commit states to halt the loss of key biodiversity areas, restore at least 30 percent of all degraded ecosystems, and conserve at least 30 percent of all ecosystems.¹⁸⁵ As of 2020, however, only 17 percent of the Earth was conserved,¹⁸⁶ meaning that states will have to nearly double that figure in the next decade. Further, scientists estimate that anywhere between 40 percent to 75 percent of the planet is degraded and if trends continue as much as 95 percent could be degraded by 2050.¹⁸⁷ The IPBES concluded that “[r]estoration increasingly *is required*, given the ongoing degradation of various ecosystem types.”¹⁸⁸ States are beginning to act. The European Union (EU) Biodiversity Strategy for 2030 commits the EU to enlarging areas under strict protection, in

184. *Kunming-Montreal GBF*, supra note 44, Goal A, Targets 1-3; see also *A Global Goal for Nature*, NATURE POSITIVE, <https://www.naturepositive.org/> [<https://perma.cc/8QQY-5CCP>] (last visited Dec. 2, 2024).

185. *Kunming-Montreal GBF*, supra note 44, Targets 1-3.

186. Olivia Rosane, , *How much of Earth is currently protected?*, WORLD ECON. F.(May 25, 2021), <https://www.weforum.org/agenda/2021/05/how-much-of-earth-is-currently-protected/>.

187. Fiona Harvey, *UN says up to 40% of world's land now degraded*, THE GUARDIAN (Apr. 27, 2022), <https://www.theguardian.com/environment/2022/apr/27/united-nations-40-per-cent-planet-land-degraded> [<https://perma.cc/7VHF-TEZV>]; Stephen Leahy, *75% of Earth's Land Areas Are Degraded*, NAT'L GEOGRAPHIC (Mar. 26, 2018), <https://www.nationalgeographic.com/science/article/ipbes-land-degradation-environmental-damage-report-spd> [<https://perma.cc/CNY2-HT22>].

188. IPBES, GLOBAL ASSESSMENT REPORT ON BIODIVERSITY AND ECOSYSTEM SERVICES 60 (2019) (emphasis added). The CBD requires States Parties to “[r]ehabilitate and restore degraded ecosystems and promote the recovery of threatened species.” See Convention on Biological Diversity [CBD], art. 8(f), June 5, 1992, 1760 U.N.T.S. 79. The States Parties further elucidated what that requires. Ecological restoration is “the process of managing or assisting the recovery of an ecosystem that has been degraded, damaged or destroyed as a means of sustaining ecosystem resilience and conserving biodiversity.” See Convention on Biological Diversity [CBD] *Decision XIII/5 on Ecosystem Restoration: Short-Term Action Plan*, at 4, ¶ 4, UN Doc. CBD/COP/DEC/XIII/5, annex (Dec. 10, 2016).

particular high biodiversity areas.¹⁸⁹ The Strategy also proposes a Nature Restoration Law that commits EU Member States to restoring at least 20 percent of EU terrestrial and marine ecosystems by 2030, and ultimately all ecosystems in need of restoration by 2050.¹⁹⁰ In November 2023, the European Council and European Parliament reached a deal approving the law.¹⁹¹ This provides a useful template for command-and-control policy mechanisms that other countries may consider when expanding existing or establishing new protected areas in line with their commitment to protect 30 percent of the Earth's land and oceans by 2030.¹⁹²

Some states are complementing the expansion of protected areas with legislation prohibiting the conversion of certain ecosystems.¹⁹³ This policy mechanism may be useful in countries with natural resource-based economies that possess critically important ecosystems. For example, countries endowed with significant forests—such as the Democratic Republic of the Congo, Brazil, Canada, Indonesia, and Malaysia—can adopt legislative moratoriums on converting primary forests.¹⁹⁴ Indonesia imposed a moratorium on permits for clearing primary forests,¹⁹⁵ but such legislation can also take the form of banning products that contribute to specific types of ecosystem degradation or nature loss. The EU, for example, adopted legislation banning all products that contribute to tropical deforestation, as determined by geolocation data.¹⁹⁶ The ban's impact may be far-reaching because the EU is the second-largest importer of agricultural products, impacting trade in products such as cattle, cocoa, coffee, palm oil, rubber, soya and wood products.¹⁹⁷ U.S. lawmakers have proposed similar legislation, but it is significantly weaker because it does not

189. *Biodiversity Strategy for 2030*, EUR.COMM'N, https://environment.ec.europa.eu/strategy/biodiversity-strategy-2030_en (last visited Dec. 3, 2024).

190. Nature restoration law, EUR.COMM'N, https://environment.ec.europa.eu/topics/nature-and-biodiversity/nature-restoration-law_en [<https://perma.cc/Q9VD-J24J>] (last visited Dec. 3, 2024).

191. Ajit Niranjani, *EU strikes landmark deal on law to restore and protect nature*, THE GUARDIAN (Nov. 10, 2023), <https://www.theguardian.com/environment/2023/nov/10/eu-strikes-landmark-deal-nature-restoration-law> [<https://perma.cc/HBM7-VZC7>].

192. Convention on Biological Diversity [CBD], *Kunming-Montreal Global Biodiversity Framework*, at Target 2, UN Doc. CBD/COP/15/L25 (Dec. 18, 2022).

193. See, e.g., Antoinette Radford, *Deforestation: EU law bans goods linked to deforestation of trees*, BBC (Dec. 6, 2022), <https://www.bbc.com/news/world-europe-63872393> [<https://perma.cc/E9K2-QZ2R>].

194. See, e.g., Aritta Suwarno et al., *Indonesia's forest conversion moratorium assessed with an agent-based model of Land-Use Change and Ecosystem Services (LUCES)*, MITIGATION AND ADAPTATION STRATEGIES FOR GLOB. CHANGE 211, 211-29 (2018), <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6054013/> [<https://perma.cc/XY8-2Z6P>].

195. *Indonesia president makes moratorium on forest clearance permanent*, REUTERS (Aug. 8, 2019), <https://www.reuters.com/article/us-indonesia-environment-forest/indonesia-president-makes-moratorium-on-forest-clearance-permanent-idUSKCN1UY14P>.

196. Patrick Greenfield, *Humanity has become 'weapon of mass extinction', UN head tells COP15 launch*, THE GUARDIAN (Dec. 6, 2022), <https://www.theguardian.com/environment/2022/dec/06/canada-leads-calls-to-reverse-nature-loss-as-cop15-opens-in-montreal#:~:text=Humanity%20has%20become%20a%20weapon,playing%20an%20entirely%20different%20song> [<https://perma.cc/CD8X-9M3W>]; Radford, *supra* note 194.

197. *Id.*

impose sanctions for forest degradation and has more limited enforcement powers.¹⁹⁸ This type of legislation is a complementary mechanism to expanding protected areas because it provides direct economic incentives for sustainable production processes and provides protection for ecosystems without formal protection status.¹⁹⁹ However, it cannot replace expanding protected areas because expansion ensures the holistic and cohesive protection of ecosystems from all anthropogenic stressors.

Effective ecosystem conservation and restoration legislation will require careful attention to the science. The IPBES concluded that there are “substantial shortfalls in [protected area] effectiveness around the world” due in part to lack of spatial and functional connectivity and ecological representativeness.²⁰⁰ Addressing this requires conservation legislation to be guided by three scientific principles: (1) preservation of critically important ecosystems (e.g., ecosystems that are still intact, biodiversity hotspots, and/or fragile or threatened ecosystems), (2) landscape and ecosystem connectivity (e.g., to accommodate species migration, support ecosystem services, and reduce human-induced pressures on those ecosystems), and (3) diversity of conservation areas (i.e., to protect the full diversity and breadth of nature).²⁰¹ The IPBES warns that conservation areas “cannot be maintained when the habitat area is too small and fragmented” and their effectiveness is “suboptimal” when ecological representation is not maximized, in particular with regard to “safeguarding Key Biodiversity Areas.”²⁰² Currently, only 19.2 percent of the estimated 15,000 Key Biodiversity Areas are fully protected and the proportion of protected areas comprising these areas is decreasing over time.²⁰³

Implementing these principles requires states to be guided by scientific data on degraded ecosystems and threatened species in their territory, their specific nature endowment, and the methodologies for ensuring effective ecosystem preservation. There are many existing resources that States can use to inform conservation

198. Forest Act of 2021, S.2950, , 117th Cong. (2021), <https://www.congress.gov/bill/117th-congress/senate-bill/2950/text>; Arthur Nelsen, *EU ban on deforestation-linked goods sets benchmark, says US lawmakers*, THE GUARDIAN (Jan. 5, 2023), <https://www.theguardian.com/environment/2023/jan/05/eu-ban-on-deforestation-linked-goods-sets-benchmark-says-us-lawmakers> [<https://perma.cc/CZN2-F8T7>].

199. Samantha Power et al., *An Overview of Nature-Related Risks and Potential Policy Actions for Ministries of Finance: Bending the Curve of Nature Loss 51* (2022), https://www.financeministersforclimate.org/sites/cape/files/inline-files/Bending%20the%20Curve%20of%20Nature%20Loss%20-%20Nature-Related%20Risks%20for%20MoFs_2.pdf [<https://perma.cc/H8RM-2RPR>].

200. IPBES, *supra* note 1, at 912–14.

201. *Getting to 30*, CAMPAIGN FOR NATURE, <https://www.campaignfornature.org/getting-to-30> [<https://perma.cc/D45R-BK7L>] (last visited Dec. 3, 2024); INT’L UNION FOR CONSERVATION NATURE [IUCN] & U.N. ENV’T PROGRAMME-WORLD CONSERVATION MONITORING CTR., *Protected Planet Report 2020* (last updated May 2021), <https://livereport.protectedplanet.net/> [<https://perma.cc/2N62-TDXF>]; JOGI HILTY ET AL., *GUIDELINES FOR CONSERVING CONNECTIVITY THROUGH ECOLOGICAL NETWORKS AND CORRIDORS*, (Craig Groves eds., 2020), <https://portals.iucn.org/library/node/49061> [<https://perma.cc/24BN-LGDQ>]; see also IPBES, *supra* note 1, at 912–14.

202. IPBES, *supra* note 1, at 913.

203. *Id.*

legislation. At COP15, delegates emphasized the utility of the International Union for Conservation of Nature's (IUCN) Red List of Ecosystems Categories and Criteria when determining what areas to conserve.²⁰⁴ The Red List provides a credible global standard for assessing the conservation status and health of ecosystems, applicable at the local, national, regional, and global levels.²⁰⁵ Likewise, the IUCN produces detailed scientific guidance on establishing, maintaining, and effectively managing conservation areas.²⁰⁶ There are also international bodies that provide scientific data relating to conservation. For example, the Convention on International Trade in Endangered Species of Wild Fauna and Flora Secretariat maintains a list of endangered or threatened species.²⁰⁷ Indeed, the IPBES noted that “[t]ransboundary conservation planning is *essential* to improve the global status of biodiversity, particularly for wide-ranging species that cannot be conserved within political boundaries” and “if each country sets its own conservation priorities without international coordination, more biodiversity is lost than if conservation decision-making is done through . . . globally coordinated efforts.”²⁰⁸ This highlights the interlinkages between the components of the sustainable economy roadmap where developing overarching international legal frameworks and policy guidance can strengthen national implementation.

Effective conservation legislation further requires resources devoted to management and enforcement. As much as one third of global protected ecosystems and land are under intense human pressure.²⁰⁹ The IPBES concluded that the failure of existing conservation areas is largely due to “inadequate resources and weak governance.”²¹⁰ Resources must be devoted to developing markets for ecosystem services and conservation to compensate local communities impacted by increasing areas under protection, and sufficient funding provided for monitoring, management, and enforcement of these protected areas.²¹¹

Brazilian President Lula da Silva's efforts to end Amazonian deforestation highlight the imperative of prioritizing enforcement. President Lula enacted a mandate to end deforestation by 2030, but it has not resulted in meaningful conservation gains.²¹²

204. *Position Paper on the Post-2020 Global Biodiversity Framework OEWG-5 and CBD COP15*, IUCN, <https://iucn.org/resources/position-paper/iucn-position-paper-post-2020-global-biodiversity-framework-oweg-5-and-cbd> [https://perma.cc/5DSL-4MM8] (last visited Dec. 3, 2024).

205. *Welcome to the IUCN Red List of Ecosystems Database*, IUCN, <http://assessments.iucnrl.org/> [https://perma.cc/NNC8-WMKH] (last visited Dec. 3, 2024).

206. *See generally IUCN WCPA Good Practice Guidelines on Protected and Conserved Areas Series*, IUCN, <https://iucn.org/our-union/commissions/world-commission-protected-areas/our-work/wcpa-publications/iucn-wcpa-good> [https://perma.cc/264Z-8UBR] (last visited Dec. 3, 2024).

207. *The CITES Species*, CITES, <https://cites.org/eng/disc/species.php> (last visited Dec. 3, 2024).

208. IPBES, *supra* note 1, at 914 (emphasis added).

209. BARBIER, *supra* note 7, at 105.

210. IPBES, *supra* note 1, at 913.

211. POWER ET AL., *supra* note 200, at 54-55.

212. *Brazil's President Lula unveils plan to end deforestation by 2030*, AL JAZEERA (Jun.

Deforestation rates in the Amazon reached a record high in February 2023.²¹³ He then announced the Action Plan for the Prevention and Control of Deforestation in the Amazon, which seeks to strengthen enforcement through use of satellite imagery to monitor illegal logging and mining operations, and government resources to track financial flows associated with any illegal deforestation.²¹⁴ However, President Lula recognizes that one of the biggest barriers to effective management and enforcement of conservation areas is limited financial resources. At COP28, Brazil proposed the “Tropical Forests Forever Fund,” funded by developed states for the purposes of remunerating eighty states with tropical forests for their maintenance and restoration.²¹⁵ The fund would provide financing for effective management of the forests, enforcement of their protected status, and the provision of financial incentives for its continued protection through payment for ecosystem services and other schemes.²¹⁶ Any country receiving payment that fails to keep deforestation at a specified low or near-zero rate would have their funding reduced or cut.²¹⁷ The fund highlights not only the essential role of enforcement, but also the interdependence of the sustainable economy roadmaps at the international and national levels. The SGE framework convention could not only codify conservation targets but also provide financing mechanisms and scientific or technical guidance for establishing conservation areas, maintaining and restoring those ecosystems, and enforcement of their protected status.

2. Binding Sustainable Economy Targets

States must also adopt binding national targets to achieve a sustainable economy. The IPBES concluded that the sustainable economy transformation will require “a mix of regulatory [and] economic or market based . . . instruments” to ensure that the economy “remain[s] with ecological bounds.”²¹⁸ Binding national targets set the parameters for sustainable economic activity by operationalizing planetary boundaries and charting a path to achieve a sustainable economy through time-bound commitments to reduce nature impacts.

