



Task Force 6  
Accelerating SDGs: Exploring New  
Pathways to the 2030 Agenda



# A SOCIO-ECOLOGICAL PATHWAY FOR LAND RESTORATION

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# Abstract




**T**he G20 Bali Leaders' Declaration (2022) recognised the role of sustainable management and land restoration in achieving the objectives of the three Rio Conventions. Three years into the UN Decade on Ecosystem Restoration (2021-2030), the challenge of land restoration has been identified as one that requires coordination and cooperation from various sectors and agencies across international and national policy landscapes. Given that ecosystems typically straddle administrative boundaries, effective implementation


requires strong collaborations and meaningful partnerships amongst various policy actors involved in the landscape, such as the environmental, water, forestry, agriculture, defence, rural development, energy, and mineral resource management sectors, as well as private sector entities, citizen groups, and civil society. The G20 plays an important role in ensuring collaboration by mobilising finance, facilitating cross-border engagements, showcasing best practices of working with local communities, and establishing synergies that are required for scientifically and socially responsible restoration.



# Introduction

1





**L**and degradation is one of the most pressing global challenges. Governments around the world have set up mechanisms to restore land, which jurisdictionally fall under various ministries and departments linked to land management. There is a need for relevant institutions to work together to incorporate the principles and language of restoration science, practice, and finance to streamline existing efforts in order to meet the G20's target for land restoration.

Scientific and people-centric principles for restoration have been synthesised by scientists<sup>1</sup> and at international


platforms such as the UN Decade for Ecosystem Restoration.<sup>2</sup> These need to be incorporated and mainstreamed within policies and institutions working on restoration-related goals. Under India's G20 presidency, the G20 Environment and Climate Sustainability Working Group (ECSWG) has been deliberating upon issues related to land degradation, accelerating ecosystem restoration, and enriching biodiversity. The leadership emphasises the need for goal setting, monitoring, knowledge sharing, and learning through strong inter-sectoral collaboration. This is crucial to foster the efforts of the G20 countries towards a resilient and sustainable future.



# **The Challenge**

# **2**






**T**he Global Environment Facility (GEF) estimates that nearly 25 percent of global land area has been degraded, and every year, 24 billion tonnes of fertile soil are lost,<sup>3</sup> with the projected implication that 95 percent of the Earth's land could become 'degraded' by 2050.<sup>4</sup> The Intergovernmental Panel on Climate Change (IPCC) estimates that about 1.5 billion people depend on degraded lands for livelihood, and the impacts are especially adverse for rural communities, particularly smallholder farmers and women.<sup>5</sup> Recognising the urgency of the situation, the United Nations has declared 2021-2030 as the UN Decade on Ecosystem Restoration, which is a rallying call for restoring ecosystems globally.<sup>6</sup> The UN defines ecosystem restoration as "preventing, halting, and reversing the degradation of ecosystems worldwide to regain their ecological functionality and to improve the productivity and capacity of ecosystems to meet the needs of society".<sup>7</sup> This definition covers multiple ecosystems, such as forests, peatlands, oceans, grasslands, shrublands, savannahs, farmlands, mountains, and urban areas. It follows that reducing land degradation and restoring

ecosystems is a complex process and requires a context-specific and transdisciplinary approach tailored for different ecoregions and ecosystems.

As ecosystem restoration is being recognised as an important tool for mitigating the adverse effects of climate change, there is increased consensus that its implementation needs to be a socio-ecological endeavour. The complexity involved in restoring land makes it challenging to translate policy into practice.

Management of land may fall under different agencies depending upon the ecosystem and land use, and hence, the implementation of restoration interventions may fall under the mandate of various institutions and departments. In other words, while restoration policies may be broadly designed and implemented by Ministries or Departments of Environment, a range of other sectors may be involved, typically forestry, agriculture, energy, water, and land management.<sup>8</sup> Consequently, the implementational machinery of the UNCCD mandate in each state consists of nodal agencies working with multiple other agencies and institutions to mobilise resources



and expertise in order to achieve the objectives of the convention (Appendix A). Guided by global commitments and national priorities, such institutions are bound by their own set of laws, tenurial systems, and specific mandates. This Policy Brief looks at such agencies across five G20 countries that are involved in implementing restoration

and allied activities. Since ecosystems typically transgress administrative borders, restoration policy needs to operate in a trans-boundary context in a web of various other policy decisions. Therefore, the involvement of multiple agencies, that otherwise work in silos within a fragmented policy landscape, need a framework for converging efforts.






