



Landscape Restoration, Food Security and Global Climate Change Policy

A CALL TO ACTION

“Humanity now faces a choice: we can continue down a path where our demands on Nature far exceed its capacity to meet them on a sustainable basis; or we can take a different path, one where our engagements with Nature are not only sustainable but also enhance our collective well-being and that of our descendants.”

— THE ECONOMICS OF BIODIVERSITY: THE DASGUPTA REVIEW

Cover Photo by Tofy Rabenandrasana

Phillipine Razanadrasoa, mother of vanilla farmer Felicité Solondraibe Pauline Raminosoa, walks in an agroforestry field on the vanilla farm with her granddaughter. Felicité Solondraibe Pauline Raminosoa is a vanilla farmer and CRS participant in SPICES, a comprehensive program that address social, economic and environmental challenges for rural farmers and communities in Madagascar.

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Writer: Hunter Michelson, consultant.

For any questions, comments or requests regarding this report, contact Emily Wei, Director of Policy, at Emily.Weil@crs.org.

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"Details of vegetables Carlos Molina grows in his orchard to feed his family. Carlos has participated in another CRS project called RAICES where he learned conservation agriculture techniques and ASA (Water-Smart Agriculture) practices. Now he is a Prospera project promoter teaching his neighbors about laying hens management and about ASA (Water-Smart Agriculture) practices."

[Photo by Oscar Leiva/Silverlight for CRS]

Acronyms

4R	Right source, right rate, right time, right place (fertilizer application)
AFR100	Africa Forest Landscape Restoration Initiative
BCC	Behavior Change Communication
CO₂	Carbon Dioxide
CBD	Convention on Biological Diversity
CGIAR	Consultative Group on International Agricultural Research
COP	Conference of the Parties
CRS	Catholic Relief Services
CSO	Civil Society Organization
EbA	Ecosystem-based Adaptation
FFP	Food for Peace
FLR	Forest Landscape Restoration
FTF	Feed the Future
GFSS	Global Food Security Strategy (United States)
GGW	Great Green Wall
GIS	Geographic information system
HDP (Nexus)	Humanitarian - Development - Peace Nexus
HEARTH	Health, Ecosystems and Agriculture for Resilient Thriving Societies
LDN	Land Degradation Neutrality
NAPs	National Adaptation Plans
NbS	Nature-based Solutions
NDCs	Nationally Determined Contributions
NGO	Non-governmental Organization
NIE	National-implementing Entity
NPK	Nitrogen, phosphorous, potassium
PES	Payment for Ecosystem Services
PREPARE	President's Emergency Plan for Adaptation and Resilience (United States)
SDG	Sustainable Development Goals
UN	United Nations
UNCCD	United Nations Convention to Combat Desertification
UNECE	United Nations Economic Commission for Europe
USAID	United States Agency for International Development
USDA	United States Department of Agriculture
USG	United States Government
VACS	Vision for Adapted Crops and Soils
VSLA	Village savings and loan association
WSA	Water-smart Agriculture

Executive Summary

An estimated 1.5 billion people depend directly on degraded landscapes (poor soils, scarce water, lack of biodiversity) for their food security, nutrition and livelihoods, with poor rural communities, small-scale producers, women, youth, indigenous peoples, and other at-risk groups disproportionately affected.¹ They bear the brunt of a global crisis of degraded landscapes, with an estimated loss of over 75 billion tons of topsoil annually at a cost of about USD \$400 billion.² On top of this, 2.7 billion people (almost a third of the world's 2023 population) experience severe water shortages for at least one month of the year.³ These problems heavily contribute to a food security and nutrition crisis in which roughly 735 million people are currently facing extreme hunger (an increase of 122 million, or 8% since 2019⁴ that puts current hunger levels back to near-2005 levels and does not bode well for achieving the SDG goal of zero hunger by 2030). The extreme hunger faced by so many is not due to global food production shortfalls, as the world as a whole produces enough food to feed 10.5 billion people⁵ (mostly under unsustainable methods of production that are further degrading farm landscapes). Rather it is predominately an issue of food production capacity of and access to food by the most vulnerable small-scale producers who live on the most degraded landscapes with limited or no access to water in areas subject to extreme weather conditions/ events (both a result of and an increasing catalyst for land degradation).

Landscape degradation, caused by humans and natural disasters, results in the plummeting availability of resources (e.g., soil nutrients, water, land, etc.), thereby affecting agricultural productivity and rural livelihoods in developing countries.