Operationalizing planetary boundaries requires “exogenously set limit[s] (“boundar[ies]”) to environmental damaging activity” via legislation.²¹⁹ As discussed in Section II, scientists have identified nine planetary boundaries, but experts agree that more study is needed to identify the comprehensive set of ecological limits and how to accurately disaggregate those limits at the national and subnational levels.²²⁰ Further, while planetary boundaries must be integrated into economies via taxes and financial and economic metrics, sustainable economy targets are also essential. Even

6, 2023), <https://www.aljazeera.com/news/2023/6/6/brazils-president-lula-unveils-plan-to-end-deforestation-by-2030>.

213. *Id.*

214. *Id.*

215. *Id.*

216. *Id.*

217. *Id.*

218. IPBES, *supra* note 1, at 962.

219. Sureth et al., *supra* note 69, at 525–27; Meyer & Newman, *supra* note 73.

220. Sureth et al., *supra* note 69, at 527; Meyer & Newman, *supra* note 73.

where nature is properly priced into an economy, there may be cost-benefit analyses that would nonetheless incentivize unsustainable economic activity.²²¹ Binding nature targets can constrain all economic activity within the aggregate sustainable threshold and these targets can, in turn, be used to set the relevant tax rate, permitting systems, or other sustainable economy regulations.²²²

Sustainable economy targets also set out a legally binding pathway to reduce ecological footprints. These “reduction targets” would chart a path “to some agreed level of levels [of nature impacts] based on the circumstances of each country” that is sustainable.²²³ There is increasing consensus that states must adopt targets relating to reducing materials consumption and, more broadly, their environmental footprint.²²⁴ Such legislatively-imposed targets would set limits on natural resource consumption, and product- or industry-specific legislation would set materials consumption limits.²²⁵ Finland and the Netherlands have already set specific domestic resource consumption limits.²²⁶ Likewise, the EU has a Circular Economy Action Plan, which sets out a roadmap to achieve a circular economy, and the European Green Deal sets quantitative targets for resource decoupling by 2050.²²⁷ With respect to environmental footprint targets, there are increasing calls for states to commit to halving raw material consumption by 2030 or, alternatively, to halve the environmental footprint of production and consumption, which goes beyond strictly addressing natural resource consumption to include pollution, land use, and other environmental externalities.²²⁸ These are but a few examples of the targets necessary to legally

221. See, e.g., HELM, *supra* note 50, at 122-23.

222. See, e.g., HELM, *supra* note 26, at 130-31.

223. VICTOR, *supra* note 42, at 224-25.

224. See, e.g., Harvey Locke et al., *A Nature-Positive World: The Global Goal For Nature*, (Apr. 2021) https://www.nature.org/content/dam/tnc/nature/en/documents/NaturePositive_GlobalGoalCEO.pdf [<https://perma.cc/6NHD-HR4T>]; Phoebe Weston & Patrick Greenfield, *What does ‘nature positive’ mean – and can it rally support to stop biodiversity loss?*, THE GUARDIAN (Dec. 13, 2022), <https://www.theguardian.com/environment/2022/dec/13/nature-positive-two-words-hoping-drive-deal-for-nature-cop15-aoe> [<https://perma.cc/QRH2-K8MK>] (noting civil society’s calls for nature positive targets for governments and companies); Robert Costanza, *To build a better world, stop chasing economic growth*, NATURE (Dec. 20, 2023), <https://www.nature.com/articles/d41586-023-04029-8> [<https://perma.cc/Q9H3-STLA>] (noting growing consensus for legislation imposing “a binding target to reduce material footprints and real, area-based nature restoration”); EDWARD B. BARBIER, *supra* note 7, at 126-28 (arguing for the need for binding targets implementing planetary boundaries, such as no net loss of ecosystems).

225. Club of Rome & Systemiq, *System Change Compass: A Practitioners’ Guide to Sustainable Products Policies* 1, 5 (Feb. 2022), <https://www.systemiq.earth/wp-content/uploads/2022/03/System-Change-Compass-Guide-for-Sustainable-Products-Policy.pdf> [<https://perma.cc/ZX7G-S3L4>].

226. *Id.*; Government of the Netherlands, *A Circular Economy in the Netherlands by 2050*, (2016), https://circulareconomy.europa.eu/platform/sites/default/files/17037circulaireconomie_en.pdf [<https://perma.cc/852N-A6QG>].

227. Club of Rome & Systemiq, *supra* note 226, at 4; European Parliament Resolution of 10 February 2021 on the New Circular Economy Action Plan (2020/2077(INI)).

228. DALBERG ADVISORS, *HALVE HUMANITY’S FOOTPRINT ON NATURE TO SAFEGUARD OUR FUTURE* (Emily McCoy & Barney Jeffries eds., Aug. 2021), p. 24; SAMANTHA POWER ET AL., *supra* note 200,

mandate the transition to sustainable economies. Other targets may address specific industries, nature impacts, or economic activity.

Legally binding targets can be an effective tool to catalyze action towards an overarching objective and harmonize that action across different stakeholders.²²⁹ This is particularly true with issues like climate change or nature loss that require systemic transformation of economies and societies.²³⁰ The benefit of an organizing objective is seen in multilateral environmental agreements, which provide the same coordinating and compulsory effect as analogous targets at the national level.²³¹ Where international targets harmonize the conduct of states, national targets coordinate the conduct of both the public and private sectors across the entire economy. Indeed, the GBF envisages “national targets” as part of implementing its “goals and targets.”²³² Another benefit of this policy mechanism is its flexibility: both governments and private actors must achieve the same result but retain discretion to determine the means. Thus, diverse stakeholders with different nature-related impacts and dependencies, as well as varying operations, risks, and cost and profit models can devise and implement the means that account for their specific circumstances.

Climate change provides an instructive example of the necessity of targets and what is needed to ensure their efficacy. There is international, science-backed consensus that global warming must be limited to well below 1.5°C to avoid the most catastrophic levels of climate change.²³³ This, in turn, dictates a remaining global carbon budget and emissions reduction pathway for individual states.²³⁴ Staying within that temperature limit will require reducing greenhouse gas emissions by

at 53–04 (suggesting imposed upstream planning for businesses to reduce their negative nature footprint).

229. SIRINI JEUDY-HUGO ET AL., OECD/ IEA CLIMATE CHANGE EXPERT GROUP, , UNDERSTANDING COUNTRIES’ NET ZERO EMISSIONS TARGETS 29 (2021) (discussing how climate targets at the national and sub-national level can have mutually reinforcing and coordinating effects).

230. Timon McPhearson et al., *Radical Changes are needed for transformations to a good Anthropocene*, NATURE (Feb. 23, 2021), <https://www.nature.com/articles/s42949-021-00017-x> [<https://perma.cc/M8R4-S5P5>]; Rachel Jetel, *What is Systems Change? 6 Questions, Answered*, WORLD RESOURCES INSTITUTE (Nov. 4, 2022), <https://www.wri.org/insights/systems-change-how-to-top-6-questions-answered>; see also Systems Change Lab, “Shifts,” <https://systemschangelab.org/shifts> [<https://perma.cc/U657-L5BU>]; see also Systems Change Lab, “Systems and Shifts,” <https://perma.cc/3FRR-5GN4>.

231. WORLD WILDLIFE FUND FOR NATURE, *supra* note 149, at 4 (noting that “binding global nature recovery targets/goals . . . provide the overarching framework needed to drive a global coordinated response across public and private actors”); BUSINESS FOR NATURE, *supra* note 225, at 3 (noting that binding nature targets would provide businesses with “long-term certainty” needed to invest in changing business models by “provid[ing] clear direction and ambition” for necessary action).

232. *Kunming-Montreal GBF*, *supra* note 44, Target 16.

233. INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE, *Summary for Policymakers*, in CLIMATE CHANGE 2023: SYNTHESIS REPORT 15 (2023).

234. JOSEPH G. CANADELL, ET AL., INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE, *Chapter 5: Global Carbon and Other Biogeochemical Cycles and Feedbacks*, in SIXTH ASSESSMENT REPORT: THE PHYSICAL SCIENCE BASIS 777 (2021).

60 percent by 2035, 69 percent by 2040, and reaching neutrality by 2050.²³⁵ These quantifiable and timebound targets have catalyzed national action. By 2021, over eighty countries had set national net-zero targets in line with the UNFCCC and Paris Agreement.²³⁶ However, the Global Stocktake of States' action on climate change reveals that the majority of states are not on track to limit their emissions as pledged under the Paris Agreement, and even if they did, the world is still projected to reach average warming of 2.8°C by 2100.²³⁷ States' climate targets have been ineffective because of their largely non-binding status and lack of follow-on policy action.²³⁸ The United Kingdom is attempting to overcome these obstacles; it is one of the first countries to set legally binding carbon budgets, restricting the total amount of greenhouse gasses that it can emit.²³⁹ Applied to nature loss, states can set legally binding sustainable economy targets to guide national action, and to operationalize international targets set in the SGE framework convention.

Accurately setting and monitoring progress towards such targets will require continued study to improve upon existing metrics for measuring ecological footprints.²⁴⁰ There are a number of existing metrics that states can use to measure progress towards sustainable economy targets, such as land use, material consumption, material and resource flows and stocks measured by the International Resources Panel, natural capital and ecosystem accounting frameworks,²⁴¹ and planetary boundaries metrics.²⁴²

However, net zero commitments are not worth the paper they are written on unless accompanied by the necessary implementing policies, such as emissions taxes or trading schemes, subsidies for green energy, and removal of subsidies for fossil

235. INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE, *Longer Report*, in SIXTH ASSESSMENT SYNTHESIS REPORT 59 fig. 2.5 (2023).

236. Cynthia Elliott and Clea Schumer, *Your Country Set a Net-Zero Target: What's Next?*, WORLD RESOURCES INSTITUTE (Feb. 7, 2022), <https://www.wri.org/insights/net-zero-target-whats-next> [<https://perma.cc/BJJ2-SL5W>].

237. United Nations, *Global Stocktake reports highlight urgent need for accelerated action to reach climate goals* (Dec. 1, 2024), <https://www.un.org/en/climatechange/global-stocktake-reports-highlight-urgent-need-for-accelerated-action-to-reach-climate-goals> [<https://perma.cc/F72Q-8GJA>]; IPCC, *supra* note 234, at 11.

238. Climate Action Tracker, "CAT Net Zero Target Evaluations," https://climateactiontracker.org/global/cat-net-zero-target-evaluations/#section__in-depth-net-zero-evaluation-by-country [<https://perma.cc/P7MX-RU6M>]; see generally INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE, CLIMATE CHANGE 2023: SYNTHESIS REPORT (2023).

239. Cynthia Elliott and Clea Schumer, *supra* note 237; U.K. Department for Energy Security and Net Zero and Department for Business, "Guidance: Carbon Budgets," <https://www.gov.uk/guidance/carbon-budgets> [<https://perma.cc/N383-3Y5G>].

240. POWER ET AL., *supra* note 200, at 58.

241. See UN, *How Natural Capital Accounting Contributions to Integrated Policies for Sustainability*, System of Environmental Economic Accounting (2020), https://seea.un.org/sites/seea.un.org/files/seea_-_overview_-_web_ready.pdf.

242. These indicators must include data on the ecological footprint of the full scope of a company's operations, including throughout its supply chain, otherwise companies and countries can outsource their ecological footprints. DALBERG ADVISORS, *supra* note 229, at 24.

fuels.²⁴³ The EU has taken steps to strengthen its European Climate Law. Only five days after passing that law, the European Commission presented a series of legislative proposals called the “Fit for 55 Package,” which sets out the measures the Commission will take to reach the 2030 target.²⁴⁴ The proposals include reforms to the EU Emissions Trading Scheme, Member States’ annual greenhouse gas emissions reductions targets published pursuant to the Effort Sharing Regulation, emissions standards for cars, as well as introducing a carbon border adjustment mechanism to prevent outsourcing emissions.²⁴⁵ Sustainable economy targets need similarly specific transition plans and policies that set out which sectors and economic activities must transition to sustainability, when that transition must occur, and what is required to achieve that transition.²⁴⁶ In addition, these pathways must include near-term and sector-specific milestones to provide a basis for tracking progress towards sustainability and strengthening accountability.²⁴⁷

Akin to the international context, developing national transition plans to achieve sustainable economy targets would benefit from the establishment of governmental task forces to develop roadmaps or action plans proscribing and coordinating actions by and between different government bodies, agencies, and branches.²⁴⁸ For example, U.S. President Joe Biden created the National Climate Task Force comprised of more than twenty-five Cabinet-level leaders across agencies working towards several unifying goals: (1) reducing U.S. greenhouse gas emissions 50–52 percent below 2005 levels by 2030; (2) reaching 100 percent carbon pollution-free electricity by 2035; and (3) achieving a net-zero emissions economy by 2050.²⁴⁹

243. Cynthia Elliott and Clea Schumer, *Your Country Set a Net-Zero Target: What's Next?*, WORLD RESOURCES INSTITUTE (Feb. 7, 2022), <https://www.wri.org/insights/net-zero-target-whats-next>.

244. LIBRARY OF CONGRESS, *European Union: European Climate Law on Achieving Climate Neutrality by 2050 Enters into Force* (Aug. 31, 2021), <https://www.loc.gov/item/global-legal-monitor/2021-08-31/european-union-european-climate-law-on-achieving-climate-neutrality-by-2050-enters-into-force> [<https://perma.cc/C85V-HXDQ>].

245. *Id.*

246. JEUDY-HUGO ET AL., *supra* note 230, at 28.

247. *Id.*

248. Norway and the United Kingdom appear to be taking the lead in this regard. Norway established the Nature Risk Commission to study the link between Norway’s economy and nature, to assess the risks associated with nature loss, and to identify the emerging regulatory frameworks to address this challenge. The United Kingdom commissioned the Dasgupta Report to study the global economy’s dependence on nature and the policy solutions to creating a sustainable economy and has subsequently devoted funds for the creation of a Nature Positive Economy Programme. See Norway’s Nature Risk Commission, “About the commission” <https://naturrisikoutvalget.no/en/om-utvalget-english/> [<https://perma.cc/6GHY-5GQX>] (last visited Dec. 1, 2024); HM Treasury, *UK Government supports developing countries to build nature positive economies*, (Dec. 15, 2022), <https://www.gov.uk/government/news/uk-government-supports-developing-countries-to-build-nature-positive-economies> [<https://perma.cc/X9SA-3CFK>]; HM Treasury, *Final Report - The Economics of Biodiversity: The Dasgupta Review*, <https://www.gov.uk/government/publications/final-report-the-economics-of-biodiversity-the-dasgupta-review> [<https://perma.cc/S4X4-6DFT>].

