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Synergy Solutions for Climate and SDG Action: Bridging the Ambition Gap for the Future We Want

REPORT ON STRENGTHENING THE EVIDENCE BASE | SECOND EDITION 2024



**United
Nations**

Department of
Economic and
Social Affairs



United Nations
Framework Convention on
Climate Change

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Preface

This report of the Expert Group on Climate and SDG Synergy comes at a crucial time. Even as the world is faced with a growing climate emergency and multiple sustainability crises, this report offers the logical next step in proposing ways to break down the fragmentation and silos that prevent transformative solutions.

We have no time to lose. With only 17 per cent of the SDG targets on track, we must dramatically accelerate action on the 2030 Agenda. And we are rapidly approaching the perilous territory beyond the 1.5 degree limit on climate change.

As this report shows, it is imperative to address these challenges through a cohesive approach that maximizes benefits and minimizes conflict. A major opportunity for integration lies ahead in 2025, as countries prepare new and enhanced climate commitments under the Paris Agreement in the form of nationally determined contributions (NDCs). These can and should include critical aspects of SDG acceleration, such as more equitable access to clean energy, jobs, better health, sustainable food sources and gender opportunities.

In addition, we urgently need investment and integrated funding models that align climate finance with SDG achievement, bridging the gap between funding requirements and implementation. We face an estimated financing gap of up to USD 4 trillion per year to reach the SDGs by 2030 and drive critical transitions. Later this year, at COP29 in Baku, we need to agree on a new target for climate finance and support a just transition that keeps average temperature rise below the 1.5-degree threshold this century.

This report builds on the growing body of evidence on the benefits of synergistic policies and action, as spelled out in the expert group's 2023 report and in four detailed thematic reports issued last month, focusing on policy frameworks; financial systems; knowledge and data; and cities. There is growing recognition of the importance of integrated approaches to climate and development policy, yet, as the report demonstrates, fragmentation across governance, finance and policy continues to hinder progress, necessitating reforms for effective and inclusive action. Achieving these goals requires sustained commitment and collaboration.

The Summit of the Future in September will be pivotal to creating the policy space for realizing SDG acceleration and climate action. This report shows that we have the solutions to make this possible. We look forward to further discussions among stakeholders at the Fifth Global Climate and SDG Synergy Conference coming up in Rio de Janeiro, Brazil, in September 2024, prior to the Summit.

We commit our organizations to do all that is within our power to support governments and other players in making the six years to 2030 a period of transformative change. As called for in this expert report, let us concur that "synergistic action must be at the heart of this transformation," for the future we want.



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List of acronyms

AI	Artificial Intelligence
AMF	ASEAN Mayors Forum
3CSEP	Center for Climate Change and Sustainable Energy Policy
C2ES	Center for Climate and Energy Solutions
COP	Conference of the Parties
CHAMP	Coalition for High Ambition Multilevel Partnerships for Climate Action
ECOSOC	United Nations Economic and Social Council
ESCAP	Economic and Social Commission for Asia and the Pacific
FAO	Food and Agriculture Organization of the United Nations
FDI	Foreign Direct Investment
G7	Group of Seven
G20	Group of Twenty
GCF	Green Climate Fund
GCoM	Global Covenant of Mayors for Climate and Energy
GEF	Global Environment Facility
GHG	Greenhouse gas
GST	Global Stocktake
HLPF	High-Level Political Forum
ICLEI	Local Governments for Sustainability
IFRS	International Financial Reporting Standards
IGES	Institute for Global Environmental Strategies
INFF	Integrated National Financing Framework
IOM	International Organization for Migration
IPCC	Intergovernmental Panel on Climate Change
IPE	Institute of Public and Environmental Affairs
K&D	Knowledge and data
LT-LEDS	Long-Term Low-Emission Development Strategies
MDB	Multilateral Development Banks

MSI	Multi-stakeholder-based initiatives
MVI	Multidimensional Vulnerability Index
NAP	National Adaptation Plans
NCQG	New Collective Quantified Goal on Climate Finance
NDC	Nationally Determined Contribution
NGO	non-governmental organization
ODA	Official Development Assistance
OECD	Organisation for Economic Co-operation and Development
PRI	Principles for Responsible Investment
SDG	Sustainable Development Goal
SEEA	Systems for Environmental Economic Accounting
SEI	Stockholm Environment Institute
SURGe	Sustainable Resilience for the Next Generation
TCFD	Taskforce on Climate-related Financial Disclosures
TNFD	Taskforce on Nature-related Financial Disclosures
UNCTAD	United Nations Conference on Trade and Development
UNDESA	United Nations Department of Economic and Social Affairs
UNDP	United Nations Development Programme
UNDRR	United Nations Office for Disaster Risk Reduction
UNEA	United Nations Environment Assembly
UNEP	United Nations Environment Programme
UNFCCC	United Nations Framework Convention on Climate Change
UNGA	United Nations General Assembly
UNHA	United Nations Habitat Assembly
UN-Habitat	United Nations Human Settlements Programme
UNOSD	United Nations Office for Sustainable Development
UNU	United Nations University
UN Women	United Nations Entity for Gender Equality and the Empowerment of Women

VLR	Voluntary Local Reviews
VNR	Voluntary National Reviews
WAVES	Wealth Accounting and the Valuation of Ecosystem Services
WBCSD	World Business Council for Sustainable Development
WHO	World Health Organization
WMO	World Meteorological Organization
WOAH	World Organisation for Animal Health

Executive Summary

It is no longer feasible to treat climate change and sustainable development separately, with over 80 per cent of SDG targets directly linked to climate. But there is a way, by tackling these two critical agendas together, that we can multiply impacts and bridge investment gaps worth trillions of dollars. We must break down fragmentation and silos, and act on the climate emergency and sustainable development together, or we risk catastrophe on both fronts.

Deep transformative changes are needed, and are possible, now. We know the issues that need to be addressed. We have solutions that are inclusive and equitable. Focusing on synergies between climate action and sustainable development is vital to overcoming the challenges, providing win-win solutions, and minimizing trade-offs. And there are many inspiring examples of how this can be done. This report seeks to highlight this as per the following key messages.

1. Only with unified action can we succeed

- It is not feasible to treat climate action and sustainable development separately and in isolation. With over 80 per cent of SDG targets directly linked to climate, either through positive co-benefits or negative trade-offs, there is an urgent need for a synergistic approach to maximize benefits and minimize trade-offs. Failure to ensure coordination, coherence, and integration across multiple goals hampers progress on both fronts and undermines the potential for transformative change.
- The purpose of a synergistic approach is for countries to strengthen coherence and integration in domestic sustainable development and climate ambition, whilst simultaneously ensuring that their global commitments are achieved.
- Achieving a synergistic approach requires enhanced cooperation and alignment among national and local governments, policymakers, researchers, academia, financiers, the private sector, civil society, and local communities, including Indigenous Peoples. It is only by working together and taking a holistic, integrated, synergistic approach that we can achieve a just, prosperous, equitable, and sustainable future for all that leaves no one behind. All countries stand to gain by synergistic action and cooperation, and all countries will lose if they fail to do so.

2. Fragmentation is the enemy

- One of the greatest impediments to pursuing synergies between climate and sustainable development actions is fragmentation across various levels – disjointed institutional structures and strategies at subnational, national, and international levels as well as non-collaborative and siloed approaches to climate finance, policy-making, design and implementation, research, and knowledge and data (K&D). This proliferation of different tools and methods often lacks relevance to the policy context and severely impedes a comprehensive and integrated understanding of the social-economic-environmental systems reflected in the SDGs. Addressing this fragmentation is

crucial for enhancing synergistic action. In this regard, linking spatial planning and climate action has mitigated fragmentation and helped in the articulation of governance, planning, and finance in territories and cities.

- Addressing fragmentation in governance requires fundamental reforms at international, regional, and national levels. Integration of climate and development agendas within policy frameworks, coupled with enhanced collaboration among government agencies, is essential for coherent and effective action. This approach facilitates progress on both agendas and delivers multiple development benefits, such as improved health, job creation, economic growth, and enhanced resilience.
- The current international financial architecture lacks the ability to enable efficient and effective funding or provide an environment for investment for synergistic action on climate and development. It is plagued with inequities, gaps, and inadequacies that are systemically rooted. The flow of climate finance remains inadequate, and many countries in the Global South are under-resourced to tackle adaptation challenges, build climate resilience, or invest in green development, particularly at the local level. There is a need to develop integrated national investment plans that align finance with domestic priorities and needs and maximize synergies, possibly through country platforms that help coordinate across actors. Integrated funding models, such as the development of Integrated National Financing Frameworks (INFFs), can align climate finance with SDGs, bridging the gap between funding needs and implementation. In this regard, climate-focused Capital Investment Planning can direct and prioritize investment in adaptation and mitigation at the local level. Furthermore, there are calls for the implementation of green tax reforms and tax on international financial transactions – as both can increase financial flows to support development needs and climate action, leveraging concessional finance and private investment. Standardizing reporting and making climate finance data accessible is essential for tracking flows, guiding decision-making processes, addressing knowledge gaps, and ensuring effective resource allocation.
- There is a critical disconnect between science, policy, and action. It has become increasingly clear that the low uptake in synergistic efforts is not a result of the absence of scientific evidence (though there are still gaps), but rather the challenge of translating multiple streams of data and information to formats that policymakers and practitioners can effectively utilize. Overcoming fragmentation in the knowledge sector demands interdisciplinary and transdisciplinary approaches and improved science-policy interface mechanisms. Bottom-up data collection and analysis, enabled through participatory approaches, can provide crucial insights for tailored interventions addressing local challenges and promoting synergistic policies. Establishing a global focal point or platform for accessing relevant tools, resources, and global and regional best practices and case studies on synergies is crucial. Such a platform should serve as a repository for knowledge and systematic knowledge creation, using among others, the best digital tools available for this purpose.

3. Deep reforms needed

- Despite decades of effort, progress remains insufficient, with global temperatures continuing to rise and possibly exceeding the targets of the Paris Agreement, catastrophic events escalating, and sustainable development stalled. Achieving meaningful progress demands comprehensive, integrated transformative changes across all sectors. This includes institutional reforms that explicitly address inequalities and behavioral shifts to ensure a just transition. Adaptive governance is essential to drive these changes forward.
- While several frameworks identify various key transformations necessary to achieve progress on the SDGs, there is a pressing need to integrate climate action, particularly aligned with the goals of the Paris Agreement. It is crucial that these transformations are implemented holistically, synergistically, and simultaneously.

4. Avoiding top-down approaches

- Goals are set, and policies are made, for both climate and development action, primarily at international and national levels. However, much of the action is implemented at sub-national and local levels – in cities, states and regions, rural areas, and communities. Achieving synergies between global climate and the SDGs requires tailoring solutions to local priorities and contexts. Top-down approaches often fail to address local nuances, hindering effective implementation. Understanding how to facilitate access to knowledge and finance from municipal governments can result in concrete implementation of the climate agenda at the local level.
- Localizing action and integrating policies at the local level, it has been clearly shown that countries can overcome barriers and maximize co-benefits across sectors, including air pollution control, urban planning, energy transition, and demand-side policies. There is a need for regional and global partnerships to support national efforts, harnessing city networks to share best practices, and implementing synergistic actions at the local level.
- Effective engagement of multi-stakeholders is crucial in driving inclusion and local initiatives. Workers, communities, and small businesses must be empowered and supported to articulate their challenges and empowered to define their own development and livelihoods.

5. Cities as drivers for a climate-resilient, sustainable future

- With increasing urbanization and population growth in urban areas, decisions made at the city level will determine whether the world moves towards a climate-resilient future. Cities hold significant sway, 65 per cent of SDG targets must be achieved in and through cities. Fortunately, cities are well-positioned to integrate climate decisions with a range of SDGs. Their capacity for innovation, adaptability, and proximity to stakeholders offers substantial opportunities to harness synergies between climate action and SDGs. This integration not only reduces mitigation and adaptation costs but also fosters multi-stakeholder alliances for scaling ambitions in line with the Paris Agreement and the SDGs.

- Cities are encouraged, beyond the integrated approach to climate action through spatial and development planning, to adopt concrete reforms across four sectors with significant synergistic potential. These include focusing resources on cooling strategies (including blue and green infrastructure), enhancing energy efficiency in industry and buildings, transforming transport systems, and promoting circular waste management. Explicitly linking climate actions to development, health, and other benefits in these sectors accelerates implementation.
- Today's urban planning and design (of infrastructure and buildings) will shape cities' resilience and sustainability for decades to come, considering that about 75 per cent of the future infrastructure is yet to be built by 2050. There is therefore a significant opportunity to develop effective urban planning and design frameworks that enable compact, resource-efficient growth and mitigate urban sprawl, thereby reducing energy consumption.
- Effective urban planning and design can mainstream urban resilience into development, mitigate climate risks for residents and create opportunities for green and blue infrastructure networks.
- Emphasizing demand-side solutions as key entry points for synergies, cities are well advised to frame their climate strategies around demand-side behavioral shifts (e.g. shifts in diets, modes of transportation, and consumption patterns). Focusing on the demand side will not only address the root causes of the climate crisis but also steadily improve service provision and well-being. Leveraging digital solutions and demand-side strategies can optimize energy usage, enhance health, and contribute to sustainable development.

6. Breaking down silos

- Policy development is primarily the purview of national and/or subnational governments and their relevant public service departments. Traditionally these have been structured along sectoral lines, for example, finance, health, education, and environment, with their own budgets and cultures, and little coordination among them. Unfortunately, these structures are inadequate for the purpose of delivering synergistic action to the extent needed.
- Policy and planning coordination, coherence, and integration are fundamental, especially across different levels of government. However, what is currently lacking are collaborative approaches and co-production of knowledge with researchers and communities that deliver policy-relevant insights on the value and nature of synergies and how policy interactions and implementation processes can lead to effective, fair, and just implementation.
- Renewable energy and energy efficiency play a pivotal role not only in addressing climate change but also in promoting inclusive economic development and job creation. Swiftly transitioning to net-zero emissions and investing in renewable energy and energy efficiency, countries can not only mitigate climate change but also improve public health, create jobs, and increase affordability and access to energy, particularly benefiting lower and middle-income groups.