# **The G20's Role**

# **3**





**T**he G20 took leadership in response to this crisis by launching the Global Initiative on Reducing Land Degradation and Enhancing Conservation of Terrestrial Habitats at the Riyadh Summit in 2019 (henceforth, the G20 Global Land Initiative).<sup>9</sup> The goal is to prevent, halt, and reverse land degradation and reduce degraded land by 50 percent by 2040.<sup>10</sup> The UN Decade on Ecosystem Restoration emphasises the need for “Living in harmony with nature”.<sup>11</sup> The G20 further affirmed its commitment to the shared ambition of reducing land degradation by 50 percent by 2040 at the G20 Rome Leaders’ Declaration in 2021<sup>12</sup> and the G20 Bali Leaders’ Declaration in 2022.<sup>13</sup> The commitment is gaining momentum with India’s presidency, as arresting land degradation is an important focus area of the Environment, Climate & Sustainability Working Group (ECSWG) under the Sherpa Track in 2023.

The G20 Global Land Initiative seeks to achieve its goal by demonstrating and presenting success stories that protect nature, engaging multiple stakeholders, including private players and civil society, and building capacity for restoration outcomes. Since the G20 countries play an important role in strengthening global architecture and governance, effective implementation of this initiative will have a substantial impact on degraded land and create spillover effects for other regions. By articulating the importance of a multi-stakeholder approach, the G20 Global Land Initiative demonstrates good thought leadership being translated into on-ground action. The G20 carries the necessary influence and weight to demonstrate policy mechanisms that are inclusive and socio-ecologically responsible.



# **Recommendations to the G20**

# **4**





**D**eveloping restoration plans that incorporate multiple land uses, ecosystem services, priorities, and aspirations of local communities requires an integrated landscape approach. The idea is to balance demands and policies for multiple land uses within a given area. The plans should converge with co-benefits such as environmental sustainability, climate change resilience, food security, improved health outcomes, and livelihood enhancement.<sup>14</sup>


From case studies in the G20 countries, it is apparent that policy institutions exist within different thematic areas such as forests, climate change, agriculture, soil, blue economy, and research with cross-cutting mandates and agendas (Appendix A). Converging the policies and mandates of restoration-related interventions with co-benefits requires the government divisions of forests, agriculture, rural, defence, and climate change to align their priorities. The convergence is necessary for mobilising finance, cross-border collaboration, working with communities, implementing ecologically appropriate interventions, and knowledge sharing.

### **a. Catalyse finance for restoration**

The role of finance is central to scaling up restoration, and this is where G20 leadership is most crucial. The UN estimates that spending by the G20 countries on nature-based solutions needs to increase from the current US\$120 billion/year to US\$285 billion/year by 2050 in order to address the climate and biodiversity crisis.<sup>15</sup> While the G20 has created vital momentum, especially since launching the Sustainable Finance Working Group, the effort needs to be stepped up to meet the finance gap.

The World Bank and other international organisations estimate high potential for investment in restoration in lieu of the various market and non-market co-benefits that restoration generates. Private finance is considered to be an important tool in meeting landscape restoration targets. The World Resources Institute estimates that every US\$1 invested in ecological restoration generates US\$7-30 in economic benefits.<sup>16</sup> However, restoration has a long gestation period as well as high risk. Risk mitigation mechanisms such as tax, subsidies, and loan guarantees can help overcome this barrier.