249. THE WHITE HOUSE, “President Biden’s Historic Climate Agenda,” <https://www.whitehouse.gov/climate/>.

The United Kingdom established an independent climate change advisory body to provide policy advice towards achieving their binding net zero target.²⁵⁰ The United Kingdom is an instructive example beyond the climate context. It created the Natural Capital Committee, an independent advisory committee to provide the government with advice on how to deliver comprehensive legislation to protect and restore the environment.²⁵¹ The Natural Capital Committee presented the government with a 25 Year Environmental Plan to preserve and restore the environment within one generation, which was then enacted as binding law in 2021.²⁵² The plan contains a number of binding nature targets, such as restoring 75 percent of the one million hectares of terrestrial and freshwater protected sites to favorable condition, doubling resource productivity by 2050, and zero avoidable waste by 2050.²⁵³

The United States, along with other G7 and G20 countries, should develop National Sustainable Economy Task Forces that, unlike the U.S. National Climate Task Force, are legally bound by sustainable economy targets, such as halving the nation's environmental footprint by 2030 or achieving a sustainable economy by 2040.²⁵⁴ A task force can provide an institution solely dedicated to this transformational change that has governmental authority and the ability to harmonize action across all government institutions and branches. The taskforce can bring together stakeholders across all industries to leverage their collective expertise to set out the comprehensive set of necessary sustainable economy targets and implementing policies. Further, such efforts would complement any sustainable economy roadmapping occurring at the international level, including any SGE framework convention. It also offers another point of synergy between the two roadmaps. The GCEN and subsequent protocols of the SGE framework convention may assist national task forces by providing economy-wide and/or sector-specific guidance.

250. Elliott and Schumer, *supra* note 237.

251. U.K. Government, "Natural Capital Committee (NCC)," <https://www.gov.uk/government/groups/natural-capital-committee> [<https://perma.cc/6UZW-WE4L>] (last visited Dec. 1, 2024).

252. U.K. Department for Environment, Food & Rural Affairs and The Rt Hon Michael Gove, "25 Year Environment Plan," <https://www.gov.uk/government/publications/25-year-environment-plan> [<https://perma.cc/B42L-NY4T>] (last updated Feb. 17, 2023).

253. U.K. Department for Environment, Food & Rural Affairs, *At a glance: summary of targets in our 25 year environment plan*, Policy Paper, <https://www.gov.uk/government/publications/25-year-environment-plan/25-year-environment-plan-our-targets-at-a-glance> [<https://perma.cc/L2NY-KJPJ>].

254. For example, the UK has committed £7.2 million to a new Nature Positive Economy Programme to "transition [] developing countries to nature positive economies" through private sector disclosure, integrating nature at country level, clear and comprehensive action plans for a nature positive economy, and evidence sharing mechanisms. *See, e.g.*, HM Treasury, "UK Government supports developing countries to build nature positive economies," (Dec. 15, 2022), <https://www.gov.uk/government/news/uk-government-supports-developing-countries-to-build-nature-positive-economies> [<https://perma.cc/X9SA-3CFK>].

B. Fiscal Policy

Fiscal policy is the second core component of the emerging sustainable economy roadmap. The IPBES concludes that the transition to a sustainable economy requires “market based [instruments such as] green taxes, credits, certification, [and] subsidies.”²⁵⁵ It specifically identifies the imposition of environmental taxes and elimination of environmentally harmful subsidies as essential to the transition.²⁵⁶ GBF Target 18 reflects this scientific consensus and commits States to “eliminate, phase out or reform incentives . . . harmful for biodiversity” and “scale up positive incentives for . . . conservation and sustainable use.”²⁵⁷

Fiscal policy can create the needed incentives to transition to a sustainable economy because it can align economic activity and financial flows with planetary boundaries by shifting incentives away from environmental degradation and towards nature preservation and restoration.²⁵⁸ Taxes and subsidies are particularly effective because they provide continuous incentives to producers and consumers in the form of price signals to minimize or eliminate negative nature-related impacts.²⁵⁹ There is growing consensus that achieving a sustainable economy requires imposing taxes to incentivize sustainable production and consumption, internalize environmental costs, and operationalize planetary boundaries, as well as eliminating environmentally harmful subsidies.²⁶⁰

1. Taxes

Taxes are integral to achieving the sustainable global economy. The IPBES concluded that environmental taxes have proven very effective at “recalibrat[ing] [] econom[ies]” by disincentivizing environmental degradation.²⁶¹ Environmental

255. IPBES, *supra* note 43, at 962.

256. *Id.*, at 954–960; *see also* DASGUPTA – ABRIDGED VERSION, *supra* note 45, at 74–75.

257. *Kunming-Montreal GBF*, *supra* note 44, Target 18.

258. BUSINESS FOR NATURE, *supra* note 225 (advocating for “transformative change” by “review[ing], disclos[ing], and shift[ing] away from direct and indirect subsidies and tax policy that incentivize the degradation and overexploitation of nature and redirect[ing] them towards sustainable use, resilience, restoration and circularity.”); POWER ET AL., *supra* note 200, at 65.

259. POWER ET AL., *supra* note 200, at 50 (noting that environmental taxes and subsidies “incentivize a change in practices (both on the demand and supply side) by raising the cost of doing business as usual (in line with the “polluter pays” principle)”); *see also* IPBES, *supra* note 43, at 952–60.

260. *See, e.g., Id.*; European Commission, “Phasing out Environmentally Harmful Subsidies,” https://environment.ec.europa.eu/economy-and-finance/phasing-out-environmentally-harmful-subsidies_en [<https://perma.cc/24UN-U9KG>]; Business for Nature, *Reform \$1.8 trillion yearly environmentally harmful subsidies to deliver a nature-positive economy*, (Feb. 17, 2022), ; OECD, *Tracking Economic Instruments and Finance for Biodiversity* (2022), p. 2, <https://www.oecd.org/environment/resources/tracking-economic-instruments-and-finance-for-biodiversity-2020.pdf>. <https://www.businessfornature.org/news/subsidy-reform> [<https://perma.cc/797L-8LPJ>]; ORGANIZATION FOR ECONOMIC CO-OPERATION AND DEVELOPMENT, *TRACKING ECONOMIC INSTRUMENTS AND FINANCE FOR BIODIVERSITY 2* (2021), <https://www.oecd.org/content/dam/oecd/en/topics/policy-sub-issues/biodiversity/tracking-economic-instruments-and-finance-for-biodiversity-2021.pdf> [<https://perma.cc/ZBL2-497H>].

261. IPBES, *supra* note 235, at 836.

taxes directly address market failures by assigning a price to nature and, therefore, making polluters pay the cost of its destruction.²⁶² This is known as the “polluter pays” principle.²⁶³ Environmental taxes implement this principle by ensuring that “all prices . . . fully incorporate all costs” and if “prices are corrected to internalize the pollution, and hence the polluter pays, the . . . economy takes on the challenge of reducing pollution.”²⁶⁴ In other words, reducing negative nature impacts becomes a central objective to improve a company’s balance sheet. This “support[s] transformative change [by] . . . modif[y]ing the competition rules in a market economy, requiring companies to redesign products and business models by taking [ecological] limitations . . . into account.”²⁶⁵ Thus, in the sustainable global economy, environmental taxes serve two essential purposes: (1) implementing the polluter pays principle, and (2) operationalizing planetary boundaries.

Taxes addressing nature loss can take many forms, but they must address the full scope of a State’s ecological impacts. All States must address unsustainable production and consumption in their environmental tax reform, which the IPBES concluded are “major driver[s] of resource use and depletion” “both on the micro/household and on macro/cross-national levels.”²⁶⁶ There are a number of taxes that can address this issue, such as taxes on products that use raw materials,²⁶⁷ products that do not include recycled or reused material, rare or critical natural resources, resource consumption, or waste.²⁶⁸ These taxes would provide a continuous incentive to producers to reduce the resources used in the production of their goods or services. However, addressing the full scope of a State’s ecological impacts will depend on its specific circumstances. There are many taxes that can address negative nature impacts, such as taxes on pesticide or fertilizer use to address their deleterious impacts on soil biodiversity and pollinators; on land use or transformation to address habitat loss and ecosystem degradation; and on services or products that contribute to

262. ZAKARIA AISSA, ORGANISATION FOR ECONOMIC CO-OPERATION AND DEVELOPMENT, ENVIRONMENTAL TAXATION: A GUIDE FOR POLICYMAKERS, 1 (2011).

263. See generally HELM, *supra* note 50, Chapter 6.

264. *Id.* at 95, 103.

265. IPBES, *supra* note 43, at 958.

266. *Id.* at 956, 958.

267. A tax on virgin materials will incentivize substitution of virgin materials with secondary and recycled materials. It can be applied at various stages of production: (i) at the stage of extraction of raw material, (ii) at the input of the material at the first industrial use, or (iii) at the final consumption stage of products with embedded material content. See Leonidas Milios, *Towards a Circular Economy Taxation Framework: Expectations and Challenges of Implementation*, 1 CIRCULAR ECONOMY AND SUSTAINABILITY 477, 480 (2021); see generally POWER ET AL., *supra* note 200.

268. OECD, *supra* note 261, at 5; Kevin Moss, et al., Mari Pantsar & Scott Vaughn, *Toward a Low-Carbon Circular Economy: The emerging role of trade*, IISD (Nov. 24, 2021), <https://www.iisd.org/articles/low-carbon-circular-economy-emerging-role-trade> [<https://perma.cc/ZHC2-62Q7>]; WORLD BANK, SQUARING THE CIRCLE: POLICIES FROM EUROPE’S CIRCULAR ECONOMY TRANSITION 111 <https://www.worldbank.org/en/region/eca/publication/squaring-circle-europe-circular-economy-transition> [<https://perma.cc/E7RD-8YWA>].

ecosystem destruction or deforestation.²⁶⁹ The precise composition of taxes imposed by a State should be guided by the primary nature impacts of its economy, the best available science, the largest industries driving their economy, and any other existing or planned sustainable economy policies.

Environmental taxes must also operationalize planetary boundaries to ensure that national economies are bounded within them. The leading scientific and economic experts on planetary boundaries have concluded that “[e]nvironmental taxation . . . could be used at the core of a broad policy mix to internalize damages that occur before planetary boundaries are reached, and to ensure adherence to those boundaries.”²⁷⁰ The tax rate is set equal to the shadow price—that is, the estimated monetary value of a marginal increase towards transgressing the relevant planetary boundary.²⁷¹ The tax rate must then “increase strongly” until it reaches a steady state that maintains “net zero” nature impact levels.²⁷² The tax consequently provides continuous financial incentive to respect critical planetary boundaries by internalizing the “marginal damage that occur[s] while approaching [the exogenously set ecological] limit.”²⁷³ Thus, even where a polluter may otherwise be willing to pay to degrade nature beyond a critical threshold, environmental taxes operationalizing these boundaries ensure that option is cost prohibitive. Studies show that environmental taxes are very effective, particularly when coupled with other stringent policy tools.²⁷⁴ For example, as part of the 1999 Swedish Environmental Code’s mandate to solve all the country’s environmental problems within a single generation, Sweden imposed taxes on pollution, pesticides, and waste.²⁷⁵ The taxes on sulfur dioxide emissions and greenhouse gases led to 90 percent and 20 percent reductions in those emissions, respectively.²⁷⁶ The United Kingdom introduced a landfill tax in 1996 reducing the amount of waste sent to the landfill from 50 million metric tons in 2001 to 12 million metric tons in 2015.²⁷⁷

However, to be effective, sustainable economy taxes must have broad scope and uniform application. The OECD emphasizes that the tax’s scope “should ideally

269. OECD, *supra* note 261; IPBES, *supra* note 43, at 958.

270. Sureth, et al., *supra* note 69, at 524; *see also* DIETER HELM, *supra* note 50.

271. Sureth, ET AL., *supra* note 69, at 489, 524.

272. *Id.* at 525.

273. *Id.* at 527.

274. *See, e.g.*, Yemane Wolde-Rufael and Eyob Mulat-Wedlemeskel, *Do environmental taxes and environmental stringency policies reduce CO2 emissions? Evidence from 7 emerging economies*, ENVIRON. SCI. POLLUT. RES. INST. 22392, 2203 (2021); Yemane Wolde-Rufael and Eyob Mulat-Wedlemeskel, *Effectiveness of environmental taxes and environmental stringent policies on CO2 emissions: the European experience*, ENVI., DEVELOP. & SUSTAINABILITY (2023); Haiyan Liu et al., *The path to sustainable environment: Do environmental taxes and governance matter?*, 31 SUSTAINABLE DEVELOPMENT 2278 (2023).

275. IPBES, *supra* note 235, at 836; *see also* OECD, *The Swedish Tax on Nitrogen Oxide Emissions*, (Dec. 24, 2013).

276. IPBES, *supra* note 235, at 836.

277. Mauro Anastasio, European Environmental Bureau, *The 5 Most Successful Environmental Taxes in Europe*, META (Nov. 23, 2017), <https://meta.eeb.org/2017/11/23/the-5-most-successful-environmental-taxes-in-europe> [<https://perma.cc/F3EV-888A>].

be as broad as the scope of the environmental damage” and apply uniformly to provide homogenous mitigation incentives on every unit of environmental degradation and to minimize the cost of compliance and administration.²⁷⁸ Broad scope and uniform application are particularly important to address nature loss, which is driven by nearly every facet of economic activity. Nature loss is a global phenomenon, and the economic actors driving this crisis are not confined to a single jurisdiction, but rather operate transnationally. Consequently, environmental taxes, including those operationalizing planetary boundaries, must be global.²⁷⁹ First, international coordination is required.²⁸⁰ This is another instance in which the international and national policy roadmaps are linked. The SGE framework convention can commit states to implementing a comprehensive set of environmental taxes that operationalize the planetary boundaries identified in that treaty. Second, states implementing these taxes can apply them not just to goods or services produced, but also consumed in their jurisdiction.²⁸¹ For example, a carbon tax applied to all goods and services consumed in the United Kingdom would prevent the United Kingdom from effectively outsourcing their carbon emissions by importing those goods and services from foreign producers not subject to the tax.

The tax rate is also critically important. Most environmental taxes are too low to properly incentivize changes in behavior, and fail to accurately reflect the marginal cost of nature loss to society.²⁸² Setting the tax rate appropriately requires a rate commensurate with the environmental damage. Natural resource taxes must be imposed at high rates due to the price inelasticity of demand for raw materials.²⁸³ However, this can be difficult when the damage does not have a clear market value.²⁸⁴ Overcoming this uncertainty reveals the synergies between the policies proposed in the emerging sustainable economy roadmap. Experts note that valuation can be precise when derived from a specific environmental outcome adopted as a target, which allows the tax rate to be set at the level needed to achieve that target.²⁸⁵ The sustainable economy targets and planetary boundaries can anchor the corresponding rates of any sustainable economy taxes.