7. Experts are everywhere

- International bodies and national governments should not be regarded as the holders of all knowledge in relation to ‘what’s best’ to address climate change and promote a just, sustainable future. Relevant knowledge exists within all sectors of society – businesses, Indigenous Peoples, local communities, non-governmental organizations (NGOs), researchers, small and medium-sized enterprises, collectives of farmers, women, cooperatives, self-help groups, and the general public.
- Inclusivity is crucial to address the systemic inertia that is preventing transformative change. Transformation cannot only come from knowledge and awareness among a small scientifically literate proportion of the population. Scientists, alongside intermediaries and the private sector, need to find ways to talk with and actively engage the general population to generate the necessary social movement for change. This must focus on incorporating perspectives from Global South populations, Indigenous groups, and youth to strongly shift action from top down to bottom up.
- We must recognize the importance of inclusive engagement by extending the scope of recommendations beyond governments to encompass the whole of society and various institutions. By fostering collective responsibility and engagement, a wider range of stakeholders can contribute to achieving synergy objectives, reflecting the understanding that coordinated efforts across all levels of society are essential for success. It is critical that we find new ways of engaging with, and elevating the voices of, those who have been historically, and are currently, excluded from these discussions.

8. Protecting the most vulnerable

- It is critical to grow institutional capacity and implement integrated approaches that incorporate consideration of policy outcomes and anticipate consequences, particularly on vulnerable communities who are already, and stand to be even further, adversely impacted. There is a need to account for important interdependencies in connected systems from local to global. Misguided efforts to implement climate and sustainable development policies pose a significant risk of leaving many individuals, groups, communities, regions, and countries behind and worse off.
- There is an acute need to build resilience in communities by strengthening infrastructure and enhancing community capacity, alongside government collaboration across relevant sectors and levels, to reduce the risks from, and prepare for, extreme climate events and to achieve sustainable developmental outcomes, emphasizing the urgency of action in vulnerable regions. There are various innovative methods of building local resilience through community-based climate response strategies.

9. We cannot 'do' if we don't 'know'

- It is impossible to make the case, and impractical to develop and implement policies, for synergistic action if the underlying rationale, benefits, and risks (political, economic, environmental, and societal) are not widely socialized and recognized. There is no shortage of K&D that clearly details the benefits of a synergistic approach (the 2023 report, *Synergy Solutions for a World in Crisis: Tackling Climate and SDG Action Together*, provides a wealth of examples). The solution lies in greater accessibility, relevance, usability, and coherence of the available information and tools to policymakers.
- Establishing a global platform for knowledge exchange and data sharing is essential to inform policy decisions and evaluate synergies effectively. Collecting granular data on vulnerability and distributional impacts is essential for ensuring inclusive and just transition strategies, filling evidence gaps, and addressing local challenges in climate and development. A system for keeping these data updated is critical for ensuring ongoing contextual relevance to inform action, particularly in rapidly evolving contexts.

10. Change won't happen overnight

- We would be foolish to believe that the transformative changes needed, as highlighted in this report, will happen overnight. Both the industrial and digital revolutions were decades in the making and are still ongoing. Both started incrementally with niche innovations before major transformations took hold. This is where we are now with respect to both climate change and sustainable development.
- At the same time the urgency of the situation cannot be ignored. The period to 2030 must serve as a major launchpad for meaningful and sustained transformative actions that ensure a prosperous and healthy future for all on a net-zero, resilient, and healthy planet in 2050 and beyond. Synergistic action must be at the heart of this transformation.

1 Introduction and Background

In a briefing to the General Assembly, the UN Secretary-General stated, “*Climate action is the 21st century’s greatest opportunity to drive forward all the Sustainable Development Goals*”. This was an urgent call to act jointly on both the climate and the development agendas and a reminder to everyone that the 2030 Agenda for Sustainable Development and the Paris Agreement are intrinsically linked – one cannot be achieved without the other.

At the same time, by any set of measures, it is evident that progress towards achieving the goals of either the Paris Agreement or Agenda 2030 is significantly off track. The eight years since the Paris Agreement entered into force have been the warmest on record and while the Agreement has had a positive impact in reducing future potential temperature increases, carbon emissions and temperatures are increasing with 2023–2024 the warmest year on record at 1.48 degrees Celsius above pre-industrial levels. The recent Sustainable Development Report 2024 states “*On average, only 17 percent of the SDG targets are on track to be met globally by 2030, with the remaining 84 percent showing limited progress or a reversal of progress. At the global level, SDG progress has been stagnant since 2020, with SDG2 (Zero Hunger), SDG11 (Sustainable Cities and Communities), SDG14 (Life Below Water), SDG15 (Life on Land) and SDG16 (Peace, Justice and Strong Institutions) particularly off track*”. In 2023, parties to the Paris Agreement and the 2030 Agenda undertook stocktaking exercises (Global Stocktake at COP28 and Voluntary National Reviews (VNRs) annually at the High-Level Political Forum (HLPF) respectively), underlining the increasing urgency and calling for accelerated implementation and synergistic action across the global sustainability goals. Clearly, over thirty years of incremental action have failed to make any significant progress or have an impact at the pace and scale necessary to tackle climate change or sustainable development. The lack of transformational progress has many reasons but fundamentally is caused by both political constraints and the deep fragmentation and inertia in global systems – governance and public administration, economics and finance, and education and research – that were mostly designed and implemented under a very different set of global conditions from what the world now faces. In short, many of these systems are no longer fit for purpose in the 21st century.

The 2023 report, *Synergy Solutions for a World in Crisis: Tackling Climate and SDG Action Together*, provided overwhelming evidence that climate and development are intrinsically linked, with over 80% of the SDGs and targets linked to climate, either positively through co-benefits or negatively through trade-offs. Connections between climate action and the SDGs go so deep that it seems incongruous that any actions designed to address both the climate and development agendas do not take advantage of the co-benefits and minimize the trade-offs – that is, to address climate and development synergistically. However, this seems to be exactly the case for most countries committed to implementing the climate and sustainable development agendas. This failure to act synergistically has many underlying causes, as outlined in the 2023 report, but the inertia and fragmentation in global systems are fundamental.

The lack of flexibility of these systems to adapt to rapidly changing conditions, globally or locally, together with competing interests promotes incrementalism and prevents the sort of transformations needed. Taking a synergistic approach to addressing both climate and development agendas has the potential to provide the sort of urgent transformations needed to make any significant progress toward achieving the goals of the Paris Agreement and Agenda 2030.

Strengthening the connections between the SDGs and climate action is essential for several reasons:

- Firstly, achieving many of the SDGs depends on progress on climate change mitigation and adaptation and *vice versa*;
- Secondly, integrated planning and actions can deliver several development benefits such as improved health, new jobs, higher economic growth, that offset the costs of greenhouse gas (GHG) mitigation and climate change adaptation; and
- Finally, working across objectives can ensure growing pools of climate finance meet other development priorities by producing strong co-benefits.

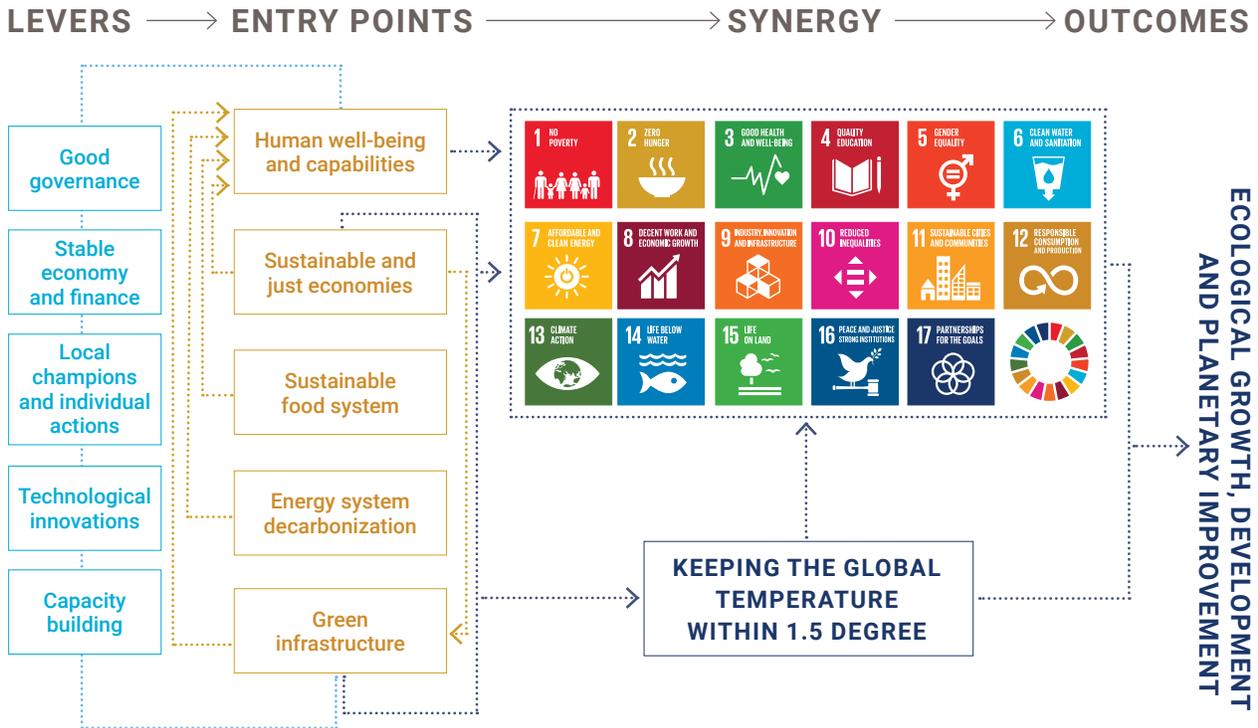
In the 2023 synergy report, the need for a synergistic approach is well-documented and supported by a wealth of evidence-driven insights illuminating the intricate relationship between climate action and sustainable development objectives. Drawing from extensive research and analysis, the report reveals compelling statistics that underscore the urgency of coordinated efforts. The report also highlighted that very few NDCs explicitly refer to SDGs while similarly, SDG reports such as Voluntary National Reviews VNRs fail to comprise quantifiable climate measures.

1.1 Purpose of this report

The purpose of this current report is not to revisit what synergies are or the arguments for why a synergistic approach is critical for progressing the climate and development agendas – these were comprehensively covered in the 2023 report and, suffice to say, the rationale and evidence for synergistic action is overwhelming. Neither does this report detail the many barriers to synergistic action, which again are covered in the 2023 report. Rather, this report is primarily focused on what now needs to be done to enhance synergistic actions, and more importantly how to translate synergies from theory to practice. The framework for synergistic action is shown in Figure 1.

The primary objective of this report is to continue the process of exploring some initial practical recommendations to facilitate and implement synergistic actions globally. Although the scope of this report is global, it also delves into synergistic actions within the context of overcoming barriers from localized to globalized scales, and highlights enablers and opportunities across four broad-based themes: frameworks for policy action; knowledge and data; finance; and cities. Importantly, these themes are not mutually exclusive and cannot be considered in isolation – they are intrinsically interwoven.

FIGURE 1. Framework for synergistic action.



Levers are a set of enablers to promote synergies. Entry points can be considered as a set of potential primary objectives that can be instrumental in building synergies between climate change and SDG actions. The arrows show the interactions between different levers, entry points, SDGs, and climate targets which ultimately lead to economic and ecological growth.

This report builds on the earlier 2023 report, subsequent online consultations with groups of eminent global experts, and the four complementary Thematic Reports to present a number of key findings and develop action-oriented integrated recommendations. The following sub-sections offer summarized key insights from the Thematic Reports.

What are synergies?

- Synergies refer to the combined or cooperative effects that occur when two or more actions interact in a way that produces a result greater than the sum of their individual contributions.
- A synergistic approach to designing and implementing policies related to climate change and SDGs serves to tackle these challenges simultaneously rather than separately, with a combined effect that increases the overall impact of both policies.

1.2 Policy action

The ultimate purpose of a synergistic approach is to ensure meaningful integration between global commitments, and national and local priorities in such a way that countries achieve a just transition, ensure that no one is left behind, and arrive at system-wide and transformative changes across social, economic, and environmental domains. It must therefore involve processes that assess expected policy outcomes and anticipate unexpected effects in terms of their negative impact on vulnerable communities that are already, and stand to be further, adversely impacted by ineffective climate and SDG implementation.

2025 is a crucial year for climate change as all parties to the Paris Agreement are scheduled to submit new NDCs (NDC 3.0), which must be more ambitious than the current climate action plans. A key objective is to strengthen the integration between the NDC and the domestic policy environment. Recent evidence from the United Nations Development Programme (UNDP) on the implementation of the current NDCs links effectiveness to the level of integration between the NDC and domestic priorities. In other words, to accelerate implementation, climate and SDG concerns must be embedded into domestic policy realities and part of a whole-of-government planning with relevant ministries at the table.

The new NDCs face several challenges related to institutional and financial silos and fragmentation. These challenges can be overcome through: (i) strengthening institutional coordination, by removing silos, reducing fragmentation, and enabling meaningful participation; (ii) overcoming incoherence in implementation, by anticipating policy interaction and negative outcomes and reducing transaction costs from horizontal and vertical coordination; (iii) navigating policy constraints, by identifying shared ideas and visions of the benefits from climate and SDG action and navigating vested interests that benefit from the status quo; and (iv) frameworks, tools and other resources that can facilitate synergistic action at each step, such as tools for systems analysis, quantification and modeling, impact assessment, budgeting, auditing, and policy integration, among others.