At present, between 20% and 40% of land on earth is degraded, directly affecting nearly half of the world's population and threatening roughly half of global GDP, amounting to USD \$44 trillion.⁶ Degradation of landscapes undermines the well-being of 3.2 billion people (with disproportionate impacts felt by women and girls)⁷ and has reduced agricultural productivity across nearly a quarter of the global terrestrial area. Associated pollinator loss puts at risk between USD \$235 billion and USD \$577 billion in annual global crop output.⁸ To add to this, 87% of inland wetlands from where freshwater is drawn worldwide have disappeared since 1700⁹ and roughly half of the world's population already experiences severe water scarcity for at least some part of the year due to climatic and non-climatic drivers.¹⁰ Our global food system, in particular, is responsible for 80% of deforestation and 70% of freshwater use globally (60% of this is wasted due to leaky irrigation systems¹¹) and is the single greatest cause of terrestrial biodiversity loss.¹² By 2050, on our present course, global crop yields are estimated to fall 10%, with some regions suffering up to a 50% reduction.¹³ As a result, world food prices are expected to rise by an estimated 30%¹⁴ and more people will fall further into food and livelihoods insecurity.

2023 marks the fourth year of the UN Decade on Ecosystem Restoration, a critical juncture for nations to reflect and refocus efforts to address the negative human impacts on local and regional ecosystems. It is also a good time to recommit to making-good on new promises and pacts such as the Sustainable Development Goals, the Paris Agreement, the Post-2020 Global Biodiversity framework, and countless others. The global outlook on the state of terrestrial and marine ecosystems for the Decade on Ecosystem Restoration is bleak, particularly regarding landscape degradation and its impact on food security, nutrition and livelihoods. Ensuring food security for 9.7 billion people by 2050 while meeting the myriad other goals of the Paris Agreement will be possible only if countries scale up landscape restoration and regenerative approaches to transform our food systems and provide

Estimates suggest USD \$ 1.3 trillion in investment is needed globally every year to ensure food systems survive and thrive under climate change. While this may seem like a lot, it is just 1 percent of global GDP.

sustainable livelihood opportunities for the most vulnerable. However, limited options exist for major new expansions in agricultural land without further degrading the environment through deforestation and wetland destruction. Restoring the productivity of existing agricultural and grazing land, while restoring and sustainably managing local and international watersheds is therefore essential to meet current and future aspirations for increasing food production without compromising ecosystem services.¹⁵ Estimates suggest USD \$ 1.3 trillion in investment is needed globally every year to ensure food systems survive and thrive under climate change. While this may seem like a lot, it is just 1 percent of global GDP.¹⁶

Over the past decade more than 125 countries have committed to targets and measures to restore land, and 115 governments have made commitments to restore a total of nearly 1 billion hectares of land as a contribution to achieving objectives of the [CBD](#), [UNCCD](#), [UNFCCC](#) and [Bonn Challenge](#).¹⁷ Policy makers, practitioners, and academics/scientists are hard at work refining the approach to climate change adaptation/mitigation to foster country/community led inclusive growth underpinned by cutting-edge climate science with an emphasis on targeted, scalable solutions. However, even with growing funding, political support and evidence base, efforts at supporting landscape restoration as a means to strengthen food security, nutrition and livelihoods still need to be ramped up significantly in order to adequately feed and nurture an exponentially growing population while regenerating and protecting the critical ecosystems upon which human life depends.

The myriad impacts of climate change require an organized and concerted focus, both in the short- and long-term, on strengthening resilience of small-scale producers for food security and a diversified, nutritious diet, while providing opportunities to make a sustainable living. This can be done through Nature-based Solutions (NbS) which harness landscape restoration approaches as part of holistic climate change adaptation and mitigation programming based on robust research and evidence. Policy development, land tenure, equitable access, capacity strengthening, market development and farmer and private sector incentives, along with improved agricultural practices/inputs, are all part of the equation. Evidence has shown that landscape restoration is not only possible, but also profitable. Restoration of 350 million hectares of degraded land between now and 2030

Carmelina is a coffee producer from the Zacapa region of Guatemala. She attributes the success of her business to adopting water-smart agriculture (WSA) practices after participating in the WSA program.