Despite their higher rate, environmental taxes have proven beneficial to national economies and individual firms. Environmental taxes provide a “double dividend” benefit of revenue generation that can be used to fund transitioning to

278. ORGANIZATION FOR ECONOMIC CO-OPERATION AND DEVELOPMENT (OECD), ENVIRONMENTAL TAXATION: A GUIDE FOR POLICYMAKERS 1, 5 (2011), <https://www.oecd.org/env/tools-evaluation/48164926.pdf>.

279. *Id.*; HELM, *supra* note 50, at 100, 110.

280. OECD, *supra* note 279, at 1, 5.

281. HELM, *supra* note 50, at 110.

282. EDWARD B. BARBIER & ANIL MARKANDYA, *supra* note 23, at 108 (noting that most environmental taxes are revenue raising rather than focused on incentivization, which requires a much higher rate).

283. Milios, *supra* note 268, at 480-81.

284. OECD, *supra* note 279, at 6.

285. *Id.*

sustainable business practices and nature conservation or restoration efforts.²⁸⁶ For example, Denmark earmarked 100 percent of the revenue from a pesticides tax for environmental purposes and to compensate farmers.²⁸⁷ Likewise, Costa Rica's use of a national carbon tax illustrates the "double dividend" benefit of environmental taxes. The revenue generated from that tax is used to fund small-scale farmers' reforestation and habitat protection initiatives through a national payment for ecosystem services program.²⁸⁸ Costa Rica's tax addresses biodiversity loss in two respects: by mitigating climate change—a primary driver of biodiversity loss—and incentivizing biodiversity restoration efforts. Thus, the revenue generated by the tax can in turn be used to alleviate any costs associated with compliance with sustainable economy policies, to assist companies with technological research and development necessary to transition to sustainable business practices, or to fund nature preservation and restoration. Additionally, studies show that environmental taxes stimulate job growth when imposed with a proportionate or corollary reduction in labor taxes—often a source of economic inefficiencies and market distortions.²⁸⁹ Environmental taxes contract output and employment less than conventional taxes, such as income or labor taxes.²⁹⁰ In the EU in just a four-year period from 2016 to 2020, transitioning taxes from labor to pollution and resource use would have increased GDP by 2 percent, created 6.6 million more jobs, and cut carbon emissions by 8.2 percent.²⁹¹

2. Subsidies

Comprehensively reforming the financial incentives that underpin economies requires addressing subsidies that confer financial benefits for environmental destruction. Target 18 of the GBF commits states to eliminate all environmentally harmful subsidies (EHS) by 2030.²⁹²

286. Don Fullerton, Andrew Leicester and Stephen Smith, *Env't Taxes* 10-11 (Nat'l Bureau of Econ. Rsch., Working Paper No. 14197, 2008), https://www.nber.org/system/files/working_papers/w14197/w14197.pdf [<https://perma.cc/9EH3-RF99>]; POWER ET AL., *supra* note 200, at 51-52; see also Don Fullerton & Gilbert E. Metcalf, *Env'l Taxes and the Double-Dividend Hypothesis: Did You Really Expect Something for Nothing?* 73 CHI.-KENT L. REV. 221 (1998).

287. OECD, *supra* note 261, at 7.

288. IPBES, *supra* note 235, at 837.

289. Systemiq and Club of Rome, *supra* note 226, at 7.

290. World Bank, "Environmental Tax, Global Tax Program," <https://www.worldbank.org/en/programs/the-global-tax-program/environmental-taxes#:~:text=Environmental%20taxes%2C%20by%20contrast%2C%20have,economy%20throu gh%20induced%20structural%20change> (last visited Dec. 1, 2024).

291. ELLEN MACARTHUR FOUND., UNIVERSAL CIRCULAR ECONOMY POLICY GOALS: 43 (2021).

292. GBF, Target 18, <https://www.cbd.int/gbf/targets/18> [<https://perma.cc/B8TG-UQ8W>] (last visited Dec. 1, 2024); BUSINESS FOR NATURE, *supra* note 225; Patrick Greenfield, *World spends \$1.8 trillion a year on subsidies that harm environment, study finds*, THE GUARDIAN (Feb. 16, 2022), <https://www.theguardian.com/environment/2022/feb/17/world-spends-18tn-a-year-on-subsidies-that-harm-environment-study-finds> [<https://perma.cc/X7L2-D59S>]; Doug Koplow and Ronald Steenblik, *Protecting Nature by Reforming Environmentally Harmful Subsidies: The Role of Business*, Earth Track (Feb. 2022), <https://www.earthtrack.net/document/protecting-nature-reforming-environmentally-harmful-subsidies-role-business> [<https://perma.cc/96JP-RSQ2>].

Subsidies refer to government actions that transfer financial benefits to private activity; this covers a broad array of fiscal and other policies that transfer value to private actors, including direct spending, tax expenditures (e.g., exemptions, deductions, credits), extension of sovereign credit, provision of goods or services on favorable terms, absorption of private risks, and selective regulatory exemptions.²⁹³ EHS are “government actions that by design or effect accelerate the production or consumption of natural resources or undermine broader ecosystems supporting planetary health,”²⁹⁴ which necessarily “worsen environmental damage and slow economic transition” to a sustainable economy.²⁹⁵ The classic example of an EHS is a subsidy directly to industries with large environmental footprints, such as extractives, construction, and agriculture. However, there are many types of EHS, including those that provide short term benefits rather than incentivizing needed structural change.²⁹⁶ For example, subsidizing development of plastic recycling facilities may increase reuse rates, but does nothing to disincentivize plastic use or incentivize the growth of higher-value secondary markets.²⁹⁷ The urgent and transformative nature of the change needed to transition to a sustainable economy requires addressing both the direct and indirect subsidies that incentivize the status quo.²⁹⁸

States can prioritize action in the first instance by focusing on subsidies to particularly harmful industries driving nature loss in line with the GBF, which requires states to “start[] with the most harmful incentives.”²⁹⁹ For example, agricultural subsidies alone are responsible for the loss of 2.2 million hectares of forest per year, equivalent to 14 percent of global deforestation.³⁰⁰ This is an effective starting point for states with biodiversity hotspots, critically important ecosystems, or higher rates of ecosystem degradation. For instance, beef production in the Amazon receives significant tax breaks despite being a leading driver of deforestation.³⁰¹ Likewise, palm oil production is a well-known driver of tropical deforestation—particularly in Indonesia and Malaysia which supply 85 percent of the global trade—and yet this production is subsidized.³⁰² It is, however, impossible to suggest a uniform approach

293. *See generally*, DOUG KOPLOW & AND RONALD STEENBLIK, EARTH TRACK, PROTECTING NATURE BY REFORMING ENVIRONMENTALLY HARMFUL SUBSIDIES: THE ROLE OF BUSINESS 10 (Feb. 2022).

294. *Id.* at 6.

295. *Id.* at 12.

296. *Id.* at 8.

297. *Id.*

298. *Id.*

299. *Kunming-Montreal GBF*, *supra* note 44, Target 18.

300. RICHARD DAMANIA ET AL., WORLD BANK GRP., DETOX DEVELOPMENT: REPURPOSING ENVIRONMENTAL HARMFUL SUBSIDIES, xvii (2023).

301. Patrick Greenfield, *World spends \$1.8 trillion a year on subsidies that harm environment, study finds*, THE GUARDIAN (Feb. 16, 2022), [https://www.theguardian.com/environment/2022/feb/17/world-spends-18tn-a-year-on-subsidies-that-harm-environment-study-finds-aoe#:~:text=The%20world%20is%20spending%20at,is%20financing%20its%20own%20extincti on](https://www.theguardian.com/environment/2022/feb/17/world-spends-18tn-a-year-on-subsidies-that-harm-environment-study-finds-aoe#:~:text=The%20world%20is%20spending%20at,is%20financing%20its%20own%20extincti on;); Doug Koplow and Ronald Steenblik, *Protecting Nature by Reforming Environmentally Harmful Subsidies: The Role of Business*, Earth Track (Feb. 2022), <https://www.earthtrack.net/document/protecting-nature-reforming-environmentally-harmful-subsidies-role-business>.

302. Elizabeth Robinson and Herry Purnomo, *Palm Oil: An EU ban won't save Asian*

to subsidy reform, as the specific industries driving nature loss will vary across states and each state has a different landscape of existing direct and indirect subsidies.

The principal challenge to implementing this policy reform is lack of information. EHS come in all forms and affect nearly all sectors of the economy.³⁰³ Further, studies of EHS are relatively nascent, including how to accurately assess the magnitude of those subsidies.³⁰⁴ This is in part the product of asymmetric information; the industries or individual firms benefiting from EHS “will be the only party to know the full “take” from all the various subsidy mechanisms.”³⁰⁵ Effective subsidy reform will therefore require each state to conduct a comprehensive assessment of the environmental impact of its current subsidies before it can begin repealing or reforming those subsidies.

Eliminating these subsidies would have two important effects. It would eliminate market distortions that incentivize environmental destruction.³⁰⁶ The IPBES concluded that states can achieve this objective without creating “competitiveness and distributional impacts” because “empirical analysis has found little evidence” is created by such reform.³⁰⁷ Subsidy reform would also free up government funding to dedicate to nature preservation and restoration. The United Nations estimates that governments are spending between \$500 billion and \$1 trillion a year on EHS.³⁰⁸ Other studies cite the figure as \$1.8 trillion per year of government funds, equivalent to 2 percent of global GDP.³⁰⁹ Regardless, the figure is likely much higher because estimates do not include the indirect subsidies that arise from the hidden costs of failing to make polluters pay for their environmental externalities.³¹⁰ The IPBES concluded that subsidy reform would “allow[] countries to compensate for the cost of adopting environmentally friendly production and consumption behavior.”³¹¹ Thus, these funds could be repurposed to alleviate costs of compliance, to fund the implementation of other sustainable economy policies, or to reduce market distorting taxes. For example, the cost of achieving the GBF’s goal of conserving 30 percent of the

rainforests, but here’s what might help, THE CONVERSATION (May 9, 2019), <https://theconversation.com/palm-oil-an-eu-ban-wont-save-asian-rainforests-but-heres-what-might-help-110519> [<https://perma.cc/28NC-QYAH>].

303. *See generally*, KOPLOW AND STEENBLIK, *supra* note 293.

304. *Id.* at 20.

305. *Id.* at 14.

306. Press Release, Business for Nature & The B Team, Global destruction of nature being subsidized by \$1.8 trillion annually (Feb. 17, 2022), https://static1.squarespace.com/static/5d777de8109c315fd22faf3a/t/620d340fe35ba8173c27a854/1645032464231/Subsidy_Research_Press_Release_FINAL_17_Feb_2022.pdf [<https://perma.cc/E3QM-4JQ2>].

307. IPBES, *supra* note 43, at 956.

308. Isla Binnie, *Nature needs \$384 billion annually by 2025, U.N. says*, REUTERS (Dec. 1, 2022), <https://www.reuters.com/business/environment/nature-needs-384-billion-annually-by-2025-un-says-2022-12-01/>.

309. Greenfield, *supra* note 293; KOPLOW AND STEENBLIK, *supra* note 293, at 6.

310. *Id.*

311. IPBES, *supra* note 43, at 954.

planet by 2030 only requires the funds equivalent to “less than one-third of the global government subsidies currently supporting activities that destroy nature.”³¹²

In light of the many benefits of subsidy reform, it is unsurprising that it has generated significant consensus. EHS reform has been a top biodiversity priority for the international community and is included in both the Aichi Targets and GBF. There is also considerable private sector momentum. Seven hundred and seventy-three institutional investors, with more than \$52 trillion in assets under management, signed a petition calling on governments to end a number of EHS,³¹³ and other business and industry groups have echoed this call.³¹⁴

C. Mainstreaming Nature

The final component of the emerging sustainable economy policy roadmap is to assign a value to nature in the government and private sector. Target 14 of the GBF requires States to

[e]nsure the full integration of biodiversity and its multiple values into policies, regulations, planning and development processes, . . . strategic environmental assessments, environmental impact assessments and . . . national accounting, within and across all levels of government and across all sectors, . . . progressively aligning all relevant public and private activities, and fiscal and financial flows.³¹⁵

Three actions are essential: (1) embedding nature in national economic accounts and decision-making, including through natural capital accounting and developing macroeconomic metrics that internalize planetary boundaries; (2) implementing a framework to integrate nature in private sector operations and decision-making through nature-related risks, impacts, and dependencies reporting; and (3) imposing corporate environmental due diligence obligations.

1. Government Nature Mainstreaming

Governments must embed nature in national balance sheets and economic statistics and accounts, effectively integrating nature into all levels of decision-making, such as development plans, trade or export plans, budgets, risk assessments, procurement decisions, and measurements of national wealth and economic performance. Nature is systemically important to the global economy: at least half of global GDP is moderately or highly dependent on nature and the collapse of nature

312. DASGUPTA – ABRIDGED VERSION, *supra* note 45, at 71.

313. Sara Sciammacco, *773 investors with more than US\$52 trillion issue strongest-ever unified call for governments to end fossil fuel subsidies, phase out coal, and mandate*, CERES (Oct. 27, 2021), <https://www.ceres.org/news-center/press-releases/733-investors-more-us52-trillion-issue-strongest-ever-unified-call> [<https://perma.cc/S7C8-549V>].

314. *See, e.g.*, BUSINESS FOR NATURE, *supra* note 225; Maria Ana Campos, World Business Council for Sustainable Development, *Road to COP15: aligning business action with the Post-2020 Global Biodiversity Framework and 2030 Action Targets* (June 29, 2022), <https://www.wbcsd.org/Overview/News-Insights/WBCSD-insights/Road-to-COP-15-aligning-business-action-with-the-Post-2020-Global-Biodiversity-Framework-and-2030-Action-Targets> [<https://perma.cc/YM6F-W89Q>].