Comprehensive disaster and climate risk management are central to development planning, including in energy, industrial, land use, ecological, and urban systems. Risk-centered approaches should be integrated into National Adaptation Plans (NAPs), and adaptation and climate information into national and local disaster risk reduction strategies. Better prevention and risk management minimize adverse effects and create opportunities to transform systems and societies. Disaster risk management and adaptation plans should be based on an analysis of both historical disaster trends and future climate and disaster risk projections.

1.3 Knowledge and data

One of the major obstacles to effective synergistic actions is the lack of understanding of the value and interplay of synergies across the science-policy-society interface. Specifically, there is a substantial gap between scientific evidence and applied policy action. This gap mostly results from both a perceived and actual lack of relevant knowledge and data (K&D) on synergistic approaches available to policymakers due to the fragmented nature and general inaccessibility or inadequacy of much of the evidence.

For practitioners, this translates into inadequate access to comprehensive knowledge and decision-making processes. With government officials and policymakers often handling various multi-faceted challenges simultaneously, K&D generation efforts to advance synergies need to strike the balance between causing information fatigue and offering necessary and usable resources, relevant evidence, and associated tools. At the outset, greater access to relevant K&D has numerous contributions to make in helping guide practitioners to employ a synergistic approach, including: (i) offering clarity on some of the basic insights on synergies, such as those related to the importance and contextualization of both co-benefits and trade-offs; (ii) helping policymakers and practitioners navigate the policy landscape; (iii) providing tailored approaches for pursuing synergies through localization and contextualization at different levels within and between countries; and (iv) providing guidance and creating opportunities for knowledge sharing on some of the universally prioritized goals.

1.4 Finance

Along with knowledge and data, finance is also perceived as a key barrier. Despite climate finance almost doubling in the last decade, there remains a significant shortfall, with only USD 1.3 trillion raised in 2021–2022. Although this is twice that of 2020–2021, the annual climate finance needed through 2030 amounts to USD 8.1–9 trillion to meet a 1.5°C global climate scenario and avoid the worst impacts of climate change (Climate Policy Initiative, 2023). Similarly, despite the 7% growth in Official Development Assistance (ODA) from the Development Assistance Committee countries in 2019–2020, the SDG financing gap in developing countries rose to USD 3.9 trillion in 2020, exacerbated by the COVID-19 outbreak and global inflation (OECD, 2022). Both figures, when considered separately, would typically mean that countries would opt for one to take precedence due to inadequate financial resources. However, what is often not realized in these evaluations are the developmental co-benefits of climate finance and the climate co-benefits of ODA. Had the synergies between climate action and SDGs been properly realized, the total investment gaps would have been significantly lower, and it would have been easier to mobilize the finances to respond to multiple objectives.

Finance for climate and development remains at the center of both the climate negotiations and the development agenda respectively, however, they have primarily been debated and developed separately (climate finance under the UNFCCC is negotiated whereas SDG financing is not). Since April 2023¹, the landscape of this debate has shifted. The decisions adopted at the Forum on Financing for Development laid the foundation for much-needed reforms of the international financial architecture to adapt to the current needs and challenges of the 21st century. In May 2023, the UN Secretary-General published a policy brief², stating that *“The existing architecture has been unable to support the mobilization of stable and long-term financing at scale for investments needed to combat the climate crisis and achieve the SDGs for the 8 billion people in the world today. It is plagued with inequities, gaps, and inefficiencies that are deeply rooted in the system”*. Both the poor understanding of the economic benefits of pursuing synergies and the dispersed control of climate and development finance make it difficult to develop policies and action plans that straddle sectoral and constituency interests to address this fragmentation. Therefore, there is increasing momentum for urgent reforms to the international financial architecture (which includes, among others, governments, multilateral development banks, and private financial

institutions), to ensure an integrated financial framework across all levels of finance (national, regional, international) to implement the climate and development agendas. Strengthening the framework of cooperation to more easily and effectively catalyze the flow of climate finance to developing countries and countries most in need from public and private sector sources is perhaps the most important, but also the most challenging, of the reforms needed. The upcoming Fourth International Conference on Financing and Development will be critically important in this regard.

1.5 Cities

Cities have a pivotal role to play in any actions to address climate change and to make progress in sustainable development. Cities are not only home to more than half of humanity but also the source of more than 70% of the world's GHG emissions. Further urbanization in low- and middle-income countries emphasizes the need to provide low-carbon infrastructure now and leapfrog to sustainable urban futures while avoiding gridlock and pollution. Cities are also hubs of innovation as well as the foundation for ongoing efforts to improve well-being and quality of life. In addition, cities frequently possess high concentrations of resources and technology that are critical for outside-the-box thinking and forward-looking planning. At the same time, cities' decision-makers are often more agile than national governments, enabling experimentation and real-time learning needed for impactful and scalable solutions with positive developments often spreading from city to city. Further, cities are melting pots of diverse actors – from municipal authorities to citizens to businesses – each playing a potentially key role as agents of transformation. In sum, cities are uniquely positioned to lead the charge in leveraging synergies and limiting trade-offs between the SDGs and climate objectives.

Specifically, demand-side climate solutions often implemented in cities offer significant potential for climate-SDG synergies. Some of the most significant synergies arise from phasing out fossil fuels that reduce air pollution and improve health; low carbon transport infrastructure and active travel programs that safeguard against hazards and reduce obesity; energy-efficient building and retrofits that improve resilience and livelihoods; circular economy strategies that shrink material footprints and boost material efficiencies; and nature-based solutions that sequester carbon and limit the risks of extreme heat.

All the themes discussed above are clearly interrelated and any actions taken in one area will impact actions in each of the others. For example, it would be a wasted effort to develop policy frameworks for cities without having access to the latest K&D relating to possible co-benefits and trade-offs and/or what the climate/development financial landscape looked like. Similarly developing new funding models for climate and development financing in the absence of knowledge of potentially new policy frameworks and administrative arrangements would be clearly counterproductive. These interrelationships highlight the need for a holistic and integrated approach to advance the synergistic action agenda.

Strong multilevel governance frameworks and accompanying multilevel climate action frameworks need to facilitate local actions. For example, to date, 66% of NDCs include strong or moderate urban content³ yet even those NDCs with strong urban content do not necessarily address adaptation and mitigation needs equally, and many do not articulate specific funding needs.

2 Towards a new architecture for synergistic action: Uncovering the barriers and enablers

2.1 Fragmentation is the enemy of effective action

One of the greatest impediments to pursuing synergies between climate and sustainable development actions is fragmentation at all levels – fragmentation of institutional landscapes, subnational, national, and international, operating in silos; fragmentation of climate finance and its governance; fragmentation in policy-making, design, and implementation; and finally, fragmentation of research, knowledge, and data leading to a proliferation of different tools and methods often of little relevance to the policy context. This fragmentation not only leads to wasted resources but also policy incoherence because of trade-offs emerging from compartmentalized policymaking. A comprehensive and integrated understanding of the social-economic-environmental systems reflected in the SDGs is severely hampered by this fragmentation. This fragmentation lends itself to missed opportunities in relating the SDGs to climate change and vice versa and underscores the need to enhance synergistic action.

One of the great paradoxes of our time is that despite the world being more interconnected than at any time in history, due in part to advances in information technology, telecommunications, and transport, it is also arguably more fragmented and divided – across ideological, political, religious, wealth, equity and justice and equality dimensions. This fragmentation is made even more evident and challenging by the ever-increasing interconnectedness. The recent Human Development Report⁴ identifies polarization and fragmentation emerging from globalization and countries' interests in seeking new coalitions to gain power and influence and respond to perceived threats to their security and their values. This has trapped our planet in gridlock and is preventing us from delivering the global public goods reflected within the 2030 Agenda and the Paris Agreement. However, overcoming their differences, countries were able to come together and unite in their commitment to the goals of both the Paris Agreement and Agenda 2030. What is needed now is their united commitment to implement meaningful actions to achieve these goals.

2.1.1 Fragmentation across governance

At the highest level, there is fragmentation between the Paris Agreement and Agenda 2030. These two critical global agendas were developed and implemented separately, minimizing the opportunity to exploit the obvious linkages between the two. Despite recent calls for greater integration between the climate and development agendas, the global mechanisms responsible for the implementation and monitoring progress of both the Paris Agreement and Agenda 2030 operate independently and in isolation. For example, only approximately 20 of the 150+ new and updated NDCs explicitly refer to SDGs, with the majority failing to consider the interactions between climate policy and SDG progress.

Conflicts between climate action and broader sustainable development policies can hamper social and political support for both agendas. The extensive potential effects of climate change—which impact at least 40% of the SDG targets (Fuso Nerini *et al.*, 2019)—challenge traditional forms of governance and make a strong argument for coordinating climate action with plans, strategies, and policies for social and economic development. Fundamental changes to the governance and policy frameworks of these critical global agendas are required if we are to achieve the integration and synergies necessary to accelerate progress toward achieving their ambitions and objectives in 2030 and beyond. Equally important are the changes that enable science advisory, science assessment, and/or science-policy interface mechanisms to be associated with each other.

While the recent Global Stocktake (GST) of the Paris Agreement makes a strong call for synergies and coherence across resilience-related actions, the ‘landing spots’ of these international agendas remain disparate. Worldwide, national government agencies continue to be organized along sectoral lines (such as finance, health, environment, and education) often functioning in isolation from one another, with few cross-sector portfolios. There is a long history of government entities responsible for climate and related portfolios not cooperating with one another. Such institutional structural rigidity together with complex governance structures can hinder synergistic action due to uneven access to information, overlapping power, separate or diverging interests, department-specific language, lack of openness, and the lack of a clear mission. Furthermore, politicians frequently have a stronger inclination to defend limited vested interests rather than broadening policies to a wider range of parties. Additionally, breaking down silos by increasing cross-ministerial collaboration and institutions is often associated with high costs, where highly qualified staff may be kept from project implementation by being deployed to cross-institutional coordination. These interagency institutional impediments can also present challenges if organizations that may contribute significantly to conversations about climate and/or development policies are left out. As subnational and local governments are often organized along different lines than their national counterparts, adapting national policies to more local levels can often result in fragmented or inconsistent local decisions. Furthermore, NGOs, civil society, Indigenous Peoples, and local communities are further marginalized in processes that are led primarily by governments who may not represent or respect their interests.

The only way to overcome this deeply rooted fragmentation and provide the unity and integration necessary to accelerate progress on the climate and development agendas is through a synergistic approach that considers both agendas holistically and simultaneously. Policy frameworks that effectively and efficiently integrate both climate and development policies and accessible knowledge and data will be key. But equally, or perhaps even more important, is the need to address the institutional inertia that is creating barriers to institutional reform. The UN Climate Change Conferences and the HLPFs on Sustainable Development should require new international linking of strategies to enable countries and other stakeholders to implement climate change and sustainable development commitments in an efficient and mutually reinforcing manner. Linkages between related agendas, such as the Sendai Framework, should also be leveraged to include the importance of resilience to the synergies narrative.

NDCs (and more widely, national climate policy) should explicitly incorporate assessments of the synergies and trade-offs with broader sustainable development. Stronger coordination and leadership between the primary institutions in charge of development and climate policy (with either department leading the coordination of the two agendas or designating a single department in charge of the leadership of both the SDGs and climate action) could help promote consistent leadership for both agendas. Although a complete redress of governance mechanisms to integrate the two agendas will not be without initial costs, such as those related to cross-institutional collaborations, this is a crucial transformation that will be imperative for the achievement of the two agendas, address trade-offs, and ensure efficient use of resources and personnel.

2.1.2 Fragmentation across financing

The current international financial architecture is unsuitable for identifying and implementing integrated funding models that incorporate both climate and development. Financing for climate actions and sustainable development is perhaps the major challenge to achieving meaningful synergies between the Paris Agreement and Agenda 2030. The financing needs for the Paris Agreement and the SDGs are staggering. The annual climate finance needed through 2030 amounts to USD 8.1–9 trillion (Climate Policy Initiative, 2023). Overall climate finance flows remain inadequate, and countries in the Global South alone would need to mobilize more than USD 2.4 trillion per year by 2030, half of which must come from external sources, to spearhead them to a low-carbon, climate-resilient development trajectory (UNCTAD, 2023b). Similarly, the annual SDG investment gap for developing countries alone is USD 4 trillion (UNCTAD, 2023a)⁵.

When both amounts are considered independently, it usually means that governments would either choose to prioritize one over the other or inadequately fund both, due to insufficient funding. The co-benefits of climate funding on development, and SDGs investments on climate target progress, however, are frequently overlooked in these assessments. It has been reported that moving toward a green economy may create new employment and economic possibilities, with an average investment of USD 1 yielding USD 4 in co-benefits due to advancements achieved in SDG 8 (Hallegatte *et al.*, 2019). Similarly, over the last six years, nearly 70% (or USD 11.6 billion) of funding for outdoor air quality simultaneously addressed climate change due to mitigation measures in the energy and transportation sectors, thereby delivering across various SDGs and climate targets. This was despite only 2% of international public climate finance or 0.5% of international development funding specifically tackling air pollution (Clean Air Fund, 2023). This achievement was made possible despite the significant mismatch in the funding requirements for air pollution worldwide, with inadequate flows in Africa, Latin America, and certain regions of Asia.