[Photo by Katlyn Holland for CRS]

In terms of food security and nutrition, agroforestry alone could increase food security for 1.3 billion people, and other landscape restoration approaches would increase that number exponentially

could generate USD \$9 trillion in ecosystem services and take an additional 13-26 gigatons of greenhouse gases out of the atmosphere. In terms of food security and nutrition, agroforestry alone could increase food security for 1.3 billion people, and other landscape restoration approaches would increase that number exponentially.¹⁸ Perhaps most importantly, landscape restoration approaches contribute to strengthening resilience in communities to help them cope with, recover from, and bounce back quicker from shocks and stresses related to climate-change generated severe weather events (drought, flooding, increased temperatures, etc.), saving lives and livelihoods.





It is through this lens CRS has invested significant resources to bring landscape restoration for food security and nutrition to the forefront of global food security and climate change policy by elevating our footprint in emergency and development food security efforts, while building thought leadership in landscape restoration.¹⁹ This effort builds off a strategic investment by the agency to scale approaches in landscape restoration, to capture new evidence (particularly in locales that already have decades of investment), and to use this evidence to influence current and future global and USG policy decisions. Based on evidence we have thus far gathered on the ground, we are putting forward for discussion the following policy recommendations:


-  **1 Mobilize \$11.4 billion of climate finance a year by 2024 along with \$3 billion for funding adaptation by 2025 to honor funding commitments for international climate change adaptation efforts.**
-  **2 Maintain and robustly fund important USG-led initiatives like Title II Food for Peace non-emergency development programs that strengthen resilience for smallholder producers.**
-  **3 Institutionalize US commitments to landscape restoration detailed in the PREPARE Action Plan, and document collective impact of the many USG initiatives including the 2021-2030 Climate Change Strategy and 2021-2026 Global Food Security Strategy.**

Multi-laterals (including USG)

- 4  Meet commitments laid out in the Sustainable Development Goals, Paris Agreement, Bonn Challenge and other initiatives.
- 5  Better articulate the impacts of land restoration as a viable solution to improve livelihoods, food security, and nutrition; focus on understanding, applying and learning from the impacts of landscape restoration and climate-resilient agriculture on these outcomes.
- 6  Donors need strategic coordination amongst themselves, and to work with national and regional bodies to create incentives at the country-level to increase investments in landscape restoration and soil health, as well as empower small-scale producers to develop culturally relevant landscape restoration solutions at the farm and landscape level.
- 7  Integrate landscape restoration activities into existing livelihood programs, and humanitarian assistance efforts where feasible.
- 8  Provide longer-term, flexible funding for landscape restoration and other climate change adaptation efforts.
- 9  Support interdisciplinary, community-led research to understand the drivers of landscape degradation, and to design appropriate land restoration interventions.
- 10  Localize funds and increase direct funding opportunities.

National/Regional Bodies

- 11  Build consensus on the need to halt landscape degradation and promote landscape restoration as a viable tool to do so.
- 12  Create the enabling environment to help usher through landscape restoration activities, making necessary changes to policy and law.
- 13  Strengthen governance structures and understand the need to work across traditional governance geographies.
- 14  Increase investment in technical capacities and knowledge production, while understanding the pathways for small scale producers to best access and utilize new technologies and data.



Yohannas Black, in a watershed plot in Kublang, Chikwakwa, Malawi. Yohannas is part of the watershed committee. The watershed committee is made up of volunteers in the community who support and train farmers to maintain the watershed structures.

[Photo by Dooshimafor Tsee for CRS]

Landscape Restoration for Food Security, Nutrition and Livelihoods

Global Landscape Degradation and Climate Change

The impacts of human-driven climate change (increasing temperatures, floods, droughts, severe weather events) and severe landscape degradation (poor soils, scarce water, biodiversity loss) from unsustainable agricultural/industrial practices (often supported by policies that condone/incentivize these practices) are felt more acutely each year and have created a mutually reinforcing cycle of environmental destruction and human suffering. As the planet continues to warm and the weather becomes more unpredictable and unforgiving, governments are failing to develop and apply policies promoting and incentivizing sustainable land and water management practices to support small-scale producers to effectively adapt the impacts of climate change, often forcing producers to adopt increasingly unsustainable practices to survive (which further fuel climate change and accelerate landscape degradation). This has led to a severe global food security, nutrition and livelihoods crisis, especially for the estimated 1.5 billion people in mid to low-income countries that depend directly on degraded landscapes (poor soils, scarce water, lack of biodiversity) to meet their basic needs (with poor rural communities, small-scale producers, women, youth, indigenous peoples, and other at-risk groups disproportionately affected).²⁰