315. *Kunming-Montreal GBF*, *supra* note 44, Target 14.

would shrink global GDP by 2.3 percent annually within this decade.³¹⁶ In effect, ignoring nature loss risks destroying \$44 trillion in economic value, or half of global GDP, and no national economy is safe from this risk.³¹⁷ Experts agree that embedding nature into national economic statistics and developing environmental-economic metrics is necessary to avert these severe risks.³¹⁸ In addition, the IPBES concluded that mainstreaming nature in this way results in not only better ecological and social outcomes, but also economic outcomes.³¹⁹

GDP is the prevailing metric that governments use to measure economic performance, but it fails to account for environmental degradation. It measures the monetary value of final goods and services produced in a country in a given time period.³²⁰ While GDP is valuable for short-term macroeconomic analysis, it was never intended to underpin long-term analysis.³²¹ As Section II's deforestation example illustrates, a country could achieve record economic growth by depreciating its assets, but GDP would not reflect the unsustainable character of this growth.³²² GDP's fatal flaw is that it fails to account for natural capital depletion.³²³ Experts agree that this incentivizes nature loss and significantly limits GDP's efficacy in measuring national economic performance.³²⁴

There is consensus that a more holistic measure of economic performance is required.³²⁵ The IPBES concludes that the sustainable global economy requires "a shift beyond standard economic indicators such as [GDP] to include those able to capture more holistic, long-term views of economics and quality of life."³²⁶ This

316. World Economic Forum, *supra* note 8; JUSTIN ANDREW JOHNSON, ET AL., WORLD BANK GRP., THE ECONOMIC CASE FOR NATURE: A GLOBAL EARTH-ECONOMY MODEL TO ASSESS DEVELOPMENT POLICY PATHWAYS X (Jun. 29, 2021), <https://openknowledge.worldbank.org/server/api/core/bitstreams/9f0d9a3a-83ca-5c96-bd59-9b16f4e936d8/content> [<https://perma.cc/UE6S-SDLG>].

317. IPBES, *supra* note 22, at 962-63; World Economic Forum, *supra* note 3.

318. *See generally*, BARBIER AND MARKANDYA, *supra* note 23; WHITE HOUSE OFFICE OF SCIENCE AND TECHNOLOGY POLICY, OFFICE OF MANAGEMENT AND BUDGET, AND DEP'T OF COMMERCE, NATIONAL STRATEGY TO DEVELOP STATISTICS FOR ENVIRONMENTAL-ECONOMIC DECISIONS viii (Jan. 2023), p. viii; DASGUPTA – FULL REPORT, *supra* note 23, at 5.

319. IPBES, *supra* note 1, at 14.

320. Tim Callen, International Monetary Fund, "Gross Domestic Product: An Economy's All," <https://www.imf.org/en/Publications/fandd/issues/Series/Back-to-Basics/gross-domestic-product-GDP> [<https://perma.cc/B5NB-YJ6S>].

321. DASGUPTA – FULL REPORT, *supra* note 23, at 5.; Joseph E. Stiglitz et al., Organisation for Economic Co-operation and Development, Beyond GDP: Measuring What Counts for Economic and Social Performance (Nov. 27, 2018), <https://www.oecd.org/social/beyond-gdp-9789264307292-en.htm>.

322. DASGUPTA – FULL REPORT, *supra* note 23, at 5.

323. BARBIER AND MARKANDYA, *supra* note 23, at 94.

324. *Id.*

325. *See, e.g.*, Richard Mylles, UBS Sustainability and Impact Institute, *There's a Problem with GDP. GDP is an incomplete measure. It counts the price of everything but the impact of nothing*, White Paper (May 2023), <https://www.ubs.com/global/en/sustainability-impact/sustainability-insights/2023/gdp.html> [<https://perma.cc/53XC-9ZLJ>].

326. IPBES, *supra* note 1, at 19; *see also* DASGUPTA – ABRIDGED VERSION, *supra* note 45, at, at 75-76.

is also a priority within the UN. Member States will focus on developing environmental-economic metrics as part of the 2025 SNA update and, more specifically, they will work to agree on metrics beyond GDP to ensure national decisions account for critical sustainability considerations.³²⁷ Many states are also reconsidering their reliance upon traditional economic statistics and developing new economic statistics that incorporate the value of nature.³²⁸

There are several paths forward, broadly falling into two categories: (1) incorporating nature into GDP, and (2) developing environmental-economic statistics to use instead of or alongside GDP. The first category would reform GDP to include natural capital and ecosystem services as a core component of its calculation.³²⁹ Experts identify two principal ways to do this. Nature can be incorporated directly into the production function,³³⁰ or indirectly through the damage function.³³¹ Under the latter approach, nature's contribution is reflected in the damaging impact of economic activity on nature and the consequent negative feedback from the destruction of nature to that activity.³³² However, both approaches offer an incomplete picture. Nature would also have to be incorporated into the utility function to reflect its direct contribution to well-being through ecosystem services.³³³ Experts assert that incorporating nature directly into GDP would improve the metric's ability to accurately reflect economic performance and its dependence on nature. However, there

327. The SNA is an internationally agreed standard set of recommendations on how to compile measures of economic activity. It describes a coherent, consistent and integrated set of macroeconomic accounts in the context of a set of internationally agreed concepts, definitions, classifications and accounting rules. See United Nations, "The System of National Accounts," <https://unstats.un.org/unsd/nationalaccount/sna.asp> [<https://perma.cc/2FDP-CT79>]; United Nations Statistics Division, "Wellbeing and Sustainability Task Team" (2022), ; Advisory Expert Group on National Accounts, *Accounting for Economic Ownership and Depletion of Natural Resources*, (2020), https://unstats.un.org/unsd/nationalaccount/aeg/2020/M14_6_2_Accounting_Economic_Ownership_Depletion_Natural_Resources.pdf; UN, "The Summit of the Future in 2024," <https://www.un.org/en/common-agenda/summit-of-the-future#:~:text=Having%20welcomed%20the%20submission%20of,will%20take%20place%20this%20year>. <https://unstats.un.org/unsd/nationalaccount/snaupdate/wstt.asp> [<https://perma.cc/X4T8-2CA3>]; Advisory Expert Group on National Accounts, *Accounting for Economic Ownership and Depletion of Natural Resources*, (2020), https://unstats.un.org/unsd/nationalaccount/aeg/2020/M14_6_2_Accounting_Economic_Ownership_Depletion_Natural_Resources.pdf; United Nations, "The Summit of the Future in 2024," <https://www.un.org/en/common-agenda/summit-of-the-future#:~:text=Having%20welcomed%20the%20submission%20of,will%20take%20place%20th> is%20year ..

328. For example, Finland, Iceland, Scotland, Wales, New Zealand, and Canada are all members of the Wellbeing Economy Governments partnership, which is a coalition of governments developing policies to achieve more sustainable economies, including by expanding beyond GDP. See Well-Being Economy Alliance, "Well-Being Economy Governments (WEGO)," <https://weall.org/wego> [<https://perma.cc/7XT9-8F6D>].

329. BJORN DOHRING ET AL., EUROPEAN COMMISSION, REFLECTIONS ON THE ROLE OF NATURAL CAPITAL FOR ECONOMIC ACTIVITY, Discussion Paper (Feb. 2023).

330. *Id.* at 11–19.

331. *Id.* at 19–20.

332. *Id.*

333. *Id.* at 21.

remain significant data and methodology gaps that impede accurate incorporation.³³⁴ Specifically, more research is needed into accurate valuation methodologies to assign a monetary value to non-marketed natural resources and ecosystem services.³³⁵

Proponents have put forth differing environmental-economic metrics that can be used instead of or alongside GDP. The Stiglitz Commission on the Measurement of Economic Performance and Social Progress recommends a dashboard approach to measuring economic performance, where GDP is evaluated alongside sustainability indices that measure the monetary value of nature's contributions.³³⁶ The OECD developed environmental-economic indicators around four key areas: (1) the environmental and resource productivity of the economy (i.e., environmentally-adjusted multifactor productivity growth)³³⁷; (2) the natural asset base, covering not only subsoil assets but also species and ecosystems; (3) the environmental dimension of the quality of life (e.g., air quality); and (4) economic opportunities arising from environmental protection (e.g., environmentally-related taxes and expenditure).³³⁸ There are a number of other environmental-economic metrics that can be employed in a macroeconomic metric dashboard.³³⁹ For example, world-renowned sustainable economist and Oxford professor Sir Dieter Helm advocates for abandoning GDP in favor of developing national accounts and balance sheets that assess the condition of a nation's assets and liabilities, including natural capital.³⁴⁰ Thus, preserving and restoring national capital would increase the value of the nation's assets on its balance sheet.³⁴¹ Likewise, degrading nature would be reflected as a liability.³⁴²

334. *See generally id.*; WILLIAM NICOLE & RICHARD MYLLES, *TAKING ROOT: MAINSTREAMING NATURAL CAPITAL ACCOUNTING TO MEET GLOBAL BIODIVERSITY GOALS* (Richard Morrow ed., UBS Sustainability and Impact Institute) (2023).

335. DOHRING ET AL., *supra* note 330, at 22-31

336. JOSEPH E. STIGLITZ ET AL., *MISMEASURING OUR LIVES* (The New Press 2010); *see also* DASGUPTA – FULL REPORT, *supra* note 23, at 493; *INCLUSIVE WEALTH REPORT 2018: MEASURING PROGRESS TOWARDS SUSTAINABILITY* (Shunsuke Managi & Pushpam Kumar eds., 1st ed. 2018). There are other similar metrics being developed. The World Bank has developed its Changing Wealth of Nations reports, which provide comprehensive wealth accounting that include blue natural capital (e.g., fisheries, mangroves, coastal protection services), land, forests, ecosystem services, minerals, and renewable and non-renewable natural capital. GDP and wealth accounting are complementary indicators for measuring economic performance and constitute the balance sheet of a country. *See* THE WORLD BANK, *THE CHANGING WEALTH OF NATIONS 2021: MANAGING ASSETS FOR THE FUTURE*, (2021) <https://openknowledge.worldbank.org/entities/publication/e1399ed3-ebe2-51fb-b2bc-b18a7flaaad>.

337. OECD, *supra* note 56.

338. *Id.* at 20.

339. *See, e.g.*, BARBIER & MARKANDYA, *supra* note 23 (reviewing metrics, including Core Indicators developed by the European Environmental Agency (EEA) and the European Benchmark Indicators; the EU and UN Sustainable Development Indicators; Ecological Footprint and Natural Capital Index; Canadian Index of Wellbeing; Human Development Index; Index of Individual Living Conditions; Genuine Progress Indicator; Happy Planet Index; Japan for Sustainability Indicator; Index of Sustainable Economic Welfare; FEEM Sustainability Index; Sustainable National Income).

340. HELM, *supra* note 50, at 73-94.

341. *Id.*

342. *Id.*

Regardless of the metrics adopted, there is increasing consensus that they must reflect a bounded economic system that internalizes planetary boundaries.³⁴³ This requires quantifying, valuing, and internalizing these boundaries into financial and economic metrics, either incorporating them into GDP and other existing metrics or developing these limits as a separate metric to be used in a statistical dashboard.³⁴⁴ Experts conclude that this can be achieved by setting physical thresholds for different natural resources or planetary boundaries and requiring that those thresholds not be breached.³⁴⁵ Scientists have identified as important biodiversity boundaries (1) indices on biodiversity intactness; (2) species abundance or richness; (3) net primary productivity; (4) no net loss of natural ecosystems; and (5) the Living Planet Index—an index of mammal, bird, reptile, amphibian and fish species from around the world.³⁴⁶ To operationalize ecological boundaries, sustainability thresholds would be imposed to determine the maximum level of output consistent with those thresholds.³⁴⁷ Sir Partha Dasgupta, renowned environmental economist and Cambridge professor, puts forward a mathematical model operationalizing planetary boundaries to bind economic output.³⁴⁸ Other experts suggest a ‘planetary accounting framework’ that quantifies environmental impacts and compares them to global limits, or planetary quotas, that set sustainability limits for human activity based on essential ecological boundaries for global environmental preservation and restoration.³⁴⁹ However, this component of nature mainstreaming is far less developed and will require scientific and economic expertise to identify a comprehensive set of ecological limits that accurately reflect the safe operating space for humanity. These include how to quantify and, where relevant, value those limits; how to disaggregate those limits to the national and sub-national levels; and how to implement these limits in environmental-economic statistics to ensure the global economy is bounded within them.³⁵⁰

343. IPBES, *supra* note 1, at 18-19; KATE RAWORTH, *DOUGHNUT ECONOMICS: 7 WAYS TO THINK LIKE A 21ST CENTURY ECONOMIST* (2017) (ebook); World Economic Forum, *supra* note 8; DASGUPTA – ABRIDGED VERSION, *supra* note 45.

344. Meyer & Newman, *supra* note 73; DASGUPTA – FULL REPORT, *supra* note 23, Chapter 4 (putting forward a model binding the global economy within planetary boundaries and/or critical ecological thresholds); *see also* HELM, *supra* note 50 (noting that “natural capital is an asset-in-perpetuity, provided that they do not fall below their critical thresholds”).

345. BARBIER AND MARKANDYA, *supra* note 23.

346. BARBIER, *supra* note 7.

347. BARBIER AND MARKANDYA, *supra* note 23; *see, e.g.*, Reyer Gerlagh et al., *A Measure of Sustainable National Income for the Netherlands*, 41 *ECOLOGICAL ECONOMICS* 157, (2002).; ROEFIE HUETING, *NEW SCARCITY AND ECONOMIC GROWTH: MORE WELFARE THROUGH LESS PRODUCTION?* (Trevor Preston trans., North-Holland Publishing Company 1980). (argued that sustainable income was equal to the actual level of income less costs of sustainability constraints).

348. DASGUPTA – FULL REPORT, *supra* note 23, Chapter 4.

349. Meyer & Newman, *supra* note 73.

350. *Id.*; Leonardo Vargas et al., *Linking planetary boundaries and ecosystem accounting, with an illustration for the Colombian Orinoco river basin*, 18 *REGIONAL ENVIRONMENTAL CHANGE* 1521 (2018).

Operationalizing any environmental-economic metrics will require developing national natural capital accounting frameworks for both government and private sector decision making.³⁵¹ As detailed in Section II, natural capital accounting provides a quantifiable measure of nature's contribution to economic performance by providing biophysical and economic data on the stock of natural resources and the flows of resources and ecosystem services that undergird the economy. In effect, it seeks to measure and integrate nature's value into accounting practices, ranging from government statistics to corporate balance sheets. Implementing a standardized system of natural capital accounting is essential to mainstreaming nature in both the public and private sectors.³⁵² To facilitate full integration of any natural capital accounting system, the system must be adopted uniformly across states given the interdependence of the global economy. Such statistics therefore require the development of consistent, accurate, and universally applicable frameworks for natural capital and ecosystem services accounting, to accurately assess and quantify nature-related dependencies, impacts, and risks.³⁵³ While there is increasing momentum among states and companies, natural capital accounting has not, as yet, been comprehensively adopted across economies and industries.³⁵⁴ The UN-SEEA framework has the most traction, being used to develop macroeconomic measures that integrate nature.³⁵⁵

There is significant momentum to develop natural capital accounting systems. As of 2022, forty-one countries use the UN-SEEA, including France, Germany, Italy, Netherlands, New Zealand, and Sweden.³⁵⁶ Further, some of these countries used it to develop environmental-economic metrics. For example, New Zealand's Living Standards Framework is an inclusive wealth measurement that integrates measures of natural capital.³⁵⁷ China developed Gross Ecosystem Product (GEP), which uses market prices and surrogates for market prices to calculate the accounting value of ecosystem services and aggregate them into a measure of the contribution of ecosystems to the economy.³⁵⁸ The United States is also taking significant steps to integrate nature into traditional measurements of economic activity. In January 2023, at the WEF

351. DASGUPTA – FULL REPORT, *supra* note 23, at 494; IPBES, *supra* note 1, at 962-963.

352. *See id.*; *see also*, WILLIAM NICOLE & RICHARD MYLLES, *TAKING ROOT: MAINSTREAMING NATURAL CAPITAL ACCOUNTING TO MEET GLOBAL BIODIVERSITY GOALS* (Richard Morrow ed., UBS Sustainability and Impact Institute) (2023).