There has been some progress in this area, with many countries incorporating SDGs and climate action into their annual business plans and financial budgets. Some, such as Colombia and Indonesia, have developed Integrated National Financing Frameworks (INFF) that include strategies linking climate action with the SDGs, such as climate/SDG budget tagging. Over the last few years, multilateral and bilateral donors have enhanced their criteria for evaluating social, environmental, and climate and disaster-related risks and encouraging the adoption of sustainable approaches in project development.

One of the most important outcomes on climate and development finance at COP27 was the text urging for reforms of multilateral development banks and other financial institutions and the response of these institutions through a joint statement pledging to reform. The Parties and civil society argued that such reforms were necessary to ensure these institutions align with the Paris Agreement and its Article 2.1(c), making finance flows and climate action, in general, consistent with a pathway towards GHG emission reductions and climate-resilient development. In addition, these institutions were called upon to develop and transparently publish reports on impacts, namely sustainable development and climate impacts, to increase accountability.

However, these urgent reforms are yet to be realized and given the inherent inertia of the global financial system may take considerable time. For instance, globally more than USD 7 trillion annually (UNEP, 2023) is being channeled to subsidize the fossil fuel economy, which directly undermines the long-term prospects for sustainable development and climate action. This highlights the need to reform taxation and subsidy practices, to provide opportunities to accelerate energy systems transition, and build more just and sustainable futures, but depends on significant efforts to manage any adverse socio-economic impacts from such reforms. There is, therefore, an important need to enable sustainability-aligned economic and tax policies as part of domestic resource mobilization. Carbon pricing, for example, can be used as an economically efficient emission-reduction policy that simultaneously generates revenues for SDG-oriented policies, for example, pro-poor redistribution or financing SDG-related investments (Franks *et al.*, 2018; Soergel *et al.*, 2021a).

The lack of clear evidence for the economic benefits and trade-offs as well as lack of an understanding of the causal links of pursuing combined efforts in climate change mitigation and adaptation, which can simultaneously advance multiple SDGs, poses a challenge. Additionally, there is limited understanding of how climate finance intersects with development finance. Specifically, it is unclear to what extent aligning these two finance streams could reduce the funding gaps for climate action and SDGs, and whether there are co-benefits or trade-offs that may influence investment requirements. Indeed, there will be no integrated transformative action at global and national levels without concrete system change in the financial sector and an 'all hands-on deck' approach. Macroeconomic modeling and practices must be aligned with sustainability objectives, including monetizing relevant externalities for the environment, climate and well-being. Costings for both national and localized co-benefits for climate and development as well as risks stemming from the cost of inaction should be the basis for economic policies and public investments. Examples of this include the UN Statistical Commission's work on Systems for Environmental-Economic Accounting (SEEA), and particularly the Wealth Accounting and the Valuation of Ecosystem Services Partnership (WAVES), which works to monetize such benefits in green accounting.

Advancing the necessary scientific understanding in the field of climate and development synergies requires interdisciplinary approaches, which can be challenging to justify to what are primarily national scientific funding agencies, but also other funders who prioritize pursuits within traditional academic disciplines and assess research excellence and risk accordingly. One potential solution is to establish

new scientific funding mechanisms that stress interdisciplinary and transdisciplinary research that can address both climate action and SDG progress simultaneously or to adapt existing funding sources to accommodate the integrated goals of climate action and SDG achievement.

In 2009, developed countries agreed to mobilize USD 100 billion per year to support developing countries' climate action by 2020⁶. When countries signed the Paris Agreement in 2015, they agreed to replace the existing goal of USD 100 billion per year and set a 'New Collective Quantified Goal on Climate Finance' (NCQG), which is due to be adopted at COP29 in Azerbaijan⁷. The new finance goal will channel greater funds toward urgently needed climate action in developing countries. It will support the implementation of low-carbon, climate-resilient solutions in energy, transport, agriculture, and other vital systems. Although NDCs can have actionable investment components, only 48 of 147 NDCs submitted by developing countries offer information on investment requirements and only 40 discuss prospective sources of investment (UNCTAD, 2023b). With increasing financial support, developing countries should be able to step up their climate ambitions in the next round of NDCs due in 2025.

The NCGQ has spurred countries to improve and quantify their climate activities in the next NDCs as well as developing INFFs. The preparation of INFFs can serve as a new generation of integrated SDGs and Climate Plans. The INFFs for SDGs and Climate Action should reflect the different risk-return expectations of an increasingly broad spectrum of financiers, including both public and private financiers, and identify the most appropriate source of finance for each national priority as well as the potential to use public funds to de-risk private investment. An integrated financial strategy will ensure a just transition by assessing the investment needs, cost, and lastly, identifying sources of financing (Figures 2 & 3). In 2022, governments, through the United Nations Economic and Social Council (ECOSOC), Forum on Financing for Development, committed to supporting the implementation of INFFs to align financing policies and strategies with national investment priorities, legal frameworks, and disaster risk and sustainable development strategies consistent with the goals of the Paris Agreement, the 2030 Agenda and the Sendai Framework for Disaster Risk Reduction 2015–2030.

The private sector is also a fundamentally important driver for integrated and effective approaches at scale. Multiple efforts are already emerging on how to align private sector practices with sustainability objectives – such as through the UN Principles for Responsible Investment (PRI), Global Compact, and OECD Principles and this business-led World Business Council for Sustainable Development (WBCSD). A new wave of green taxonomies and sustainable value chain regulations are also being introduced, such as those by the European Union⁸. Such regulation – today replicated by almost all large economies – has the potential to dramatically change the markets' *modus operandi*. However, to minimize any associated risk of adverse impacts on sustainable development and climate action, there is a critical need to build adequate capacities in all companies, investors, and countries to accommodate such new requirements, and harmonize the multiple due diligence requirements to ease administrative burdens on affected countries.

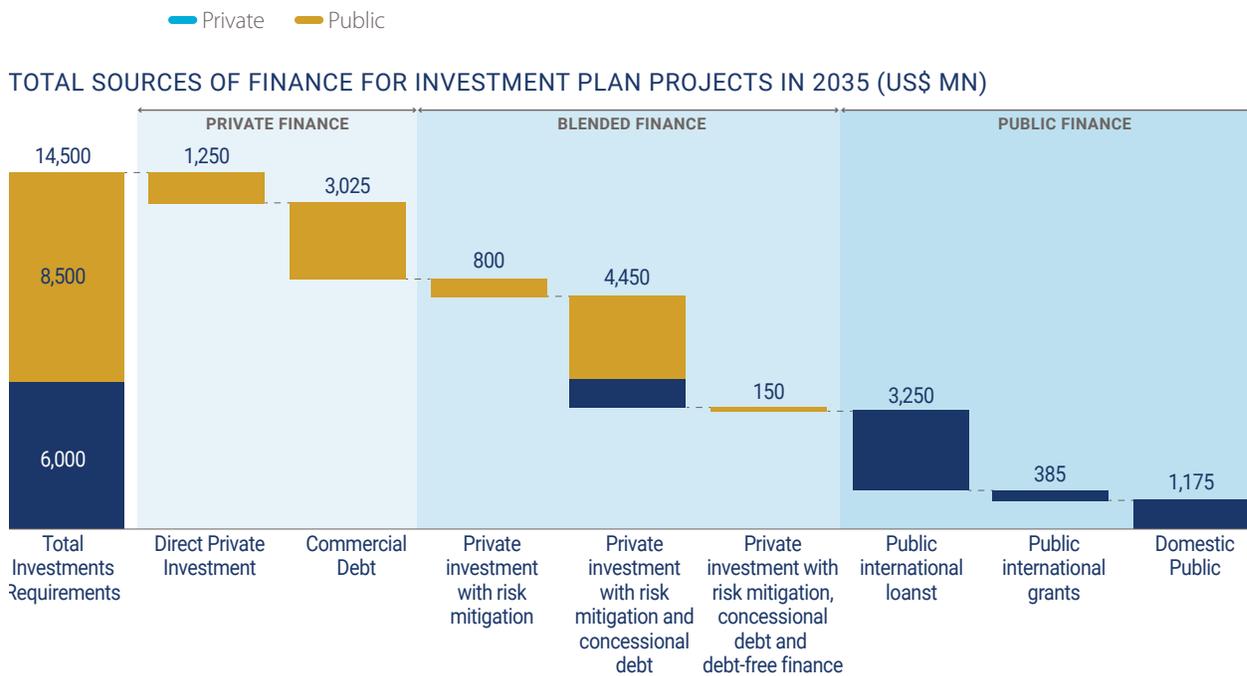
At the local level, there is a need for enabling conditions for finance and investments through the management of risks in the market, including risks associated with the political economy, regulation, currency, and climate impacts to ensure that capital needs are scaled from integrated national

Long-Term Low-Emission Development Strategies (LT-LEDS) as a Way to Address Finance Gaps

The lack of long-term planning, the fragmentation caused by numerous funding sources for climate and development, the complexities in aligning both agendas, and the imbalanced nature of climate and development finance flows which channel more funding towards higher-income countries, can leave more countries in need of the financing incapable of utilizing synergies. An important way to resolve issues related to inadequate or unequal finance flows and integrate financing for climate and development is utilizing the LT-LEDS, which can essentially be seen as a development strategy for a country, including developed countries, rather than just an environmental or economic plan.

to localized approaches to development and climate action. In this regard, blended finance is crucial to improve access to capital for underserved population segments, which has a strong correlation with poverty eradication, localized business development, a just and inclusive transition, climate resilience, job creation, and gender equality. However, without basic risk-mitigation conditions for channeling and scaling finance and investment, investors and private sector actors will remain discouraged. It remains pivotal to internalize these risks through the creation of predictable, transparent, and stable long-term policy frameworks by ensuring clear and realistic target setting and solid and transparent regulation of the market. Access to updated localized risk assessments across sectors for climate change impacts remains critical to avoid maladaptation and stranded assets.

FIGURE 2. The spectrum of sustainable investing



Source: UN DESA and Global Investors for Sustainable Development Alliance based on RIAA (Responsible Investment Association of Australasia), CFA Institute, Global Sustainable Investment Alliance, and Principles for Responsible Investment.

FIGURE 3. Impact of the international financial architecture on the Sustainable Development Goals and⁹ Climate



2.1.3 Fragmentation across knowledge

The knowledge sector is also fragmented. Most universities continue to be structured along traditional disciplinary lines with few offering qualifications or undertaking research using interdisciplinary approaches (Fuso Nerini *et al.*, 2019). Globally, few research institutions or university departments work at the science-to-policy-society interface, as from the institutions' perspective, such outreach and engagement activities can be difficult to justify to funders focused on evaluating the performance of specific and traditional academic fields. Therefore, research institutions are often uncertain about how to engage with policymakers and *vice versa* primarily due to a lack of understanding on both sides of the value and critical importance of evidence-based K&D for the policy and decision-making processes. This limits opportunities for the exchange and dissemination of ideas, especially for evaluating the impact of research and ensuring that research is problem-driven. It is essential that researchers gain some understanding of both the intricacies and nuances of decision-making processes and the potential impacts of their research so that research outcomes can be presented in a policy-relevant manner. Similarly, it is incumbent on policymakers and bureaucrats to understand the scientific rationale underlying various policy options to enable objective policymaking. Thus, there is a mutual obligation between researchers of different disciplines and policymakers to strengthen their relationships to ensure the best scientifically verified policies are developed and implemented. Universities and institutions need to formally engage with governments to establish shared goals that foster integration in understanding climate change and SDGs at the grassroots level. Action on climate and sustainable development requires a transdisciplinary and systems approach across both the knowledge and policy sectors. This includes addressing the North-South divide in science and research which also contributes to this fragmentation¹⁰. The recent move towards 'open science' introduces some welcome changes to this current situation.

Action towards climate change requires better communication across all sectors of society – scientists, policymakers, business, media, and the public, especially affected groups including the young, women, the elderly, displaced communities, and Indigenous Peoples. Knowledge has an important role to play in mitigating polarization. People tend to inflate how negatively others perceive them and underestimate how much they agree with one another. For instance, less than half of the population believe that others are willing to forgo some of their income to mitigate the impacts of climate change, whereas nearly 70% of people worldwide claim to be prepared to do so (Andre *et al.*, 2024). Strategies that encourage more deliberative information processing can help release people from being trapped in unfounded beliefs, as well as equip themselves with climate literacy to enhance their ability to identify denialism and take appropriate action to protect themselves against the impacts of climate change (IPCC, 2022).

Access to relevant K&D is pivotal in supporting synergistic policies and practices, offering insights into policy interactions, distributional outcomes, and institutional arrangements. However, much is yet to be accomplished in how we produce and use K&D to operationalize synergies. Below are some important issues that need to be addressed to drive synergistic policymaking across sectors, localities, regions, and countries.

FIGURE 4. Impacts of climate change on the achievement of the SDGs. Each rectangle to the right of the relevant SDG represents a Target. Targets highlighted in red denote the presence of published evidence of impacts. The absence of highlighting indicates the absence of identified evidence, although it does not necessarily mean the absence of an impact.

— No evidence of impacts found — Evidence of climate-change impacts



Source: Fuso Nerini et al., 2019.