- **Share knowledge for innovative financing mechanisms such as biodiversity bonds:** Developing high-integrity global and local-scale voluntary and compliant biodiversity credit markets is crucial to bridge the restoration finance gap post the Kunming-Montreal Biodiversity Framework, which emphasises target-based restoration. There are innovative and upcoming financing mechanisms, such as ‘rhino bonds’, that link investors’ returns with the survival of the endangered black rhino.<sup>17</sup> However, such financing requires cross-sectoral knowledge, with a clear understanding of restoration goals, outcomes, and measurable targets in a way that is acceptable to restoration practitioners as well as financiers. This further requires scientists, practitioners, financial institutions, and the government to collaborate and develop implementable standards. Kickstarting this may require engaging with philanthropy and providing development-sector funding, which plays an important role in preliminary investments and initiating the restoration economy, given the associated long-term returns.
  - **Promote self-sustaining mechanisms such as Payment of Ecosystem Services (PES), where ‘users’ of an ecosystem service compensate ‘providers’ for ensuring the service flows:** For example, the Global Green Growth Institute (GGGI) is collaborating with the Government of India and USAID to implement a PES mechanism for landscape restoration in India.<sup>18</sup> Farmers and agricultural communities will be compensated by urban communities for the adoption of sustainable practices that ensure water availability in nearby cities and industrial areas. Similarly, a long-standing example of a working PES model exists in South Africa, where the government has restored about 1 million hectares of land while providing employment to marginalised communities.
- b. Understand the aspirations of communities**
- The human dimensions of ecological restoration have been well articulated. The following steps are necessary to centre people and social dimensions in restoration practice.

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- **Recognise that people do not belong to a homogenous group and that there are power relations and diversity (in gender, class, caste, race, ethnicity, and social capital) among stakeholders:**

Promoting inclusive processes, equitable costs, and benefits as well as addressing socio-economic contexts is important to engage people as true agents of change.<sup>19</sup> Aligning societal aspirations and conservation, as described in the Towards a Unified System of Key Environmental Relations (TUSKER) Framework, is a useful tool to facilitate such integrated conservation.<sup>20</sup>

- **Generate livelihood opportunities and enhance income for people to co-own restoration initiatives:**

The economic outcomes of restoring land need to directly benefit local stakeholders. This is especially important for developing countries, as it makes the economic case for restoration and improving the wellbeing of people. Restoration requires inter-sectoral collaboration. There are a number of agencies and stakeholders that contribute to and are responsible for carrying out restoration-related interventions.

Ministries, departments, or institutions that engage with rural development and livelihoods need to play a key role in mainstreaming restoration by synergising between livelihood generation and restoration activities. There are also country-specific lessons to be replicated. The Rural Payments Agency in the UK illustrates a best practice for such integration, where the UK government pays farmers and land managers for actions that protect and enhance biodiversity and improve water and air quality while continuing to produce food.<sup>21</sup> Successful management of multifunctional landscapes would benefit from such agreements and cross-sector collaboration. This is especially relevant for developing countries where marginal agriculture causes acute distress to farmers.

### **c. Exemplify cross-border collaboration for habitat protection and restoration**

Ecosystems transgress administrative and state boundaries, with relevance to a range of issues such as drought, intensive water use, deforestation, habitat fragmentation, and climate change. However, cross-border

collaboration for restoration comes with its own set of challenges due to varied laws, cultural or religious differences and outlooks, differential resource allocation and priority, security and defence-related matters, and political differences. Nevertheless, many agencies have exemplified good work, such as the United Nations Development Programme (UNDP), which launched a regional initiative that extends to 12 countries to protect the snow leopard and its habitat.<sup>22</sup> Recognising the need to promote trans-boundary collaborations to conserve migratory species, in 1979, an international treaty of Convention on Migratory Species (CMS) was adopted by 130 countries.<sup>23</sup> In line with CMS-led trans-boundary collaborations, several regional cooperation groups for conservation, such as The Great Limpopo Transfrontier Park (GLTP), a trilateral agreement between Mozambique, South Africa, and Zimbabwe, took shape in 2002.<sup>24</sup> GLTP has achieved success in conserving threatened species by reducing poaching and protecting savannah and wetland habitats across the three countries. The G20 can facilitate inter-country collaboration for effective implementation of restoration interventions, as previously demonstrated in issues such as addressing the subprime lending crisis in 2008.<sup>25</sup>

#### **d. Know how much land is degraded across land use types and who is managing it**

Multiple technical agencies, including the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES), recommend collecting rigorous baseline data for land degradation to improve monitoring and verification systems. Even though global estimates of degradation are available, prioritising areas for restoration requires information on degraded land across forests, grazing lands, peatlands, agricultural lands, and riparian habitats. Frameworks such as the Land Degradation Surveillance Framework (LDSF) outline methods to collect data on various biophysical parameters as well as monitoring and evaluation frameworks to assess period success. Collaborations with research institutions and universities as well as specific time-bound projects are required to effectively carry out such monitoring. Various agencies may be responsible for restoration-related interventions depending on the land use type. For instance, if the bulk of degradation is in agricultural lands, agricultural institutions may have to be more proactive in leading restoration efforts.