The state of global landscape degradation is troubling: upwards of 40% of all land on earth is degraded (2 billion hectares), with an estimated loss of over 75 billion tons of topsoil annually at a cost of about USD \$400 billion.²¹ More than half of the world's wetlands have disappeared since 1700 and 2.7 billion people (almost a third of the world's 2023 population) experience severe water shortages for at least one month of the year.²² Forests are disappearing at a net rate of roughly 5 million hectares a year (an area roughly the size of Portugal)²³, and between 200 and 2000 species extinctions occur annually. 735 million people currently face extreme hunger, an increase of 126 million since 2019 that puts current hunger levels back to near-2005 levels. This does not bode well for achieving the Sustainable Development Goals (SDGs) goal of zero hunger by 2030.

The world currently grows enough food to feed roughly 10.5 billion people, or 1.5x the population of the earth, albeit unsustainably.

Unfortunately, the most degraded landscapes are located in countries and regions (the “dry corridor” of Central America and Africa, etc.) that also disproportionately feel the negative effects of climate change. Flooding, drought, severe weather events and other impacts of climate change make it even more difficult for the most vulnerable small-scale producers to grow enough food to feed their families an adequate, nutritious diet and meet their basic needs. The hunger/nutrition issue is not due to lack of global food production (the world currently grows enough food to feed roughly 10.5 billion people, or 1.5x the population of the earth, albeit unsustainably), but it is due to the immense challenges faced by the small-scale producers who live on the most degraded landscapes that cannot produce sufficient nutritious food to feed their families and secure their livelihoods. Of those severely

hungry in the world right now, nearly 60% are women and girls. Women are uniquely and differentially affected by landscape degradation given their greater vulnerability to poverty, weaker legal protection and social status.

Global warming and its impact on agricultural production is already being felt and will most certainly get worse before it gets better.

Fertile soil, adequate clean water and robust biodiversity are critical to food security, nutrition, livelihoods and overall strengthened resilience for the world's small-scale producers (84% of all farms), while helping to mitigate the impacts of climate change through carbon sequestration and avoiding greenhouse gas emissions. However, increasing global temperatures and negative landscape degradation trends make it clear that the world is headed in the wrong direction and increased collective action is required through policy, funding, research, practice, to reverse these trends. Global warming and its impact on agricultural production is already being felt and will most certainly get worse before it gets better. That is why these small-scale producers need to be supported to adopt climate-resilient practices that restore landscapes while strengthening food security, nutrition and livelihoods.

A growing body of evidence showcases the benefits of landscape restoration on the environment, food security and nutrition. Every dollar invested in landscape restoration and sustainable land management can yield up to USD \$30 in economic benefits, including increased crop yields, improved water availability (more water, better soil moisture retention, lower water loss due to evapotranspiration), and reduced landscape degradation.²⁴ Improved agriculture, agroforestry, and watershed management activities increase the diversity of nutrient-rich crops to improve nutrition, increase cash crops for income, and provide habitat for important pollinators and food/medicine sources. Further, they reduce disaster risk by mitigating the impacts of severe weather events and increasing the adaptive capacity of small-scale producers to recover from these events, while sequestering the carbon that is heavily contributing to these events. To put it in perspective, restoring 150 million hectares of degraded agricultural land (less than 1% of the degraded land on earth!) could generate USD \$85 billion in net benefits to national and local economies, including USD \$30-40 billion a year in additional income for small-scale producers, and increased food security for nearly 200 million people.²⁵ Moreover, addressing gender inequalities when it comes to landscape degradation provides an opportunity to use previously underused and under-recognized abilities, knowledge and talents to reverse the issue.

2023 marks the fourth year of the UN Decade on Ecosystem Restoration, a critical juncture for nations to reflect and refocus efforts to address the negative human impacts on local and regional ecosystems and work to overcome inequalities for the well-being and prosperity of all people. It is also a good time to recommit to making good on new promises and pacts such as the SDGs the Paris Agreement, the Post-2020 Global Biodiversity framework, and countless others that will make important strides towards strengthening food security, nutrition and livelihoods for the most vulnerable small-scale producers. This policy paper briefly touches on the important role landscape restoration plays in adapting to climate change, outlines current USG and global policy/mechanisms that support landscape restoration and other climate change adaptation approaches, and provides recommendations for supporting, improving and scaling-up land restoration approaches.