- Poor understanding of interactions between climate action and development pathways:** How climate change will affect the achievement of nearly 60% of SDG targets, especially those related to education, health, inequality, innovation, resource production and consumption, sustainable cities and communities, peace, justice, institutions, and cross-national partnerships, is poorly understood (Fuso Nerini et al., 2019; see Figure 4). In contrast, there is abundant evidence linking the impacts of climate change to environmental SDGs as it is easier to discern the links between natural systems, rather than natural and social systems. This gap in K&D creates trade-offs in the form of distributional impacts between climate and development policies. Therefore, there is a critical need to uncover the potential proximities and interlinkages between social systems as they relate to climate action.
- Too many tools, not many applications:** While there are numerous tools and methods at the disposal of researchers to reveal these interactions, each approach has its advantages and limitations. Each has unique data requirements, assumptions, and ease of use, resulting in poor uptake by policymakers, further widening the gap between science and policy when it comes to synergies¹¹. Despite nearly a decade since the SDGs came into force, there are few frameworks available to assess the interactions between the different goals. Moreover, there remain very few modeling studies that explore pathways to advance the SDGs and climate targets simultaneously and thus produce policy-relevant insights by focusing on synergies and trade-offs of specific policies, rather than simply providing information on the synergies between individual SDG targets (exceptions to this are Soergel et al., 2021b, and Allen et al., 2024). Overall, the appropriateness of any tool or

method depends on which policy phase it can effectively contribute to, and how embedded it is in policymaking to compare policy options and produce outputs that are applicable and relevant. Nevertheless, a balance needs to be achieved between sophistication, which may be required for the localization of goals but may be difficult to use, and standardization and accessibility, which may increase use at the policy level but may result in policy options with unanticipated distributional impacts. A way forward toward a standard method would be to combine quantitative and qualitative approaches to investigate the interactions with knowledge co-creation with experts and local stakeholders (Pradhan, 2023).

- **Importance of bottom-up K&D:** Bottom-up data is key for addressing distributional impacts, particularly as gathering data on social dimensions often comes from numerous local sources. Good examples of localized data exist that help understand the disproportionate impact of climate change and disasters across sectors, populations, and geographies (e.g., <https://desinventar.net>)¹². Data collection methods, such as participatory mapping, community surveys, and citizen science generate data that is essential for understanding context-specific challenges, identifying innovative solutions, addressing distributional impacts, and ensuring that policies and interventions are tailored to the unique needs and circumstances of different communities. For example, bottom-up data on local climate vulnerabilities, community-based adaptation strategies, and Indigenous Knowledge can provide invaluable insights for designing targeted interventions that address the specific needs of vulnerable populations and marginalized communities. A more robust assessment of synergies can be conducted using composite indices that integrate considerations of physical risk, exposure, the sensitivity of local economies, and social and administrative adaptive capacity. For example, recently a climate vulnerability index was developed by India's Council on Energy, Environment and Water that maps exposure, sensitivity, and adaptive capacity, allowing for the formulation of strategies to enhance resilience and climate-proof communities, economies, and infrastructure (Mohanty & Wadhawan, 2021). Moreover, artificial intelligence (AI) tools can provide rapid access to knowledge, correct human errors, validate, verify, streamline, and simplify all available tools and information, and in principle be tailored to provide knowledge on sustainability and climate action accessible to practitioners. Strides have already been made in the integration of AI with human intelligence to address climate change and support SDGs (Debnath *et al.*, 2023). However, co-creating AI systems with human input remains critical to ensure that they are less biased, more accountable, and better suited to addressing complex global challenges like climate change, and ultimately contribute to a more sustainable and equitable world.

2.2 Focus on transformative changes – go beyond incrementalism

The UNFCCC came into being in 1992 “to combat climate change by limiting average global temperature increases and the resulting climate change, and coping with impacts that were, by then, inevitable”. The first COP of the Framework was held in Berlin in 1995, with the 29th session to be held this year. In the intervening 30 year, the Kyoto Protocol (1997) legally bound Parties to emissions reduction targets and the Paris Agreement (2015) aimed to “strengthen the global response to the threat of climate change by keeping a global temperature rise this century well below 2 degrees Celsius above pre-industrial

levels and to pursue efforts to limit the temperature increase even further to 1.5 degrees Celsius¹³. The first global meeting on sustainable development was held in Rio in 1992 which led to the development of the Millennium Development Goals which committed to achieving a set of eight measurable goals that ranged from halving extreme poverty and hunger to promoting gender equality and reducing child mortality by 2015. These were expanded in 2015 to become the globally ambitious SDGs consisting of 17 goals and 169 targets to be achieved by 2030.

Despite the high level of ambition and commitment shown by countries, progress on both agendas has been lackluster. The recently released UN Secretary General's annual report (2024) on SDG progress states *"in the past 12 months, little has changed in terms of trends. Only 15% of the SDG targets are on track to be achieved, 49% show minimal or moderate progress, and 36% of the targets show signs of stagnation or regression"*. Similarly, the 2023 UNEP Emissions Gap Report states that *"Humanity is breaking all the wrong records when it comes to climate change. Greenhouse gas emissions reached a new high in 2022. In September 2023, global average temperatures were 1.[4]8°C above pre-industrial levels. The report finds that fully implementing and continuing mitigation efforts of unconditional nationally determined contributions (NDCs) made under the Paris Agreement for 2030 would put the world on course for limiting temperature rise to 2.9°C this century. Fully implementing conditional NDCs would lower this to 2.5°C. Given the intense climate impacts we are already seeing, neither outcome is desirable"*.

Thus, all the new NDCs and climate actions need to focus on transformative changes to achieve the goals of the Paris Agreement and Agenda 2030. Relying only on incrementalism, as has been the case consistently to date, can cause inaction to perpetuate, resulting in issues like the "emissions gap" in NDCs or falling short of climate and SDG targets due to the poor match between the systems needed to deliver the targets. For example, the total GHG emissions of the Parties that communicated new or updated NDCs are estimated at 45.6 (42.7–48.6) Gt CO₂eq in 2030, which is 9.5 (9.2–9.7) percent lower than the estimated levels according to their previous NDCs (UNFCCC, 2022). While this is progress, these incremental changes are still not sufficient to limit global temperature rise to 2 degrees Celsius by the end of the century. As we look towards and beyond 2030 to 2050, it is increasingly evident that meaningful and sustainable progress can only be achieved through deep transformative changes to ensure a prosperous and healthy future for all on a resilient and healthy planet. The Secretary-General has called for *"transformative progress between now and 2030" and the need to "unlock transformative progress across the Goals by doubling down on key transitions around energy, food, digital connectivity, social protection and decent jobs, education, and the triple planetary crisis of climate change, biodiversity loss, and pollution"* (United Nations General Assembly (UNGA), 2024). The IPCC itself in its recent report calls for deep transformation across various sectors, including energy, buildings, transportation, industry, and agriculture, forestry, and other land use (Riahi *et al.*, 2022). These transformations imply deep structural changes, profound reforms of institutions and governance, shifting mental maps and norms, and changing patterns of human behavior, which in turn require widespread awareness raising and mobilization, the adoption of a complex adaptive systems approach to sustainability issues, and unprecedented problem-solving. The arguments for such transformative changes are not new with several reports detailing the types of transformations needed (TWI2050 2018; Sachs *et al.*, 2019). A key element of these reports was the call for these transformations to be acted upon holistically,

synergistically, and simultaneously. While these reports presented a major and radical rethinking of the means to accelerate progress towards achieving the SDGs and beyond, they were focused mostly on the 17 SDG goals, with less explicit reference to the Paris Agreement or related climate commitments, except as they related to SDG13 on climate action. More recently, the Global Sustainable Development Report 2023 also lists several entry points for the achievement of Agenda 2030¹⁴.

Such deep transformations require significant investments to redress the systems to be more compatible with climate and SDG targets. The six transformative pathways proposed by the Global Sustainable Development Report 2023 would require USD 5.4–6.4 trillion per year between 2023 and 2030. This corresponds to an annual cost of (at least) USD 1,179 to USD 1,383 per person (UNCTAD, 2023a)¹⁵. However, these transformation costs are required to avoid larger costs in the future. The more years that go by without sufficient funding for the SDGs, the more money will be required by 2030, decreasing our chances of success.

Aggressively harnessing the synergies between the Paris Agreement and Agenda 2030 is the major overarching change needed to accelerate progress toward achieving the goals of both agendas. The challenge now is to design a new framework with a set of transformations that harness the synergies between the Paris Agreement and Agenda 2030, with a vision that goes beyond 2050.

From COP 28 to COP 29: Transformative change options from the Global Stocktake

A major focus of COP28 was the inaugural GST. The objective of the GST, as stated in Article 14 of the Paris Agreement, is “to assess the collective progress towards achieving the purpose of [the Paris] Agreement and its long-term goals.” Under GSTs, countries are expected to identify and implement transformative measures for further emission reductions, while evaluating how well finance flows are matching up with targets for reducing emissions. When carried out well, the GST may serve as a foundation for decisions about climate investment and policy made by nations and non-state actors. Moreover, it can stimulate transformative activity in several systems, including energy, nature, food, and transport.

The technical phase of the GST concluded in September 2023 shows that transformative measures are required on all fronts to combat the climate crisis, as the present incremental changes leads to an increase in the global temperature by 2.4–2.6 degrees Celsius by the end of the century, which reflected a staggering “emissions gap” in present climate pledges (Srouji & Cogen, 2023).

As a way forward, outcomes of the GST can deliver transformative climate action and support in high-impact areas by prompting actions in the following areas (Srouji & Cogen, 2023):

1. strengthening NDC and climate finance commitments and implementation;
2. increasing renewable energy sources while rapidly and equitably phasing out of fossil fuels;
3. transforming land use, agricultural, forestry, and food systems to increase resilience, promote food security, and equitably curtail emissions;
4. rapidly transforming the transportation and industry sector to be more carbon neutral;
5. increasing funding and other forms of assistance for adaptation, supplying fresh capital to deal with losses and damages, streamlining the application process, and efficiently allocating resources at the local level; and
6. fulfilling pledges made on climate financing and reorienting international financial flows to the extent required to support net-zero emissions and climate-resilient development.

System-wide transformative changes could be initiated by G20 nations, particularly by G7 nations, for cross-border support to avoid over-burdening public sources in developing countries. G7 nations have indicated this change in the Elmau Agreement, they pledged to contribute to the “*transformation of the energy sector by 2050*” and underlined the necessity of a “*decarbonization of the global economy over the course of the century*”. These blocs have also accelerated funding a just transition, albeit mostly focusing on developed countries (Krawchenko & Gordon, 2021).

2.3 Localizing global action: entry points according to local priorities and contexts

The approach to identifying, evaluating, and implementing synergies varies significantly based on national contexts and domestic priorities (Warchold *et al.*, 2020). Tailoring solutions to align with these contexts is crucial, considering the diverse enablers, barriers, and political hurdles across governance systems. Moreover, demonstrating synergies across different SDGs and targets depends on factors such as national income level, vulnerability, and exposure to climate and disaster risks. Equally important is the need to build much-needed capacity to implement these synergistic actions.

Numerous reports have emphasized that local contexts, such as the different socio-political landscapes and varying degrees of economic development at sub-continental or even sub-national levels, affect not only the climate and SDG interactions of interest but the nature of the interactions themselves.

A key barrier to the localization and contextualization of global goals is a top-down approach that aims to use ‘cookie-cutter’ methods to adopt global policies at national and local levels. Due to the increasing standardization of national mitigation and adaptation strategies, local governments may be handed directives to enact aggressive climate or development goals without having the means or the ability to make them locally relevant.

As national governments have different responsibilities for public services linked to the SDGs and climate action due to constitutional mandates, local and regional governments prioritize subnational planning and resource allocation in particular sectors considering local variances (Lucci, 2015). Both the 2030 Agenda and the Paris Agreement have encouraged the localization of goals, as evidenced by the inclination of countries to develop their own site-specific solutions under the Paris Agreement (UNFCCC, 2016), or the heavy engagement from local and regional governments in the development of voluntary local reviews (VLRs) (Managi *et al.*, 2021). However, localization of global goals that incorporate synergies is scarce. Nevertheless, some efforts to address this are underway, such as the Coalition for High Ambition Multilevel Partnerships for Climate Action (CHAMP) initiative, launched at COP28 (endorsed by 70 states), to connect the local level to national governments in the context of enhanced NDCs.

Cities have a central role in localization, serving as important arenas to accelerate synergistic actions. In urban settings particularly, co-dimensions are automatically addressed in urban infrastructure interventions through the governance of spaces and places, and it is in the spatial domains that synergies can be effectively realized. Cities consume 78% of the world’s energy and account for over 70% of global GHG emissions. Additionally, it is expected that a further 2.5 billion people, equivalent to 68% of the global population, will reside in urban areas by 2050 with nearly 90% of them in cities in Asia

Table 1. Connections between Sustainable Cities and Communities (SDG 11) targets and other SDGs

 Sustainable Cities and Communities																
Target 11.1: Safe and affordable housing												✓				
Target 11.2: Affordable and sustainable transport systems												✓				
Target 11.3: Inclusive and sustainable urbanization												✓				
Target 11.4: Protect the world's cultural and natural heritage												✓				
Target 11.5: Reduce the adverse effects of natural disasters												✓				
Target 11.6: Reduce the environmental impacts of cities												✓				
Target 11.7: Provide access to safe and inclusive green and public spaces												✓				

and Africa¹⁶. Global warming makes cities warmer, exacerbated by urbanization through urban heat islands and aerosol radiative forcing (Kumar, 2021). At the same time, urban areas are considered one of the main “hotspots of coastal vulnerability” (Newton & Weichselgartner, 2014, p. 125). Moreover, 65% of SDGs can only be achieved through the work and mandate of local governments, especially cities¹⁷. Thus, taking climate action while improving well-being is essential at the local scale.

However, although 145 cities have developed VLRs as a policy tool to implement local initiatives toward fulfilling the SDGs, there are still inadequate actions to mitigate the effects of climate change. For example, in most of the VLRs, there is little evidence of comprehensive integration of climate policies and the SDGs with the majority treating environmental issues in isolation and without reference to other SDGs (Ortiz-Moya & Reggiani, 2023).

VLRs can support the mainstreaming of climate action across all spheres of local government. The data produced during the VLR development process allows municipalities to evaluate current and upcoming initiatives and provides opportunities to identify possibilities for climate-positive measures across all local policymaking areas (Ortiz-Moya & Reggiani, 2023).