- **Prioritise areas for restoration:**

Socially just restoration requires combining baseline data on biophysical parameters with socioeconomic indicators and aspirations to prioritise areas and goals for restoration. A people-centric approach to prioritising restoration areas has high potential for success in some of the poorest districts in India.<sup>26</sup> There are also long-term strategies that optimise the goals of carbon sequestration and conserving biodiversity while improving livelihoods through reforestation.<sup>27</sup> Since such prioritisation requires a systems thinking approach, policy institutions linked to tenure, agriculture and forest management, livelihood, and climate change need to synergise efforts.

**e. Choose appropriate and context-specific interventions and carry out periodic evaluations**

Many well-tested practices and interventions have been shown to reduce degradation. These include

promoting salt-tolerant crops, conservation agriculture, and integrated crop, livestock, and forestry systems in croplands; maintaining appropriate fire regimes and livestock management in grazing lands; and reforesting degraded forests.

Local management plans that learn from global knowledge to incorporate social and economic factors while involving relevant local institutions across various departments are required to specify appropriate interventions. Mass tree-planting campaigns that do not account for socio-ecological complexities have multiple pitfalls, to the extent that they can wreck natural systems, marginalise local communities, and dry up groundwater.<sup>28</sup> It follows that restoration interventions need to be carefully designed to avoid wasted expenditure and effort and also be periodically assessed for measuring restoration success.<sup>29</sup> The evaluation should particularly incorporate livelihood outcomes, in addition to restoring ecosystem services and biodiversity.






# Appendix

# 5







## Appendix A: Who is leading restoration and implementing programmes?


This Policy Brief looks at key institutions that implement restoration-related interventions in the G20 countries—USA, UK, South Africa, Brazil, and India. Broadly, restoration is implemented through six thematic areas—blue economy, grazing/rangeland, forests, agriculture and soil, climate change, and research (Table 1). In all five countries, a number of institutions and programmes cover these interventions. For instance, in the US, the Environmental Protection Agency under the Department of Interior works closely with the Department of State and the Department of Defence to address land degradation.<sup>30</sup> In India, the Ministry of Rural Development (MoRD), through its flagship programme, incorporates Natural Resource Management (NRM)

in its livelihood generation initiatives.<sup>31</sup> In South Africa, this is the Department of Agriculture, Land Reform and Rural Development, formed in 2019 by the merger of the agriculture functions of the former Department of Agriculture, Forestry and Fisheries with the Department of Rural Development and Land Reform.<sup>32</sup> In the UK, apart from the key departments of environmental protection and rural affairs,<sup>33</sup> the army also has initiatives for afforestation. In Brazil, while the Ministry of Environment (MMA) is the focal ministry, the Brazilian Forest Service was transferred to the Agriculture Ministry, which means that the goals of reversing degradation for forests and agricultural lands may be aligned. The Ministry of Agriculture, Livestock and Food Supply's mission is to ensure food security and sustainable agriculture, promote agri-businesses, and reduce social inequalities.<sup>34</sup>