353. *Reflections on the Role of Natural Capital for Economic Activity*, at 22-31 (Feb, 2023), https://economy-finance.ec.europa.eu/document/download/a63334d5-ee2f-4b76-b82d-a12d17964759_en?filename=dp180_en.pdf.

354. NICOLE & MYLLES, *supra* note 353, at 8.

355. *See* Zhiyun Ouyang et al., *Using gross ecosystem product (GEP) to value nature in decision making*, 117 PROC. NAT'L ACAD. SCI. 14593 (2020).

356. Carrie Exton & Michal Shinwell, *Policy use of well-being metrics: Describing countries' experiences* (OECD Statistics, Working Paper No. 94, 2018); NICOLE & MYLLES, *supra* note 353, at 11.

357. *Our Living Standards Framework*, New Zealand Treasury (Apr 12, 2022), <https://www.treasury.govt.nz/information-and-services/nz-economy/higher-living-standards/our-living-standards-framework> [<https://perma.cc/J53Z-USZN>].

358. Ouyang et al., *supra* note 356.

annual gathering, U.S. Special Envoy for Climate Change, John Kerry, announced the Biden Administration’s National Strategy to Develop Statistics for Environmental-Economic Decisions.³⁵⁹ The strategy establishes a “pathway to bring nature into the national economic accounts by developing natural capital accounts supported by environmental-economic statistics.”³⁶⁰ National, regional, and state-level statistics will be developed and included in the framework.³⁶¹ The United States will use the UN-SEEA to develop a macroeconomic dashboard that complements GDP with environmental-economic statistics that treat nature as an economic “asset and incorporate[] these natural assets on the national balance sheet.”³⁶² The strategy will embed nature in the national economic accounts³⁶³ and the “broader U.S. econom[y].”³⁶⁴

2. Private Sector Nature Mainstreaming

Mainstreaming nature in private sector operations and decision-making will require two reforms: (1) establishing a standardized framework for nature-related financial disclosures; and (2) imposing nature-related due diligence obligations.

1. Nature-Related Financial Disclosures

There is broad consensus that a sustainable global economy will require states to mandate that companies and financial institutions embed nature within their operations throughout their value chain. Target 15 of the GBF commits states to “[t]ake legal, administrative or policy measures” to require businesses to “regularly monitor, assess, and transparently disclose their risks, dependencies and impacts on” nature “along their operations, supply and value chains and portfolios.”³⁶⁵

Nature-related disclosures place nature at the center of financial risk assessment to align firm financial and environmental performance. A number of frameworks have emerged to assist companies in making these disclosures. For example, the International Sustainability Standard Board (ISSB) announced that it will expand its climate-related disclosure standard to include biodiversity.³⁶⁶ Likewise, the Global

359. U.S. Dep’t of Commerce, *Fact Sheet: Biden-Harris Administration Releases National Strategy to Put Nature on the Nation’s Balance Sheet*, Press Release (Jan. 19, 2022), <https://www.commerce.gov/news/press-releases/2023/01/fact-sheet-biden-harris-administration-releases-national-strategy-put> [<https://perma.cc/5QVP-PSBT>].

360. THE WHITE HOUSE, NATIONAL STRATEGY TO DEVELOP STATISTICS FOR ENVIRONMENTAL-ECONOMIC DECISIONS viii (2023), <https://www.whitehouse.gov/wp-content/uploads/2022/08/Natural-Capital-Accounting-Strategy.pdf>.

361. *Id.* at viii.

362. *Id.*

363. National economic accounts are defined as “statistics on U.S. production, consumption, investment, exports, imports, and savings.” *See id.*

364. *Id.*; Lydia DePillis, *White House Aims to Reflect the Environment in Economic Data*, N.Y. TIMES (Jan. 20, 2023), <https://www.nytimes.com/2023/01/20/business/economy/economic-statistics-climate-nature.html>.

365. *Kunming-Montreal GBF*, *supra* note 44, Target 15.

366. Isla Binnie, *Global sustainability rules body steps up focus on biodiversity*, REUTERS (Dec. 14, 2022), <https://www.reuters.com/business/environment/global-sustainability-rules-body-steps-up-focus-biodiversity-2022-12-14/>; Mark Segal, *ISSB to Add Biodiversity, Just Transition*

Reporting Initiative proposed a new biodiversity standard requiring companies to report on biodiversity impacts throughout their supply chains and disclose drivers of biodiversity loss.³⁶⁷ Broadly, these frameworks require companies to disclose three types of nature-related risks: physical, transition, and systemic.³⁶⁸ Physical risks arise from nature dependencies and the consequent financial impact of changes in natural capital.³⁶⁹ Transition risks arise from the transition to a sustainable economy, such as cost of compliance with new regulatory policies or changes in market sentiments.³⁷⁰ Systemic risks reflect the nature-related impacts and dependencies that extend through an entire economic system and the associated systemic risk if natural capital is degraded or lost.³⁷¹

The Taskforce on Nature-Related Financial Disclosures (TNFD) has the most global traction.³⁷² It is modeled after the Taskforce on Climate-Related Financial Disclosures,³⁷³ with the goal of developing a risk management and disclosure framework for companies and financial institutions to report on nature-related risks, dependencies, and impacts along their value chains and portfolios.³⁷⁴ The TNFD provides detailed guidance across four categories of disclosure: governance, strategy, risk management, and metrics and targets. It recommends companies disclose (1) how the organization's governance system takes account of nature-related risks, impacts, and opportunities; (2) the integration of actual and potential impacts of nature-related impacts, risks, and opportunities in their businesses, strategy, and financial

Disclosures to Climate Reporting Standard, ESG TODAY (Dec. 15, 2022), <https://www.esgtoday.com/issb-to-add-biodiversity-just-transition-disclosures-to-climate-reporting-standard/> [<https://perma.cc/JJ9K-KL3W>].

367. Global standard for biodiversity impacts one step closer, GLOBAL REPORTING INITIATIVE (Dec. 5, 2022), <https://www.globalreporting.org/news/news-center/global-standard-for-biodiversity-impacts-one-step-closer/> [<https://perma.cc/8H3G-38GF>] (last visited Nov. 28, 2024).

368. DASGUPTA – FULL REPORT, *supra* note 23, at 418; BLOOMBERG NEF, WHEN THE BEE STRINGS: COUNTING THE COST OF NATURE-RELATED RISKS 2 (2023) https://tnfd.global/wp-content/uploads/2023/12/BNEF_Case-Studies_-_Nature_Risk_When-bees-sting.pdf [<https://perma.cc/5PUL-B6FH>].

369. DASGUPTA – FULL REPORT, *supra* note 23, at 418.

370. *Id.* at 420.

371. BLOOMBERG NEF, *supra* note 369, at 2.

372. This initiative has been endorsed by the G7 Finance Ministers and G20 Sustainable Roadmap, as well as international leaders including UN Secretary General António Guterres, French President Emmanuel Macron, U.K. Prime Minister Boris Johnson and UN Special Envoy on Climate Action and Finance Mark Carney. See Michael Littenberg et al., *Taskforce on Nature-Related Financial Disclosures Framework: Overview of First Beta Release*, HARV. L. SCH. FORUM ON CORP. GOVERNANCE (Jun. 12, 2022), <https://corpgov.law.harvard.edu/21022/06/12/taskforce-on-nature-related-financial-disclosures-framework-overview-of-first-beta-release/> [<https://perma.cc/T6FP-4ELR>].

373. See The Taskforce on Nature-related Financial Disclosures (TNFD), “The TNFD Nature-Related Risk and Opportunity Management and Disclosure Framework,” (Nov. 2022), <https://tnfd.global/wp-content/uploads/2022/03/220321-TNFD-framework-beta-v0.1-FINAL.pdf> [<https://perma.cc/N3ZC-X7A2>] [hereinafter “TNFD Framework”].

374. About us, TNFD, <https://tnfd.global/about/> (last visited Nov 28, 2024).

planning; (3) how the organization identifies, assesses, and manages nature-related risks within its overall risk management approach; and (4) the qualitative and quantitative performance metrics and targets used to assess, manage, and mitigate those risks, impacts, and dependencies.³⁷⁵ The first category requires firms to describe the board's oversight of nature-related risks and opportunities, as well as management's role in assessing and managing those risks and opportunities.³⁷⁶ The second category requires firms to describe the nature-related dependencies, impacts, risks, and opportunities the organization has identified over the short, medium, and long term, as well as their impact on the organization's businesses, strategy, and financial planning.³⁷⁷ This incorporates both the financial materiality of nature-related risks resulting from dependencies on nature, as well as the adverse environmental impacts resulting from an entity's activities.³⁷⁸ The third category requires disclosure of the organization's processes for identifying, assessing, and managing nature-related dependencies, impacts, risks, and opportunities, as well as their integration within the organization's overall risk management.³⁷⁹ The fourth category requires disclosure of the metrics that the organization (1) uses to assess and manage nature-related risks in line with its strategy and risk management process; (2) the metrics used to assess and manage direct, upstream and, if appropriate, downstream dependencies and impacts on nature; and (3) the targets the organization sets to manage nature-related risks and impacts, as well as performance against those targets.³⁸⁰

These or similar nature-related disclosures would not only help to embed nature within a company or financial institution's balance sheet but also correct for the market's failure to account for the significant material risks generated by environmental degradation. The International Financial Reporting Standards' (IFRS) ISSB notes a firm's nature-related risks and impacts "could reasonably be expected to affect an entity's cash flows, its access to finance and cost of capital over the short, medium and long term."³⁸¹ These risks are currently left off firm balance sheets to the detriment of individual firms and the economy as a whole. Requiring firms to report on these risks, impacts, and dependencies would force them to embed nature within their strategy, risk management, and capital allocation decisions. Further, disclosing this information on the firm's balance sheet both enables the market and investors to more accurately assess nature-related risks when making investment and

375. TNFD, RECOMMENDATIONS OF THE TASKFORCE ON NATURE-RELATED FINANCIAL DISCLOSURES 47 (2023), https://tnfd.global/wp-content/uploads/2023/08/Recommendations_of_the_Taskforce_on_Nature-related_Financial_Disclosures_September_2023.pdf [<https://perma.cc/T8K9-S6D7>] [hereinafter "TNFD Recommendations"].

376. TNFD Framework, *supra* note 374.

377. *Id.*

378. *See generally* TNFD Recommendations, *supra* note 376.

379. TNFD Framework, *supra* note 374.

380. *Id.*

381. IFRS SUSTAINABILITY, GENERAL REQUIREMENTS FOR DISCLOSURE OF SUSTAINABILITY-RELATED FINANCIAL INFORMATION ¶B2 (2023) <https://www.ifrs.org/content/dam/ifrs/publications/pdf-standards-issb/english/2023/issued/part-a/issb-2023-a-ifrs-s1-general-requirements-for-disclosure-of-sustainability-related-financial-information.pdf?bypass=on> [<https://perma.cc/YEE7-3ACT>].

pricing decisions and equips shareholders with the information needed to advocate for mitigation of a firm's nature-related risks and impacts.

While private sector mainstreaming faces similar methodological challenges as government mainstreaming, there are enough reliable metrics for firms to act now.³⁸² Effectively operationalizing data on nature-related risks, impacts, and opportunities requires translating it into financial values.³⁸³ As discussed, the UN-SEEA provides a starting point to develop reliable, standardized environmental-economic metrics. The TNFD represents a similar starting point for the private sector to measure and disclose their nature-related risks, impacts, and dependencies. After a years-long process of iteration with feedback from nearly all sectors and industries, the TNFD has also provided workable metrics to support private sector nature mainstreaming.³⁸⁴ The TNFD uses metrics already in use by market participants through leading international financial institutions, including the IFRS, Sustainability Accounting Standards Board, and GRI.³⁸⁵ This is important to prevent a fragmented system for assessing, monitoring, and reporting on nature-related risks and impacts. As discussed, States are also developing such metrics. Ultimately, more investment in developing and improving environmental-economic metrics, including financial valuation, is needed and will likely be accelerated through refinement in practice.³⁸⁶

Progress on nature-related reporting has been limited to voluntary initiatives, but there is growing momentum to implement mandatory corporate disclosure frameworks. One hundred and twenty-six financial institutions representing some €18.8 trillion in assets signed on to the Finance for Biodiversity Pledge, which committed each institution to set science-based targets and publicly report on biodiversity impacts within their portfolios.³⁸⁷ More than 330 business and financial institutions from fifty-two countries with combined revenues of more than US\$1.5 trillion signed on to Business for Nature's "Make it Mandatory" pledge urging world leaders to adopt a mandatory nature-related financial disclosure requirement for companies.³⁸⁸ Nature Action 100 investors representing over US\$27 trillion in assets under management or advice are currently calling on one hundred major companies to assess and publicly disclose their nature-related dependencies, impacts, and risks.³⁸⁹ BlackRock, the world's largest asset management firm, is asking companies "to have clear action

382. TNFD Recommendations, *supra* note 376, at 23.

383. *Id.* at 66.

384. *Id.* at 61-68.

385. *Id.* at 10.

386. *Id.* at 61.

387. About the Pledge, FINANCE FOR BIODIVERSITY FOUNDATION <https://www.financeforbiodiversity.org/about-the-pledge/> [<https://perma.cc/R79W-8A7U>] (last visited Nov. 29, 2024).

388. BUSINESS FOR NATURE, Make it Mandatory 6 (2022), https://static1.squarespace.com/static/5d777de8109c315fd22faf3a/t/635930f22c677e36eefb6807/1666789622524/Make+it+Mandatory+Report_final.pdf [<https://perma.cc/7YPG-65WC>].