Governments are gradually beginning to prioritize elements of synergistic action – coordination, coherence, and integration. Recognizing the interconnectedness of these challenges is critical, as neglecting one dimension can have cascading effects across others, exacerbating risks and vulnerabilities. Consequently, addressing human and planetary health concurrently can foster more efficient and sustainable solutions, as called for in the One Health initiative (FAO *et al.*, 2022).

In cities, and beyond, maximizing health co-benefits is worthwhile, as these are related to a number of other SDGs. The most widely studied co-benefit of climate action is improved air quality (addressed by SDGs 3 & 11) where it has been shown that the policy costs of meeting NDC objectives are greatly exceeded by the health co-benefits (Markandya *et al.*, 2018). Depending on the scenario, the ratio of the mitigation costs to the health co-benefits varied from 1.4–2.45, and in many regions, the additional work required to try to achieve the 1.5 degrees Celsius objective rather than the 2 degrees Celsius target

might result in a significant net gain. The co-benefits of mitigating climate change on air quality are generally estimated to range from USD 2–196/tCO₂ with a mean of USD 49/tCO₂, with the Global South expected to experience the largest co-benefits across health (Nemet *et al.*, 2010). Therefore, climate policies that simultaneously target improved air quality, or *vice versa*, are important entry points for regions worldwide, particularly more so for cities to advance SDG 11.

The integration of clean energy transitions into development strategies is another entry point for synergistic options frequently pursued by nations of the Global North through the transformation of public transportation. Sustainable modes of transportation, such as cycling, walking, and the use of electric public transportation systems, support both climate and development objectives by reducing carbon emissions, alleviating traffic congestion, and improving air quality. These measures not only contribute to climate mitigation but also reduce the incidence of respiratory and cardiovascular diseases, highlighting the potential for synergistic outcomes in addressing both environmental and public health challenges.

Demand-side solutions refer to any policies/ interventions/ measures that reduce energy and material demand and associated GHG emissions while improving individual and/or societal well-being (Sugiyama *et al.* 2024). Demand-side measures exhibit great potential for significantly reducing GHG emissions from end-use sectors by at least 40–70% by 2050, without compromising service levels (IPCC 2022; Sugiyama *et al.*, 2024). In addition to reducing energy consumption, these measures can lead to substantial improvements in several aspects of well-being, particularly in areas such as health, employment, and productivity (Chatterjee *et al.*, 2022), demonstrating substantial synergies between climate change mitigation and the SDGs.

Such solutions are not a substitute for renewable energy policies but rather provide *flexibility* to the transition process by reducing the total demand for renewable energy production capacity. Demand-side policies are often driven by *multiple objectives*. Despite their substantial potential, demand-side solutions are still not regularly included in core policy frameworks for two reasons:

- i. they require granular level data to analyze the magnitude of potential impact, and existing models often lack this granularly; and
- ii. they result in many co-benefits that are often not identified and rarely quantified due to lack of quantification methods.

Importantly, demand-side shifts, especially toward sufficiency, are currently more relevant for the Global North, as the primary focus in the Global South in the near term is on reaching a minimum level of decent living standards (Kikstra *et al.*, 2021). However, equally relevant to both regions is the need to emphasize sustainable behaviors, consumption patterns, and lifestyles, including dietary shifts away from animal consumption towards more plant-based diets, and shifts towards much less natural resource-intensive consumption patterns related to the diminishing global natural capital. Shifts towards healthier nutrition have large co-benefits for climate and ecosystems. In addition to the obvious health benefits, such shifts

facilitate reaching stringent climate targets and also reduce water and fertilizer requirements, among other benefits (Soergel *et al.*, 2021b; Humpenöder *et al.*, 2024). Countries therefore are responsible for enabling these shifts, including through building stronger data frameworks, lifestyle-visioning, and economic incentive structures, and providing guidance that citizens and non-governmental stakeholders can also act on.

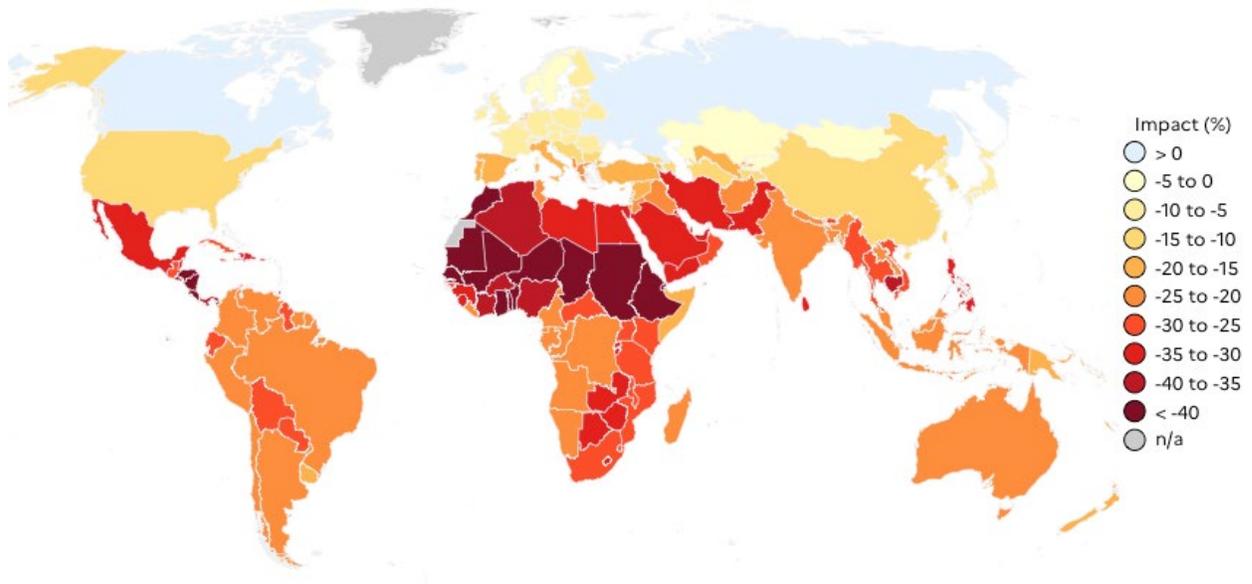
A widely accessible K&D platform to support the importance of demand-side solutions for realizing the synergies between climate change mitigation and SDGs is essential. Furthermore, implementing demand-side actions requires governance arrangements and other enabling reforms such as financial incentives, and change in behavioral patterns through nudges, that help break down institutional silos and encourage scalable change. Above all, national and local policymakers in countries, regions, and cities need an integrated language around climate action and development that their constituencies can identify with and support through linkages to concrete issues such as relating to jobs, income, health, education, food, energy, and water. The 2023 report, *Synergy Solutions for a World in Crisis: Tackling Climate and SDG Action Together*, calls for just this, and an expanding knowledge base of best practices through a global platform can spearhead such co-benefits thinking. Legitimacy and broad-based support from the general public can be achieved by designing a just transition in which cost and benefits as well as access and participation of stakeholders and constituencies are transparent and considered fair. An obvious step to take for any government at any level is therefore to initiate localized dialogues about the futures that their constituencies are looking for and then to align co-benefits narratives and an integrated approach on that basis.

Moreover, there is a need to prepare beyond 2030. Going beyond 2030 not only necessitates deep integrated systemic transformations but also requires a further prioritization of systemically-oriented interventions in key areas in the years to come. In particular, there is a need for systemic transitions in food, energy, and finance, as key policy levers, and in the cities we live in. These transitions must be people-centered while ensuring just, inclusive and bio-centric approaches in the post-2030 era.

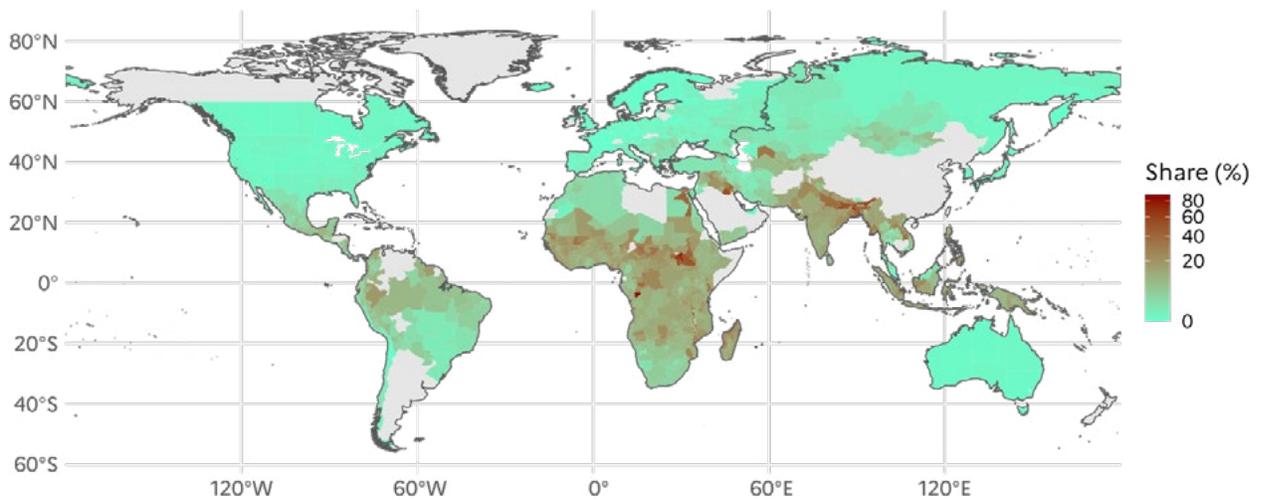
2.4 Framing synergies to be more just

Many nations, particularly those in the Global South, confront numerous climate-sensitive obstacles to sustainable development, such as hunger, diseases, water scarcity, disasters including floods and droughts, biodiversity concerns, and inequality issues that can hinder effective climate interventions (see Figure 5). For example, in sub-Saharan Africa, the impacts of climate change on agricultural production have hampered efforts to reduce poverty and hunger (Mugambiwa & Tirivangasi, 2017; Chilunjika & Gumede, 2021). Similarly, in the absence of facilitative policies to protect marginalized and vulnerable groups such as small landholders, climate mitigation policies and strategies, encouraged land-grabbing in the Global South, further exacerbating inequalities and disempowerment (Larson *et al.*, 2023). Additionally, between 2015–2020, developing and transitional countries received 66% of light-duty vehicles, most of which performed poorly in terms of environmental impact, safety, and quality (UNEP, 2021).

FIGURE 5. Observed regional effects of climate change on agricultural productivity across the world (1961–2015)



Population share exposed to significant flood risk and poverty (using USD 5.5/day poverty line) across the world in 2020.



Source: Chancel *et al.*, 2023.

At the same time, climate change and disasters worsen inequalities and vulnerabilities, exposing disadvantaged groups disproportionately to the threats of climate change, which reduces their capacity and capability to cope with and recover from the impacts, exacerbating pre-existing inequalities (Islam & Winkel, 2017). However, these can be mitigated through policies that consider both synergies and trade-offs and thus ensure a just transition. Therefore, reconciling both agendas can ensure a just

transition to zero-emissions and climate-resilient sustainable development (WWF & CARE, 2016) as synergies facilitate the development of new ways to reach vulnerable groups and promote resilience through early warning and anticipatory action programs, social protection, and climate risk insurance to support vulnerable communities. For example, the European Union has created a just transition mechanism designed to anticipate and facilitate the shift of laid-off fossil fuel workers into more sustainable industries¹⁸. Similarly, a climate support package has been launched by the French Ministry of Inclusive Ecological Transition to socially support the country's national climate strategy including measures that offer financial assistance to socially disadvantaged households (Bouyé *et al.*, 2018). Importantly, these demonstrate the importance of reducing vulnerability and ensuring social welfare and justice to advance both sustainable development and climate actions in a manner that does not give rise to distributional impacts. Indeed, climate change mitigation has strong SDG co-benefits by avoiding additional climate impacts, with mitigation avoiding the worst climate impacts on virtually all SDG dimensions, making the case for pursuing synergistic action (Riahi *et al.*, 2022).

Incorporating a just transition strategy into both short- and long-term climate plans, such as NDCs and LT-LEDS, will reduce the potential for global warming while pursuing an equitable and inclusive society. For instance, numerous synergies have already been identified across the submitted LT-LEDS, with over 50–85% highlighting synergies with economic growth, job creation, climate resilience and disaster risk reduction, better human health due to improved air quality, and social welfare, and human well-being with reduced inequalities, among others¹⁹. The co-benefits obtained from shifting to a less carbon-intensive society would ensure more resilient and democratic energy systems by reducing poverty and including social and environmental justice (Lo & Broto, 2019; Wang, & Lo, 2021).

3 Recommendations

This section delineates a broad set of actions to advance synergistic actions. These actions and recommendations can form a structured policy framework or be issued as guidance by pertinent authorities. It is essential to emphasize that the recommendations presented herein are not only designed for governments but for a much wider audience, including citizens and various institutions. By addressing a diverse range of stakeholders, these recommendations seek to foster collective responsibility and engagement in achieving synergy objectives. This inclusive approach underscores the recognition that effective synergy demands coordinated efforts across all levels of society, from policymakers to individual citizens. Through the implementation of these recommendations, we aspire to cultivate an environment conducive to the realization of the full potential of synergistic approaches, thereby facilitating climate change actions and sustainable development progress.