**Table 1: Key Agencies That Have Made Restoration-Related Interventions in Their Mandate in Five Sample G20 Countries**

Sample Country	Examples of agencies with mandate in respective thematic areas					
	Water/Blue Economy	Grazing/Rangeland	Forests	Agriculture and Soil	Climate Change	Research
<p>United States of America</p> 	<p>Department of Agriculture (DoA)</p> <p><b>Environmental Protection Agency (EPA)</b></p> <p>U.S Department of State – Climate Crisis Agency (US-CCA)</p>	<p>DoA</p>	<p>DoA</p> <p>Department of Interior</p> <p><b>Bureau of Land Management</b></p>	<p>DoA</p>	<p>DoA</p> <p>EPA</p> <p>U.S. Department of Defense</p> <p>US-CCA</p> <p>US-CCA</p>	<p>National Science Foundation</p> <p><b>United States Geographical Survey</b></p> <p><b>National Oceanic and Atmospheric Administration</b></p> <p>Universities and independent research organisations</p>
<p>India</p> 	<p><b>Ministry of Jal Shakti</b></p> <p><b>Ministry of Environment, Forests and Climate Change (MoEFCC)</b></p>	<p>MoEFCC</p> <p>Forest Department</p> <p>Ministry of Agriculture and Farmers' Welfare (MoA&amp;FW)</p> <p><b>Department of Land Resources</b></p>	<p>MoEFCC</p> <p>Forest Department</p>	<p><b>MoA&amp;FW</b></p> <p>MoEFCC</p> <p><b>Ministry of Rural Development (MoRD)</b></p> <p><b>Ministry of Animal Husbandry</b></p> <p><b>Ministry of Social Justice and Empowerment</b></p>	<p>MoEFCC</p> <p>Ministry of Railways</p> <p>Ministry of Coal</p>	<p>Department of Agricultural Research and Education</p> <p><b>National Afforestation and Eco-Development Board</b></p> <p>Indian Institute of Forest Management</p>

Sample Country	Examples of agencies with mandate in respective thematic areas					
	Water/Blue Economy	Grazing/Rangeland	Forests	Agriculture and Soil	Climate Change	Research
South Africa 	Department of Forestry, Fisheries and the Environment (DFFE)  Department of Mineral Resources and Energy  iSimangaliso Wetland Park  Department of Water and Sanitation (DWS)	Department of Agriculture, Land Reform and Rural Development (DALARD)  Department of Forestry, Fisheries and the Environment (DFFE)	DFFE  <b>South African National Parks (SANParks)</b>  National Forest Advisory Council	DALARD  Department of Mineral Resources and Energy  DFFE  <b>DWS</b>	DFFE  Department of Mineral Resources and Energy  South African Weather Service (SAWS)  Presidential Climate Commission	Department of Science and Innovation  DFFE  <b>South African National Biodiversity Institute (SANBI).</b>  Council for Scientific and Industrial Research (CSIR)  Agricultural Research Council (ARC)  Water Research Commission (WRC)  Council for Geoscience (CGS)  National Research Foundation
United Kingdom 	Centre for Environment, Fisheries and Aquaculture Science (Cefas)  <b>Environment Agency</b>  Joint Nature Conservation Committee (JNCC)	Rural Payments Agency  <b>Natural England</b>	<b>Department for Environment, Food, and Rural Affairs</b>  <b>Forestry Commission</b>  JNCC  Natural England	Rural Payments Agency  Natural England  Agriculture and Horticulture Development Board	JNCC	National Environmental Research Council + others.

Sample Country	Examples of agencies with mandate in respective thematic areas					
	Water/Blue Economy	Grazing/Rangeland	Forests	Agriculture and Soil	Climate Change	Research
Brazil 	Ministry of Environment (MMA)  Ministry of Mines and Energy (MME)  National Water Agency	MMA  Ministry of Agriculture, Livestock and Supply (MAPA)	Ministry of National Integration  MMA  Brazilian Forest Service	Department of Water Resources  Ministry of Social Development and Combating Hunger  Ministry of Agrarian Development	MMA  MAPA  MME  National Council for the Environment (CONAMA)	Brazilian Institute of the Environment and Renewable Natural Resources (IBAMA)  Chico Mendes Institute of Conservation and Biodiversity (ICMBio)  Ministry of Science and Technology  Brazilian Institute of Geography and Statistic  Brazilian Agricultural Research Corporation  Brazilian Institute of Environment and Renewable Natural Resources

**Legend: Nodal agencies that implement Land Degradation Neutrality (LDN) (SDG 15.3, UNCCD)**

**Agencies and institutions working under nodal agencies to implement LDN, UNCCD**

**Other agencies that have the mandate to implement restoration-related interventions**

Source: Compiled by the authors from the websites of various government departments

Attribution: Anuja Malhotra et al., "A Socio-Ecological Pathway for Land Restoration," *T20 Policy Brief*, July 2023.



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