389. Investor Expectations, NATURE ACTION 100, <https://www.natureaction100.org/investor-expectations-for-companies/> [<https://perma.cc/EUK2-AG4U>] (last visited Nov. 29, 2024).

plans to mitigate climate and natural capital risks.³⁹⁰ It asks companies to disclose how natural capital risks might affect their operations and long-term strategy, to explain how it is incorporating sustainable business practices, and to establish programs for the conservation of resources upon which it depends.³⁹¹ As of January 2024, over 300 companies and financial institutions adopted the TNFD and will begin making nature-related disclosures by the 2024 fiscal year.³⁹²

Governments have shown similar ambition. For example, more than twenty jurisdictions, representing nearly 55 percent of global GDP and more than 40 percent of global market capitalization, have decided to use the ISSB's sustainability standards or are introducing their own frameworks.³⁹³ The EU adopted the Taxonomy Regulation establishing a taxonomy that defines the set of economic activities considered to be environmentally sustainable.³⁹⁴ Companies and financial institutions falling within the regulation's scope must report on their degree of alignment with the taxonomy.³⁹⁵ Similar taxonomies have been developed in Colombia and Mexico.³⁹⁶ Taxonomies identify harmful business activities that contribute to high levels of nature-related risk, which thereby directs regulatory authorities to phase out the financing of those activities. In effect, this redirects the economy to reduce drivers of nature loss and to incentivize sustainable economic activity. Another important reform is the EU's Corporate Sustainability Reporting Directive (CSRD), which requires large EU companies and non-EU companies with a significant presence in the EU or with securities listed on an EU-regulated market to report on their business strategy and resilience of their business model to environmental risks and impacts.³⁹⁷ The CSRD will also require companies to report on their sustainability

390. *Our approach to engagement on natural capital*, BLACKROCK (Feb. 2022), <https://www.blackrock.com/corporate/literature/publication/blk-commentary-engagement-on-natural-capital.pdf> [<https://perma.cc/B6V5-7J2P>] (last visited Nov. 29, 2024); BlackRock starts to walk to the talk, PLANET TRACKER (Mar. 19, 2021), https://planet-tracker.org/blackrock-starts-to-walk-the-talk/#_edn1 [<https://perma.cc/J6UM-FZQC>].

391. *Id.*

392. *TNFD Early Adopters*, TNFD, <https://tnfd.global/engage/tnfd-adopters/> (last visited Jan. 23, 2025).

393. Mark Segal, *IFRS Says Over Half of Global Economy Moving Towards Coverage by ISSB Sustainability Reporting Standards*, ESG TODAY (May 28, 2024), <https://www.esgtoday.com/ifrs-says-over-half-of-global-economy-moving-towards-coverage-by-issb-sustainability-reporting-standards> [<https://perma.cc/JB86-5P3G>].

394. Regulation 2020/852, of the European Parliament and of the Council of 18 June 2020 on the Establishment of a Framework to Facilitate Sustainable Investment and Amending Regulation 2019/2088, 2020 O.J. (L 198) 13.

395. *Id.*

396. Khalid Azizuddin, *Colombia launches first LatAm green taxonomy, excludes nuclear and gas*, RESPONSIBLE INVESTOR (Apr. 13, 2022), <https://www.responsible-investor.com/colombia-launches-first-latam-green-taxonomy-excludes-nuclear-and-gas/> [<https://perma.cc/DRU8-A23P>]; Khalid Azizuddin & Fiona McNally, *Mexico includes gender equality and access to services in sustainable finance taxonomy*, RESPONSIBLE INVESTOR (Mar. 20, 2023), <https://www.responsible-investor.com/mexico-includes-gender-equality-and-access-to-services-in-sustainable-finance-taxonomy/> [<https://perma.cc/6GZW-2JCX>].

397. Kolja Stehl et al., *EU Corporate Sustainability Reporting Directive – What Do Companies*

targets and transition plans to ensure their business model and strategy is compatible with the transition to the sustainable global economy, limiting climate change to 1.5°C consistent with the Paris Agreement, and achieving climate neutrality by 2050, in line with the European Climate Law.³⁹⁸ The CSRD is a useful model for analogous regulation in other states and can be further strengthened by requirements to adopt and publicly report on sustainable economy targets and action plans, including incorporating national sustainable economy targets and any targets set forth in the SGE framework convention.

2. Environmental Due Diligence

The final component of the emerging sustainable economy roadmap is corporate environmental due diligence.³⁹⁹ Nature-related disclosures are insufficient without due diligence legislation requiring companies and financial institutions to develop detailed systems for identifying, preventing, mitigating, and redressing environmental risks and impacts.⁴⁰⁰ Moreover, these due diligence obligations provide significant benefits to companies for mitigating adverse impacts, reducing costs, strengthening risk-management of company-specific business and operational risks, and reducing exposure to systemic risks.⁴⁰¹

Effective environmental due diligence has several essential components. The OECD's *Guidelines for Multinational Enterprises* recommends states adopt due

Need to Know, HARV. L. SCH. FORUM ON CORP. GOVERNANCE (Aug. 23, 2022), <https://corp.gov.harvard.edu/2022/08/23/eu-corporate-sustainability-reporting-directive-what-do-companies-need-to-know/> [<https://perma.cc/Q2S8-52KU>] (“The Draft Directive defines an “established business relationship” as a direct or indirect relationship that is expected to be lasting and “which does not represent a negligible or merely ancillary part of the value chain”. This includes contractors, subcontractors and other entities in the supply chain.”).

398. *Id.*

399. See, e.g., G20 Leaders' Declaration, *Shaping an Interconnected World*, Hamburg (Jul. 8, 2017) https://ec.europa.eu/commission/presscorner/detail/en/STATEMENT_17_1960 [<https://perma.cc/X57S-6KEX>]; G7 Leaders' Declaration, Schloss Elmau, Germany, SUSTAINABLE DEVELOPMENT https://sustainabledevelopment.un.org/content/documents/7320LEADERS%20STATEMENT_FINAL_CLEAN.pdf [<https://perma.cc/U4YX-EXRF>] (last visited Nov 29., 2024). (discussing the need for due diligence for human rights and environmental impacts); OHCHR, Report of the Special Rapporteur on the issue of human rights obligations relating to the enjoyment of a safe, clean, health and sustainable environment, David R. Boyd (Special Rapporteur on the Issue of Human Rights Obligations Relating to the Enjoyment of a Safe, Clean, Healthy and Sustainable Environment), *Business, planetary boundaries, and the right to a clean, healthy and sustainable environment*, UN Doc. A/HRC/55/43 (Jan. 2, 2024).

400. Mark Carney, among others, has emphasized the need for disclosure efforts to be complemented by both risk management and portfolio alignment. See Mark Carney, “The Road to Glasgow,” BANK OF ENGLAND, <https://www.bankofengland.co.uk/-/media/boe/files/speech/2020/the-road-to-glasgow-speech-by-mark-carney.pdf> [<https://perma.cc/8MZV-ZXH5>]; see also Aligning Global Finance with Nature's Needs: A Framework for Systemic Change, NATURE FINANCE, <https://www.naturefinance.net/resources-tools/aligning-global-finance-with-natures-needs-a-framework-for-systemic-change/> [<https://perma.cc/BTH3-W33J>].

401. *OECD Due Diligence Guidance for Responsible Business Conduct*, OECD 16 (2018), <https://mneguidelines.oecd.org/OECD-Due-Diligence-Guidance-for-Responsible-Business-Conduct.pdf> [<https://perma.cc/4CYY-P23N>].

diligence legislation requiring companies to “establish and maintain a system of environmental management” that includes “collection and evaluation of adequate and timely information regarding the environmental . . . impacts of their activities” and “establishment of measurable objectives and, where appropriate, targets for improved environmental performance and resource utilization, including periodically reviewing the continuing relevance of these objectives,” and dictating that “where appropriate, targets should be consistent with relevant national policies and international environmental commitments.”⁴⁰² Companies must also regularly monitor and verify “progress toward environmental objectives or targets” and “continually seek to improve corporate environmental performance, at the level of the enterprise and . . . supply chain, by” developing “products or services that have no undue environmental impacts” and “can be reused [or] recycled.”⁴⁰³ Finally, companies must “explor[e] and assess[] ways of improving the environmental performance of the enterprise over the longer term.”⁴⁰⁴ Industry groups and other stakeholders have called upon states to adopt legislation imposing such due diligence obligations, which could require setting binding sustainable economy targets, developing action plans and timelines to achieve those targets, and reporting on compliance.⁴⁰⁵ As the OECD guidelines indicate, the policy reforms identified in the international and national policy roadmaps are not independently sufficient; their effectiveness is interdependent. The SGE framework convention sets the global targets and inviolable planetary boundaries that are then disaggregated and adopted at the national level. In turn, those international and national targets inform the content of private sector due diligence obligations. Further, due diligence forces companies and financial institutions to develop action plans and time-bound interim targets to achieve their overarching sustainable economy targets, which, as discussed, is essential to implementing those targets.

Effective due diligence legislation must have a broad scope balanced by the principle of proportionality to ensure compliance is feasible. The legislation’s scope should be broad enough to include as many companies and/or types of economic activity as possible, including extraterritorial application and industries with a high probability of negative environmental impacts.⁴⁰⁶ For instance, the United Kingdom’s

402. *OECD Guidelines for Multinational Enterprises*, OECD 42 (2011), <http://dx.doi.org/10.1787/9789264115415-en>.

403. *Id.* at 33–34.

404. *Id.* at 42–43.

405. See, e.g., WBCSD, *Roadmaps to Nature Positive: Guidelines to accelerate business accountability, ambition and action for a nature positive future* 7–11 (2022), https://www.wbcsd.org/wp-content/uploads/2023/09/WBCSD-Roadmaps-to-Nature-Positive-Guidelines_9Dec22.pdf [<https://perma.cc/JAR5-9PT6>]; *Policy Trends in Environmental Due Diligence*, OECD (2021), <https://mneguidelines.oecd.org/policy-trends-in-environmental-due-diligence.pdf> [<https://perma.cc/U7RK-3FJX>] (identifying emerging environmental due diligence requirements in the United Kingdom, France, Japan, the Netherlands, Germany, Switzerland, and the EU); OECD, *BIODIVERSITY, NATURAL CAPITAL AND THE ECONOMY: A POLICY GUIDE FOR FINANCE, ECONOMIC AND ENVIRONMENT MINISTERS*, *supra* note 56, at 43–46.

406. Jon McGowan, *After Delays, EU Approves Corporate Sustainability Due Diligence Law*, FORBES (Mar. 15, 2024), <https://www.forbes.com/sites/jonmcgowan/2024/03/15/after-delays-eu-approves-corporate-sustainability-due-diligence-law/?sh=1c03d6287f33> [<https://perma.cc/>

due diligence obligations on forest risk commodities has broad remit, covering all “commercial activity.”⁴⁰⁷ By contrast, to achieve political consensus, The EU’s Corporate Sustainability Due Diligence Directive’s (CSDDD) scope was narrowed by 30 percent to only include about 0.05 percent of the businesses operating in the EU, undermining its ability to comprehensively address nature loss.⁴⁰⁸ The legislation’s broad applicability can be balanced by the principle of proportionality that allows the company to prioritize which environmental risks it addresses. This ensures the legislation is not unduly burdensome on covered companies, allowing them to focus resources on the most acute environmental impacts. However, prioritization is only preferable where addressing all impacts is not feasible, and once the company has addressed the more significant impacts, the enterprise should move on to address remaining impacts.⁴⁰⁹ The burden of compliance can be further eased by providing incentives for progressively increasing ambition, such as tax breaks, government procurement advantages, and tethering variable remuneration of corporate directors to their achievement of pre-established mandatory sustainability targets—incentivizing those with the greatest influence over companies to prioritize action.⁴¹⁰

Consistent with the OECD’s guidance, the due diligence legislation must require firms to set and disclose sustainable economy targets, timelines, and action plans to achieve those targets.⁴¹¹ Thus, companies and financial institutions must set time-bound, science-based, and quantitative sustainable economy targets to address their specific nature impacts, as well as corresponding action plans to achieve

GK9Q-ZGU2].

407. Due Diligence on Forest Risk Commodities, U.K. DEPARTMENT FOR ENVIRONMENT AND RURAL AFFAIRS, <https://consult.defra.gov.uk/eu/due-diligence-on-forest-risk-commodities/> [<https://perma.cc/Y5GG-7V4F>] (last visited Nov. 29, 2024); *Designing Due Diligence: How Policymakers and Businesses Can Effectively Turn Legislation Into Action on Deforestation and Conversion*, WWF 13 (2022) https://www.wwf.org.uk/sites/default/files/2022-03/WWF-UK_Designing%20Due%20Diligence%20-%20Final%20.pdf [<https://perma.cc/FC96-X88X>].

408. David R. Boyle and Stephanie Keene, *Essential elements of effective and equitable human rights and environmental due diligence legislation*, OHCHR 14–16 (2022) https://www.ohchr.org/sites/default/files/documents/issues/environment/srenvironment/activities/2022-07-14/20220713-SR-Environment_PolicyBriefingNr3.pdf [<https://perma.cc/Z45X-WBHX>]; Jon McGowan, *After Delays, EU Approves Corporate Sustainability Due Diligence Law*, FORBES (Mar. 15, 2024), <https://www.forbes.com/sites/jonmcgowan/2024/03/15/after-delays-eu-approves-corporate-sustainability-due-diligence-law/?sh=1c03d6287f33> [<https://perma.cc/5MHE-NQJE>].

409. *OECD Due Diligence Guidance for Responsible Business Conduct*, *supra* note 402, at 17.

410. David R. Boyle and Stephanie Keene, *Essential elements of effective and equitable human rights and environmental due diligence legislation*, OHCHR 19 (2022) https://www.ohchr.org/sites/default/files/documents/issues/environment/srenvironment/activities/2022-07-14/20220713-SR-Environment_PolicyBriefingNr3.pdf [<https://perma.cc/ZBQ9-8X6P>].

411. *Roadmaps to Nature Positive: Guidelines to accelerate business accountability, ambition and action for a nature positive future*, WBCSD 18 (2022), https://www.wbcds.org/wp-content/uploads/2023/09/WBCSD-Roadmaps-to-Nature-Positive-Guidelines_9Dec22.pdf [<https://perma.cc/9N94-FQMN>] (advocating for companies to adopt nature positive roadmaps implement nature positive targets that they have committed to).

those targets.⁴¹² Once a firm understands its nature-related risks, dependencies, and impacts, it can set measurable and time-bound objectives based on the best available science that allow the company to align its operations within planetary boundaries.⁴¹³

National and international sustainable economy targets can have an important coordinating effect for private sector targets. As evidenced by the EU's environmental regulations, national and international targets can serve as the yardstick against which national efforts are assessed, and help to harmonize efforts across countries, sectors, and industries.⁴¹⁴ For example, a binding international target to halve global ecological footprint by 2030 would translate to a national target of halving the national footprint by 2030, and private actors, to be in line with that target, would likewise seek to halve their footprints within the same time frames. The CSDDD exemplifies this approach.⁴¹⁵ It requires in-scope companies to adopt a plan to ensure their operations are compatible with the transition to a sustainable economy and with the Paris Agreement's 1.5°C temperature target.⁴¹⁶ Thus, legally binding sustainable economy targets at all levels would harmonize actions across all economies and sectors towards a sustainable global economy.