3.1 Frame policies for development as policies for transformation

- *Ensure that new generation of NDCs are not only 1.5°C aligned but also explicitly address the interactions with the SDGs.* This entails committing to more aggressive emission reduction targets and/or avoiding emissions while pursuing development objectives, implementing robust strategies to achieve them, and identifying potential synergies to accelerate efforts.
- *Foster coordination between government ministries and departments to align climate actions with SDGs, emphasizing the need for a shared vision and integrated policy objectives.* This requires a vertical and horizontal coordination process between relevant ministries and departments to agree on the same vision. Furthermore, the development process and roles and responsibilities to ensure alignment between policy objectives are essential.
- *Adapt governance frameworks to facilitate seamless integration of climate and development objectives, promoting responsiveness and resilience.* While silos are prevalent, they are not fixed; institutional reforms, restructuring, or even new institutional arrangements can facilitate synergies. It is essential to identify governance components capable of integrating synergies into current policy implementation structures and assessment procedures. National platforms promote data and information sharing and ensure coordination in action. A governance framework that is responsive and adapts swiftly to the dynamic nature of our world is crucial.
- *Identify and engage institutional champions to drive synergistic actions* through incentives and recognition mechanisms. For example, a 'synergies award' to any existing champion, promotion mechanisms, or adding an element of competition that provides financial, reputational, or other benefit for good synergistic practices.

- *Advocate for a cultural shift towards valuing nature and development synergistically, fostering resilience in the face of global challenges. Tapping into the ideological debate and appetite for global sustainability goals is important to embed synergies in the real world. A culture that values nature and development in a synergistic way will be resilient.*

3.2 Achieve finance flows consistent with the needs of the SDG and climate action transformations

- *Implement green tax reforms, carbon and resource-use taxes, and eliminate subsidies of fossil fuels to enhance efficient resource allocation and incentivize sustainable practices. Financial resources and dynamics are crucial enablers. Synergies enhance the efficient use of financial resources and taxing unsustainable use of commons and distributing the finances to citizens will be important to realize synergies, especially between development and the environment. The multilateral system (e.g., Global Environment Facility (GEF), Green Climate Fund (GCF), UNEP, UNDP, Multilateral Development Banks (MDBs), and others) need to adopt synergies as criteria for funding. Equally, there is a role for microfinance, national budgets, ODA, and Foreign Direct Investment (FDI) FDI to take on a synergistic focus.*
- *Increase financial flows to support development needs and climate action in developing countries, leveraging concessional finance, and private investments, and utilizing international platforms like the upcoming Fourth International Conference on Financing and Development which will critically provide global policy guidance for the next decade on sustainable development and climate finance. It is important to reform international financial institutions and leverage concessional finance to expand private flows. To increase the financial flows, harnessing synergies between development, well-being, and climate action by mainstreaming climate adaptation and resilience into financial systems is pivotal. Deploy mechanisms to de-risk investments in the Global South to ensure that sustainable finance flows into regions and populations that need it most. To encourage capital flows from the private sector, it is crucial to improve access to localized risk assessments across sectors for climate change impacts and facilitate risk internationalization through the creation of predictable, transparent, and long-term policy frameworks.*
- *Standardize reporting and make climate finance data accessible to track flows and impact, addressing knowledge gaps and guiding decision-making processes. Simplifying and standardizing taxonomies and reporting and making climate finance data widely available and accessible is crucial. K&D gaps, plus methodological inconsistencies, make it difficult if not impossible to track flows and impact. Lack of knowledge, data, and information on country-level climate and risk vulnerability to guide decision-making, needs to be addressed by making data available and making climate risk a key component of capital investment planning by government and development partners. There is also a need to ensure the necessary competencies and capacities to establish required data and reporting frameworks in all countries affected by global value chains to facilitate sustainable reporting requirements and harmonize multiple due diligence requirements to ensure a more inclusive global economy.*

3.3 Facilitate global collaboration for local impact

- *Establish regional and global partnerships to support national efforts*, leveraging existing platforms like the G7, G20, United Nations Environment Assembly (UNEA), and United Nations Habitat Assembly (UNHA) resolutions. Building regional and global partnerships for implementation is an important addition to the work taking place at national levels. Processes around synergies are already emerging in fora such as the G7 and G20 which can support the exchange of best practices or address potential negative spillovers from value chains that involve several countries. The recently approved UNEA resolution²⁰ on synergies can help create momentum and opportunities for identifying and enhancing synergies across existing reporting mechanisms around climate change, biodiversity, and the SDGs. Other examples include financial disclosure processes within the private sector such as the Taskforce on Nature-related Financial Disclosures (TNFD), Taskforce on Climate-related Financial Disclosures (TCFD), International Financial Reporting Standards (IFRS) Sustainability Disclosure Standards, and European Sustainability Reporting Standards, which involve different relevant stakeholders along the value chain.
- *Strengthen multi-stakeholder-based initiatives (MSI) in integrated climate and development interventions*. Timely societal systemic change requires collaboration between all relevant stakeholders, including private authorities, civil society organizations, philanthropic organizations, and the private sector. However, MSI requires attention to specific requirements, which need to be considered when designing integrated climate and development interventions, including the need for more time to allow for preparation, more flexible funding, a physical space to localize collective efforts, and strong local-to-sector and national-level plans and efforts.
- *Harness city networks to share best practices and implement synergistic actions at the local level*, focusing on technological advancements and case studies. Cities have many global networks, such as C40, the Global Covenant of Mayors for Climate and Energy (GCoM), the ASEAN Mayors Forum (AMF), the Resilient Cities Network, and Local Governments for Sustainability (ICLEI), to support each other in achieving synergistic goals. These networks could be utilized for technological improvement and gathering case studies about successful city-level synergistic actions.
- *Utilize collaborative platforms for implementation* by encouraging active engagement in collaborative platforms such as UN Climate Change Conferences and the HLPF on Sustainable Development to facilitate the implementation of climate change and sustainable development commitments. These platforms provide opportunities for knowledge exchange, capacity building, and collective action towards achieving climate and development goals.
- *Localize global goals through multi-disciplinary and multi-agent collaboration*. There is a globally recognized need to frame the progress and impacts of the 2030 Agenda and climate action at the local level to contextualize the synergies. Top-down strategies that aim to implement universal methods and strategies in various nations and areas hinder the localization of climate change and development issues, which are frequently formed by local circumstances and handled by local resources. To promote the localization of climate and development challenges, transdisciplinary

and systems approaches that are participatory and human rights-based in nature, as well as multi-stakeholder groups and processes, must be adopted. These require awareness, commitment, and capacity—qualities that are not always present in many nations, especially in countries of the Global South.

3.4 Use knowledge and data to drive impactful actions

- *Develop a global platform for knowledge exchange and data sharing* to inform policy decisions and effectively evaluate synergies. Such a platform should provide access to relevant tools, resources, and global and regional best practices, examples, and case studies on synergies, aiding in the assessment of various policy measures both ex-ante and ex-post. The platform must be easily accessible to all interested parties including policymakers and practitioners. It would be structured as a hub and overseen by a range of actors and collaborators that both contribute data and undertake quality control in the selection of data through a review process.
- *Collect granular data on vulnerability and distributional impacts to ensure inclusive and just transition strategies*, addressing evidence gaps and localizing climate and development challenges. More granular data emerging from various sources and localized knowledge, including real-time community-based data and information, on the vulnerability of different sections of the population and the distributional impacts of policies are required to promote universal social well-being and welfare for a just transition. The synthesis and streamlining of the data can be facilitated by human-supervised AI technology to make the information accessible to policymakers. These data would help the understanding of the full potentiality of any synergy actions, especially in terms of evaluating the costs and benefits of such policies. To this end, the development of the UN's Multidimensional Vulnerability Index (MVI) which assesses ecological and economic vulnerability can provide valuable data to ensure inclusive sustainable development²¹.
- *Strengthen synergies in data and indicators between climate change and sustainable development to have common metrics to measure progress*. This builds on integrated monitoring of global frameworks, such as the SDGs, and the Sendai Framework. The Global Goal on Adaptation and constituent targets, for which indicators are in the process of being developed, is a critical opportunity to build synergies with SDGs.

3.5 Promote technological innovations for job creation and economic growth

- *Swiftly transition to net-zero emissions by promoting transformative technological innovations such as tripling renewable energy capacity, batteries for two-three -and four-wheelers, heat pumps, and passive house constructions*. Promoting these transformative technological changes not only addresses the challenge of climate change but also mitigates air pollution, thereby positively impacting several SDGs including those related to health, energy, cities, and climate action. The urban sector needs to be at the forefront to embrace the implementation of these transformative innovations due to their positioning in terms of population, economic growth, and contribution to emissions.

- *Invest in transformative technological changes to create jobs* taking advantage of the three times more employment opportunities for each dollar invested than the fossil fuel industry. The global transition to net zero will create 9 million net jobs by creating 14 million new jobs in the renewable energy sector²².
- *Drive down costs by rapidly expanding renewable energy technologies* such as wind and solar power, making electricity more affordable, accessible, and cleaner, particularly for lower and middle-income groups worldwide. Renewable energy is significantly cheaper than conventional fossil fuels. Prices for renewable energy technologies are dropping rapidly. Cheap electricity is particularly useful in tackling energy poverty and increasing the disposable income of lower and middle-income groups.

3.6 Strive for low demand and high well-being, especially in high-energy-demand sectors and urban settings

- *Double energy efficiency across industries, buildings, and transport* to achieve SDGs related to energy, sustainable cities, responsible consumption, and climate action.
- *Improve building energy efficiency* through retrofitting and enforcing stringent standards for new constructions, enhancing health and well-being while increasing disposable income. Utilize digital solutions like smart building technologies to optimize energy usage, contributing directly to health, sustainable cities, and climate action.
- *Facilitate shifts to demand-side solutions and sustainable lifestyles and consumption patterns* by building stronger data frameworks, lifestyle-visioning, and economic incentive structures, and providing guidance. Minimizing demand for energy through sufficiency, especially for countries in the Global North, and efficiency techniques, promoting sustainable and effective management of energy and land resources, and redressing consumption patterns to be less resource-intensive will be key to tackling the diminishing global natural capital.

3.7 Build resilience to drive change

- *Strengthen the resilience of infrastructure and settlements to withstand climate impacts*, such as elevated roads and flood barriers, ensuring inclusivity, safety, and sustainability. Increasing the resilience of infrastructure and human settlements would not only prepare for extreme and slow-onset climate events but also relate to several developmental impacts.
- *Focus on community capacity building, and collaboration with governments*. Greater emphasis should be placed on improving resilience by enhancing community capacity to reduce vulnerability. Collaboration with governments at all levels in implementing government participation strategies, fostering initiatives to expand food production, and ensuring ecological security is critical.

4 Conclusion

Work on synergies is not new. There is an abundance of literature detailing the rationale behind taking synergistic action and providing real-world examples of synergies in action. However, in practice, the pursuit of synergistic action is by no means a prevalent or default position amongst policymakers at all levels of governance. This represents a potentially powerful but, as of now, missed opportunity for a potential course correction in the world's current trajectory of failing to secure progress toward an inclusive, safe, sustainable, just, equitable, and prosperous future.

It is worth reflecting more broadly on what this renewed focus on synergies raises about one of the key contemporary challenges for science, especially for science that seeks to support societal change. We need to recognize that, across the board – in science, policy, and practice – we are essentially responding to a context of multiple simultaneous crises with no singular forum or coordinated approach to action. Consider, for example, the multiple, overlapping global frameworks that are today managed by different multilateral agencies and that all demand attention and coherent action from national and local policymakers, practitioners, and scientific communities. Alongside the SDGs and the Paris Agreement, we have many other agreements and frameworks including, *inter alia*:

- the Human Development Index (UNDP)
- the Sendai Framework for Disaster Risk Reduction 2015–2030 (UNDRR)
- the Kunming-Montreal Global Biodiversity Framework, Convention on Biological Diversity (UNEP)
- the One Health approach (WHO, FAO, OIE)
- the emerging Planetary Health approach (UNEP)
- the emerging Sustainable Resilience for the Next Generation (SURGe) Initiative (UN-Habitat)
- the upcoming Global Treaty to End Plastic Pollution (UNEP)
- and the UN Secretary-General's Roadmap for Digital Cooperation.

This multiplicity of global 'guides to action' and the institutional arrangements that accompany them may well foster tailored decision-making, programming innovation, and contextually appropriate outcomes. But we know that it can – and too often does – also lead to fragmented, siloed domains of policy and practice, with action that is duplicative (at best) and subject to numerous inefficiencies. This needs to be avoided as it stands in the way of accelerated progress toward sustainable and equitable outcomes.

It is in this regard that the idea of synergistic action must be further explored and exploited and come into its own. It is common to adopt a rather technical approach to synergies, ticking the boxes of co-benefits between specific goals, targets, and indicators. This is not enough. An effective synergistic approach is essential to meaningfully inform and support us in moving towards coherent, collaborative, and coordinated responses to today's cascading systemic risks and threats, based on a shared vision of the future, developed through approaches that ensure that all voices are heard, and comprehensive plan that can take us there.

That means thinking across and beyond the ever-increasing range of global goals, frameworks, and conventions in selected domains, and more importantly, acting across and beyond the institutions – in both science and society – that sustain them. It means foregoing the current paradigm of incrementalism, parochialism, and vested interests and moving towards a culture of transformation, cooperation, openness, and justice across all sectors of society. It goes beyond a simple 'call to action' – it demands real action. Humanity's and the planet's future is at stake and we have no time to lose.

5 References

Allen, C., Biddulph, A., Wiedmann, T., Pedercini, M., & Malekpour, S. (2024). Modelling six sustainable development transformations in Australia and their accelerators, impediments, enablers, and interlinkages. *Nature Communications*, 15(1), 594.

Andre, P., Boneva, T., Chopra, F., & Falk, A. (2024). Globally representative evidence on the actual and perceived support for climate action. *Nature Climate Change*, 14, 253–259.

Bouyé, M., Walther, C., & Shin, N.-H. (2018). Connecting the Dots: Elements for a Joined-Up Implementation of the 2030 Agenda and Paris Agreement. www.wri.org/research/connecting-dots-elements-joined-implementation-2030-agenda-and-paris-agreement.