The Science Based Targets Network (SBTN), one of the leading organizations providing technical guidance on nature targets, has published a set of interim targets that companies can set consistent with the best available science on nature loss and

412. *What are SBT's?*, SCIENCE BASED TARGETS NETWORK, <https://sciencebasedtargetsnetwork.org/about/what-are-sbts/> [<https://perma.cc/6X4R-F3JP>] (last visited Nov. 29, 2024).

413. *Id.*

414. *Proposal to Establish a Roadmap to a Nature Positive Economy*, WWF 4 (2022) https://wwf.panda.org/wwf_news/?5681466/Nature-Positive-Economy-Roadmap (arguing for “binding global nature recovery targets/goals, to provide the overarching framework needed to drive a globally coordinated response across public and private actors [equivalent to the Paris Agreement for net zero].); see also *Roadmaps to Nature Positive: Guidelines to accelerate business accountability, ambition and action for a nature positive future*, WBCSD 7–11 (2022), https://www.wbcsd.org/wp-content/uploads/2023/09/WBCSD-Roadmaps-to-Nature-Positive-Guidelines_9Dec22.pdf [<https://perma.cc/8L5W-SR65>].

415. The CSDDD was approved by the European Parliament on April 24, 2024 and finally approved by the European Council on May 24, 2024. It will take effect shortly after its publication in the EU's Official Journal. See Mark Segal, *EU Parliament Adopts Environmental, Human Rights Sustainability Due Diligence Law*, ESG TODAY (Apr. 24, 2024), <https://www.esgtoday.com/eu-parliament-adopts-environmental-human-rights-sustainability-due-diligence-law/> [<https://perma.cc/4RET-HA9Z>]; Samantha Rowe et al., *European Union Finally Adopts Corporate Sustainability Due Diligence Directive*, DEBEVOISE IN DEPTH (Jun. 17, 2024), <https://www.debevoise.com/insights/publications/2024/06/european-union-finally-adopts-corporate-sustain> [<https://perma.cc/26HX-RT5X>].

416. Johannes Weichbrodt and James Ford, *EU Publishes Draft Corporate Sustainability Due Diligence Directive*, HARV. L. SCH. FORUM ON CORP.GOVERNANCE (Mar. 15, 2022), <https://corpgov.law.harvard.edu/2022/03/15/eu-publishes-draft-corporate-sustainability-due-diligence-directive/> [<https://perma.cc/59MC-MQW6>]; Eduard Gergondet et al., *Human Rights and the Environment: What to Expect from the Corporate Sustainability Due Diligence Directive?*, MAYER BROWN (Mar. 19, 2024), <https://www.mayerbrown.com/en/insights/publications/2024/03/human-rights-and-the-environment--what-to-expect-from-the-corporate-sustainability-due-diligence-directive> [<https://perma.cc/785J-F2RC>].

aligned with the GBF's goal of nature positivity by 2050.⁴¹⁷ The guidance offers quantifiable, timebound targets, as well as suggested metrics for assessing progress.⁴¹⁸ The suggested targets include zero deforestation from 2020 in all corporate supply chains, measured by hectares of deforestation and/or conversion; zero conversion from 2020 of all natural habitats; zero conversion from 2020 of all areas that meet the criteria for a key biodiversity area; reducing value chain greenhouse gas emissions by 50 percent by 2030 and by 90 percent by 2040; and from present, increasing areas under restoration in all ecosystems, in line with targets set in the GBF, measured by percentage of surface under restoration in each ecosystem.⁴¹⁹ Another example of a sustainable economy target is the "No Net Loss" or "Net Positive Impact" objectives, which are clear, measurable objectives for companies and financial institutions to ensure that the negative nature-related impacts of their operations or portfolios are either balanced or outweighed by biodiversity or nature gains.⁴²⁰

Despite its narrow scope of applicability, the CSDDD is an instructive example. To be effective, due diligence legislation must require aligning business activities with major international environmental agreements, such as the Paris Agreement, the CBD and GBF, and any SGE framework convention.⁴²¹ The CSDDD requires in-scope companies to identify actual or potential environmental impacts arising from their own operations, those of their subsidiaries and from their established business relationships throughout their value chains; prevent potential adverse impacts and bring actual adverse impacts to an end; and adopt a plan to ensure a company's business model and strategy is compatible with the transition to a sustainable economy and with limiting global warming to 1.5°C in line with the Paris Agreement.⁴²² It goes further, requiring companies to adopt climate transition plans in line with the 1.5°C temperature target, which must contain: (1) time-bound emission reduction targets based on conclusive scientific evidence; (2) a description of decarbonization "levers" identified and key actions planned to reach the climate targets; (3) an explanation and quantification of investments and funding to support implementation of the plan; and (4) a description of the company's administrative, management, and supervisory

417. SBTN's Target-Setting Process, SCIENCE BASED TARGETS NETWORK, <https://sciencebasedtargetsnetwork.org/take-action-now/take-action-as-a-company/what-you-can-do-now/interim-targets/> [<https://perma.cc/LGQ5-T74F>] (last visited Nov. 29, 2024). In 2023, the Science Based Targets Network also began piloting their target validation process with 17 global companies. *The First Science-Based Targets for Nature*, SBTN, <https://sciencebasedtargetsnetwork.org/how-it-works/the-first-science-based-targets-for-nature/> [<https://perma.cc/TA87-KN46>] (last visited Dec. 6, 2024).

418. *Id.*

419. *Id.*

420. *Biodiversity: Finance and the Economic and Business Case for Action - Annexes to the Report*, OECD (2019), https://www.oecd.org/content/dam/oecd/en/publications/reports/2019/12/biodiversity-finance-and-the-economic-and-business-case-for-action_016f1faa/a3147942-en.pdf [<https://perma.cc/2AJL-S2V7>]; *No net loss and net positive impact approaches to biodiversity*, IUCN (2015), <https://portals.iucn.org/library/sites/library/files/documents/2015-003.pdf> [<https://perma.cc/ND8D-4BCN>].

421. Boyle and Keene, *supra* note 410, at 7.

422. Weichbrodt and Ford, *supra* note 416.

bodies overseeing implementation.⁴²³ The transition plans must then be updated every twelve months to report on progress towards the identified targets.⁴²⁴ Other countries can use the CSDDD as a model to require firms to adopt and public report on their compliance with a sustainable economy transition plan and to ensure their business is aligned with corresponding international and/or national sustainable economy targets and planetary boundaries.

While the CSDDD offers a useful starting point, effective legislation requires rigorous enforcement mechanisms. The CSDDD fails to impose any penalty on non-compliance with the requirements to establish transition plans in line with the Paris Agreement because those obligations are excluded from the core duties specified in Articles 4 to 11 of the regulation.⁴²⁵ Effective due diligence legislation must establish a range of judicial and administrative remedies for noncompliance, including administrative, civil, and criminal remedies.⁴²⁶ In particular, the competent enforcement authority must be authorized to seek injunctive relief, restitution orders, administrative orders suspending relevant operating licenses, civil and criminal compensation payments, reparations to affected populations, environmental rehabilitation orders, and guarantees of non-repetition.⁴²⁷ Further, the enforcement authority must be properly resourced to be able to provide sufficient oversight and vigorous enforcement efforts.⁴²⁸ Beyond the remedial powers of the enforcement authority, the punishment must be significant enough to successfully deter non-compliance. This is particularly important when determining the fine amount. Fines are often too low to deter non-compliance—to be effective, they need to pose a genuine economic risk to the company.⁴²⁹ Fixed fines are often too small or disproportionately impact small or medium-sized enterprises. Fines as a percentage of profit are more effective because they impose a proportionate economic cost on large actors.⁴³⁰ The CSDDD imposes pecuniary penalties of up to 5 percent of the net worldwide turnover of the company.⁴³¹ In practice, fines are more effective when combined with the other disruptive measures previously mentioned, including suspension of operations and corporate director civil and criminal liability.⁴³²

423. Rowe et al., *supra* note 415.

424. Eduoard Gergondet et al., *supra* note 416.

425. David R. Boyle and Stephanie Keene, *Essential elements of effective and equitable human rights and environmental due diligence legislation*, UN Human Rights Special Procedures (Jun. 2022), p. 12.

426. *Id.* at 24.

427. *Id.*

428. *Id.*; *Designing Due Diligence: How Policymakers and Businesses Can Effectively Turn Legislation Into Action on Deforestation and Conversion*, WWF 25 (2022), https://www.wwf.org.uk/sites/default/files/2022-03/WWF-UK_Designing%20Due%20Diligence%20-%20Final%20.pdf [<https://perma.cc/MX4X-LH6Y>].

429. *Id.* at 25.

430. *Id.*

431. Eduoard Gergondet et al., *supra* note 416.

432. WWF, *supra* note 428, at 26.

V. CONCLUSION

This article has established that nature loss is caused by the current unsustainable global economy and that maintaining this system presents catastrophic risks. As Sir Dieter Helm observed, “[i]t is pretty clear to everyone that the current pathway is not sustainable. What follows, if this is true, is that it will not be sustained.”⁴³³ So, “we can either act now and head off further damage, or we can live with the consequences as and when our economic way of life is no longer sustained.”⁴³⁴ States and the private sector alike recognize the need to transition to a sustainable global economy. Consistent with international, science-backed consensus, there are two fundamental components to the sustainable global economy: (1) properly pricing nature, and (2) internalizing ecological limits. This article has reviewed the emerging policy roadmap to achieve the sustainable economy at both the international and national levels.

Achieving the sustainable global economy will require transformative change within this decade; this change is not only necessary but can increase prosperity beyond the status quo. Nature is the economy’s most valuable asset, providing services worth at least \$125 trillion per year, globally.⁴³⁵ Taking the necessary steps to preserve and restore this uniquely valuable asset will translate into enormous economic gain. The WEF estimates that implementing sustainable economic policies will create over \$10 trillion in economic opportunity and 395 million jobs by 2030.⁴³⁶ More modestly, the World Bank concluded that implementing policies that mitigate nature loss will deliver economic gains on the order of up to US\$150 billion in global GDP increases by 2030.⁴³⁷ A narrower study found that restoring biodiversity-rich land across a mere 10 percent of Europe’s territory would cost US\$167 billion, but this investment would generate benefits valued at around \$12 trillion.⁴³⁸ This is a cost-benefit ratio of 1:12. These immense macroeconomic benefits translate into firm-level gains. Many sustainable global economy policies have a larger return on investment than environmentally-degrading policies and can generate an annual

433. DIETER HELM, *LEGACY: HOW TO BUILD THE SUSTAINABLE ECONOMY 3* (Cambridge Univ. Press 2024).

434. *Id.*

435. *Building Integrated Policies for the Planet: How Governments Can Drive Business Action on Nature and Climate*, BUSINESS FOR NATURE 2, https://static1.squarespace.com/static/5d777de8109c315fd22faf3a/t/6101327326d6617b4ac20e27/1627468412577/BfN-WMB_Climate_Nature_Publicationv+FINAL.pdf [<https://perma.cc/732Y-GTEH>].

436. WORLD ECONOMIC FORUM, *NEW NATURE ECONOMIC REPORT: NATURE RISK RISING: WHY THE CRISIS ENGULFING NATURE MATTERS FOR BUSINESS AND THE ECONOMY 4* (2020), https://www3.weforum.org/docs/WEF_New_Nature_Economy_Report_2020.pdf [<https://perma.cc/KS9P-DPCT>].

437. *The Economic Case for Nature*, WORLD BANK GROUP xiii (2021), <https://openknowledge.worldbank.org/server/api/core/bitstreams/9f0d9a3a-83ca-5c96-bd59-9b16f4e936d8/content> [<https://perma.cc/7VQF-P42P>] (using more conservative valuation methodologies and/or criteria for nature-related economic gain).

438. Lily Maxwell-Lwin, *Pricing the Planet: Can Valuing Nature as an Asset Save Our Ecosystems?*, FORBES (Apr. 22, 2024), <https://www.forbes.com/sites/forbeseq/2024/04/22/pricing-the-planet-can-valuing-nature-as-an-asset-save-our-ecosystems/?sh=29598aa7c714> [<https://perma.cc/9PPB-Q9DU>].

benefit of \$700 billion.⁴³⁹ In addition, studies show that firms that embed nature within their operations and accounting outperform their peers in terms of revenue, earnings, investments, and job growth.⁴⁴⁰ Consumers and investors are not blind to the significant risk of continued nature loss. In recognition of these catastrophic risks, their preferences are shifting, creating a \$10.1 trillion commercial opportunity each year for companies that transition to nature-positive pathways.⁴⁴¹

In short, transformative change is needed and time is running out to make that change. While states and the private sector are beginning to act, it is not enough. Much more is needed much faster to avert global economic and ecological catastrophe. The old adage popularized by Parisian student protestors rings true: “Be realistic, demand the impossible.”⁴⁴²

439. See generally Paul Polman & Andrew Winston, *Yes, Investing in ESG Pays Off*, HARVARD BUSINESS REV. (Apr. 13, 2022), <https://hbr.org/2022/04/yes-investing-in-esg-pays-off> [<https://perma.cc/ET93-LTH8>]; *The Economic Case for Nature: A Global-Earth Economy Model to Assess Development Policy Pathways*, WORLD BANK (Jun. 29, 2021), <https://openknowledge.worldbank.org/handle/10986/35882> [<https://perma.cc/6BFL-S748>]; Daniel Aminetzah et al., *Nature in the balance: What companies can do to restore natural capital*, MCKINSEY 9 (2022), <https://www.mckinsey.com/capabilities/sustainability/our-insights/nature-in-the-balance-what-companies-can-do-to-restore-natural-capital#/> [<https://perma.cc/5SRP-NJPH>].

440. Dominic Barton et al., *Where companies with a long-term view outperform their peers*, MCKINSEY (Feb. 8, 2017), <https://www.mckinsey.com/featured-insights/long-term-capitalism/where-companies-with-a-long-term-view-outperform-their-peers> [<https://perma.cc/B9BK-PXDS>].

441. World Economic Forum, *CEO Briefing: Measuring Nature-Positive Outcomes from Business Actions* 1 (2022), https://www3.weforum.org/docs/WEF_Measuring_Nature_positive_Outcomes_from_Business_Actions_2022.pdf [<https://perma.cc/5H6A-XP33>].

442. “Soyez réalistes, demandez l’impossible” *May 1968 France*, UNIV. OF CAMBRIDGE (May 24, 2019), <https://languagecollections-blog.lib.cam.ac.uk/2019/05/24/soyez-realistes-demandez-limpossible-may-1968-france> [<https://perma.cc/5BQL-LDGD>].