Chancel, L., Bothe, P., & Voituriez, T. (2023). Climate Inequality Report 2023. <https://wid.world/wp-content/uploads/2023/01/CBV2023-ClimateInequalityReport-2.pdf>.

Chatterjee, S., Stavrakas, V., Oreggioni, G., Süsner, D., Staffell, I., Lilliestam, J., ... & Ürge-Vorsatz, D. (2022). Existing tools, user needs and required model adjustments for energy demand modelling of a carbon-neutral Europe. *Energy Research & Social Science*, 90, 102662.

Chilunjika, A., & Gumede, N. (2021). Climate change and human security in Sub-Saharan Africa. *African Renaissance*, 2021(si1), 13–37.

Clean Air Fund. (2023). The State of Air Quality Funding 2023. www.cleanairfund.org/resource/state-of-global-air-quality-funding-2023/.

Climate Policy Initiative. (2023). Global Landscape of Climate Finance 2023. www.climatepolicyinitiative.org/publication/global-landscape-of-climate-finance-2023/

Debnath, R., Creutzig, F., Sovacool, B. K., & Shuckburgh, E. (2023). Harnessing human and machine intelligence for planetary-level climate action. *Climate Action*, 2(1), 20.

FAO, UNEP, WHO, & WOA. (2022). One Health Joint Plan of Action, 2022–2026. *Working together for the health of humans, animals, plants and the environment*. Rome: FAO, UNEP, WHO, & WOA.

Franks, M., Lessmann, K., Jakob, M., Steckel, J. C., & Edenhofer, O. (2018). Mobilizing domestic resources for the Agenda 2030 via carbon pricing. *Nature Sustainability*, 1(7), 350–357.

Fuso Nerini, F., Sovacool, B., Hughes, N., Cozzi, L., Cosgrave, E., Howells, M., ... & Milligan, B. (2019). Connecting climate action with other Sustainable Development Goals. *Nature Sustainability*, 2(8), 674–680.

Hallegatte, S., Rentschler, J., & Rozenberg, J. (2019). Lifelines: The Resilience Infrastructure Opportunity. <https://openknowledge.worldbank.org/handle/10986/31805>

Humpenöder, F., Popp, A., Merfort, L., Luderer, G., Weindl, I., Bodirsky, B. L., ... & Rockström, J. (2024). Food matters: Dietary shifts increase the feasibility of 1.5°C pathways in line with the Paris Agreement. *Science Advances*, 10(13), ead3832.

IPCC (2022). Summary for Policymakers. In Shukla, P. R., Skea, J., Slade, R., Al Khourdajie, A., van Diemen, R., McCollum, D., Pathak, M., Some, S., Vyas, P., Fradera, R., Belkacemi, M., Hasija, A., Lisboa, G., Luz, S., & Malley, J. (eds.) *Climate Change 2022: Mitigation of Climate Change. Contribution of Working Group III to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change*. Cambridge University Press.

Islam, S. N., & Winkel, J. (2017). Climate Change and Social Inequality. www.un.org/esa/desa/papers/2017/wp152_2017.pdf.

Kikstra, J. S., Mastrucci, A., Min, J., Riahi, K., & Rao, N. D. (2021). Decent living gaps and energy needs around the world. *Environmental Research Letters*, 16(9), 095006.

Krawchenko, T. A., & Gordon, M. (2021). How do we manage a just transition? A comparative review of national and regional just transition initiatives. *Sustainability*, 13(11), 6070.

Krausing, J., & Birch, S. S. (2023). New EU requirements for sustainability in value chains risk undermining prospects of green transition and trust between the EU and Africa. <https://concito.dk/en/udgivelser/nye-krav-til-vaerdikaeder-risiker-er-undergrave-groen-omstilling-tillid-afrika>

Kumar, P. (2021). Climate change and cities: challenges ahead. *Frontiers in Sustainable Cities*, 3, 645613.

Larson, A. M., Brockhaus, M., Sunderlin, W. D., Duchelle, A., Babon, A., Dokken, T., ... & Huynh, T. B. (2013). Land tenure and REDD+: The good, the bad and the ugly. *Global environmental change*, 23(3), 678–689.

Lo, K., & Broto, V. C. (2019). Co-benefits, contradictions, and multi-level governance of low-carbon experimentation: Leveraging solar energy for sustainable development in China. *Global Environmental Change*, 59, 101993. Chicago

Lucci, P. (2015). 'Localising' the Post-2015 Agenda: What Does It Mean In Practice? <https://media.odi.org/documents/9395.pdf>

Markandya, A., Sampedro, J., Smith, S. J., Van Dingenen, R., Pizarro-Irizar, C., Arto, I., & González-Eguino, M. (2018). Health co-benefits from air pollution and mitigation costs of the Paris Agreement: a modelling study. *The Lancet Planetary Health*, 2(3), e126–e133.

Managi, S., Lindner, R., & Stevens, C. C. (2021). Technology policy for the sustainable development goals: From the global to the local level. *Technological Forecasting and Social Change*, 162, 120410.

Mohanty, A., & Wadhawan, S. (2021). *Mapping India's Climate Vulnerability: A District-Level Assessment*. www.ceew.in/publications/mapping-climate-change-vulnerability-index-of-india-a-district-level-assessment

Mugambiwa, S. S., & Tirivangasi, H. M. (2017). Climate change: A threat towards achieving 'Sustainable Development Goal number two' (end hunger, achieve food security and improved nutrition and promote sustainable agriculture) in South Africa. *Jàmbá: Journal of Disaster Risk Studies*, 9(1), 1–6.

Nemet, G. F., Holloway, T., & Meier, P. (2010). Implications of incorporating air-quality co-benefits into climate change policymaking. *Environmental Research Letters*, 5(1), 014007.

Newton, A., & Weichselgartner, J. (2014). Hotspots of coastal vulnerability: A DPSIR analysis to find societal pathways and responses. *Estuarine, Coastal and Shelf Science*, 140, 123–133.

OECD. (2022). Global Outlook on Financing for Sustainable Development 2023 – No Sustainability Without Equity. www.oecd.org/finance/global-outlook-on-financing-for-sustainable-development-2023-fcbe6ce9-en.htm.

Ortiz-Moya, F., & Reggiani, M. (2023). Contributions of the voluntary local review process to policy integration: evidence from frontrunner cities. *Urban Sustainability*, 3(1), 22.

Pradhan, P. (2023). A threefold approach to rescue the 2030 Agenda from failing. *National Science Review*, 10(7), nwad015.

Riahi, K., Schaeffer, R., Arango, J., Calvin, K., Guivarch, C., Hasegawa, T., Jiang, K., Kriegler, E., Matthews, R., Peters, G. P., Rao, A., Robertson, S., Sebbit, A. M., Steinberger, J., Tavoni, M., & van Vuuren, D. P. (2022). 2022: Mitigation pathways compatible with long-term goals. In Shukla, P. R., Skea, J., Slade, R., Al Khourdajie, A., van Diemen, R., McCollum, D., Pathak, M., Some, S., Vyas, P., Fradera, R., Belkacemi, M., Hasija, A., Lisboa, G., Luz, S., & Malley, J. (eds.) *Climate Change 2022: Mitigation of Climate Change. Contribution of Working Group III to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change*. Cambridge University Press.

- Sachs, J. D., Schmidt-Traub, G., Mazzucato, M., Messner, D., Nakicenovic, N., & Rockström, J. (2019). Six transformations to achieve the sustainable development goals. *Nature sustainability*, 2(9), 805–814.
- Soergel, B., Kriegler, E., Bodirsky, B. L., Bauer, N., Leimbach, M., & Popp, A. (2021a). Combining ambitious climate policies with efforts to eradicate poverty. *Nature Communications*, 12(1), 2342.
- Soergel, B., Kriegler, E., Weindl, I., Rauner, S., Dirnaichner, A., Ruhe, C., ... & Popp, A. (2021b). A sustainable development pathway for climate action within the UN 2030 Agenda. *Nature Climate Change*, 11(8), 656–664.
- Srouji, J., & Cogen D. (2023). What Is the 'Global Stocktake' and How Can It Accelerate Climate Action? www.wri.org/insights/explaining-global-stocktake-paris-agreement.
- Sugiyama, M., Wilson, C., Wiedenhofer, D., Boza-Kiss, B., Cao, T., Chatterjee, J. S., ... & Zimm, C. (2024). High with low: Harnessing the power of demand-side solutions for high wellbeing with low energy and material demand. *Joule*, 8(1), 1–6.
- TWI2050 (2018). Transformations to Achieve the Sustainable Development Goals. Report prepared by The World in 2050 initiative. www.twi2050.org
- UNCTAD. (2023a). The costs of achieving the Sustainable Development Goals. <https://unctad.org/sdg-costing>
- UNCTAD. (2023b). World Investment Report 2023: Investing in Sustainable Energy for All. https://unctad.org/system/files/official-document/wir2023_en.pdf
- UNEP. (2021). Used Vehicles and the Environment – Progress and Updates 2021. www.unep.org/resources/report/used-vehicles-and-environment-progress-and-updates-2021.
- UNEP. (2023). State of Finance for Nature 2023. www.unep.org/resources/state-finance-nature-2023
- UNFCCC. (2016). Report of the Conference of the Parties on its twenty-first session, held in Paris from 30 November to 13 December 2015. Addendum. Part two: Action taken by the Conference of the Parties at its thirty-first session. FCCC/CP/2015/10/Add.1. www.un.org/en/development/desa/population/migration/generalassembly/docs/globalcompact/FCCC_CP_2015_10_Add.1.pdf
- UNFCCC. (2022). 2022 NDC Synthesis Report. <https://unfccc.int/ndc-synthesis-report-2022>
- UNGA. (2024). Progress towards the Sustainable Development Goals. Report of the Secretary-General. A /79/79- E /2024/54. <https://unstats.un.org/sdgs/files/report/2024/SG-SDG-Progress-Report-2024-advanced-unedited-version.pdf>
- Warchold, A., Pradhan, P., & Kropp, J. P. (2021). Variations in sustainable development goal interactions: Population, regional, and income disaggregation. *Sustainable Development*, 29(2), 285–299.
- Wang, X., & Lo, K. (2021). Just transition: A conceptual review. *Energy Research & Social Science*, 82, 102291.
- WWF & CARE. (2016). TWIN TRACKS: Developing sustainably and equitably in a carbon-constrained world. https://wwfint.awsassets.panda.org/downloads/twin_tracks___developing_sustainably_and_equitably_in_a_carbon_constrained_world__report.pdf

Endnotes

- ¹ ECOSOC Forum on Financing for Development (2023)
- ² <https://sdgs.un.org/sites/default/files/2023-08/our-common-agenda-policy-brief-international-finance-architecture-en.pdf>
- ³ UN-Habitat, UNDP, SDU (<https://unhabitat.org/urban-content-of-ndcs-local-climate-action-explored-through-in-depth-country-analyses-2024-report>)
- ⁴ Human Development Report 2023-24: Breaking the gridlock: Reimagining cooperation in a polarized world, <https://hdr.undp.org/content/human-development-report-2023-24> much higher than each individual pathway (though presumably lower due to synergies).
- ⁵ Which is still an understatement as this estimate targets only a subset of SDGs, meaning that the total cost of combining them will be much higher than each individual pathway (though presumably lower due to synergies).
- ⁶ Which not only failed to be met but “generous accounting practices” have also overstated the support. <https://policy-practice.oxfam.org/resources/climate-finance-shadow-report-2023-621500/>
- ⁷ World Resources Institute (2024). www.wri.org/insights/ncqg-key-elements
- ⁸ https://commission.europa.eu/business-economy-euro/doing-business-eu/corporate-sustainability-due-diligence_en
- ⁹ Our Common Agenda Policy Brief 6: Reforms to the International Financial Architecture
- ¹⁰ North–south publishing data show stark inequities in global research (www.nature.com/articles/d41586-023-03901-x#:~:text=The%20ratio%20of%20north%E2%80%93south,data%20on%20south%E2%80%93south%20partnerships)
- ¹¹ For a detailed list of some of the models with policy relevance, and co-benefits modelling studies, please refer to Tables A1 and A2 in Appendix of the *Seeking Synergy Solutions: Integrating Climate and SDG Knowledge and Data for Action* Report.
- ¹² The database provides granular details on impact and provides an aggregated basis for several of indicators across SDGs 1, 11 and 13, and the Sendai Framework. The system is now being revamped to an innovative tracking system for losses and damages (www.undrr.org/building-risk-knowledge/disaster-losses-and-damages-tracking-system-dldt).
- ¹³ <https://unfccc.int/most-requested/key-aspects-of-the-paris-agreement>
- ¹⁴ Global Sustainable Development Report 2023, <https://sdgs.un.org/gsdr/gsdr2023>
- ¹⁵ See footnote 5.
- ¹⁶ <https://unhabitat.org/cities-and-climate-change#:~:text=By%202050%2C%20towns%20and%20cities,to%20increased%20emissions%20in%20cities.>
- ¹⁷ <https://sdglocalization.org/about/overview#background>
- ¹⁸ https://commission.europa.eu/strategy-and-policy/priorities-2019-2024/european-green-deal/finance-and-green-deal/just-transition-mechanism_en
- ¹⁹ <https://unfccc.int/it-leds-synthesis-report#Long-term-low-emission-development-pathways-and-development-priorities>
- ²⁰ <https://documents.un.org/doc/undoc/gen/k24/008/07/pdf/k2400807.pdf?token=Gm2WiVuYC3Fh86pyEx&fe=true>
- ²¹ www.un.org/ohrlls/mvi
- ²² www.un.org/en/climatechange/raising-ambition/renewable-energy

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