Landscape Restoration is an effective climate change adaptation tool

- **Landscape restoration preserves and regenerates local and regional ecosystems, reducing small scale-producer vulnerability and climate risks.**

Landscape restoration, including agroforestry, provides multiple benefits towards

ecosystem regeneration through adaptation and mitigation, such as: erosion control, sinking carbon, recharging and retaining fresh water, providing homes for diverse plants and animals required to make ecosystems function efficiently. Landscape restoration approaches can also be utilized by communities to prepare for, cope with and recover from extreme weather events and natural disasters that are increasing in frequency and magnitude, helping to minimize vulnerability (saving lives and livelihoods), and allowing them to bounce back quicker.

■ **Landscape restoration strengthens food security, nutrition and ecosystems.**

Landscape regeneration supports soil health, water recharging and retention, and diversification of production, which all contribute to improved yields and dietary diversity. It creates and sustains home for pollinators, important animals used for protein, and the trillions of healthy bacteria that add biomass to soil and improve soil quality. Agroforestry provides important fruit and nuts to complement diets while contributing to sinking carbon (potentially 13-26 gigatons if 350 million hectares of landscape undergoes restoration, less than 18% of the estimated degraded land in the world²⁶). Landscape restoration efforts also seek to capitalize on indigenous wild foods and knowledge of food production to empower communities to improve their own diets and builds resilience to shocks that may impact food security and livelihoods.

In his family orchard, Carlos Molina grows vegetables and other crops that will feed his family. He recently planted cucumbers, cabbage and some aromatic herbs. He also grows papayas, green beans, garlic and green chili in Los Morenos community, in Corinto, Morazan, El Salvador.



[Photo by Oscar Leiva/Silverlight for CRS]

- **Landscape restoration provides improved livelihoods opportunities for smallholding families.** Through improved food, fodder, and fuel, supported access to sustainable markets, payment for ecosystem services, cash for work (planting trees, soil restoration, etc.) and other options, landscape restoration can create a multitude of livelihoods options for vulnerable populations. Restoration of 350 million hectares of degraded land between now and 2030 could generate USD \$9 trillion in ecosystem services while strengthening food security, nutrition and local ecosystems!²⁷

Landscape restoration can support improved climate change adaptation efforts

Climate change policy approaches and country climate change adaptation/mitigation plans have made a significant shift toward country/community led inclusive growth underpinned by cutting-edge climate science with an emphasis on targeted, scalable solutions. Landscape restoration has proven to be an approach that yields substantial results within the goals set out in current climate change adaptation policy and country plans. The landscape restoration approach highlights the success of equitable and inclusive country and community led development efforts, is a catalyst for improved climate and soil modeling (science-based approach with robust research), provides tangible results (increased yields, increased income, improved dietary diversity, improved soil quality, etc.) that can be used effectively to adapt projects and approaches, and can be scaled up based on results and needs of individual communities. Landscape restoration and other NbS can be used in any context and are increasingly being used in humanitarian crises as a way to increase resilience and improve quality of life (SPHERE recently developed a guide on integrated approaches for [NbS in humanitarian contexts](#)).

Landscape restoration: program and policy

Over the last decade efforts to address landscape degradation have ramped up significantly, with policy makers, practitioners and academics/scientists joining forces to support the poorest small-scale producers. The global community has rallied around funding, scientific analysis and development of a targeted suite of scientifically proven, locally acceptable agroecological, and climate-resilient landscape restoration practices at a scalable level. This is evident in the multitude of multilateral initiatives, coalitions and funding mechanisms working to bring increased awareness, research, and funding to climate change adaptation/mitigation, including landscape restoration. Governments have rallied around the SDGs, Paris Agreement, Sendai Framework and other pacts/agreements to address climate change and have chosen landscape restoration as a key component of improving ecosystems while strengthening food security, nutrition and livelihoods.

At the country level, donors and policymakers are undertaking a wide variety of projects, both internationally and directly funded, to address climate change through landscape restoration. This includes payment for ecosystem services like clean water and carbon storage as a bonus for farmers to adapt improved agriculture/agroforestry practices. For example, several governments have adopted payment for ecosystem services (PES) schemes to address specific climate change issues in their respective countries. In Malawi, the private sector is helping to fund a PES scheme for low-carbon agriculture to reduce erosion, which has provide income for farmers while encouraging them to adapt new practices like no-till and intercropping.²⁸ Governments have also invested heavily in strengthening capacity to take a locally-led approach to climate change, including training and infrastructure development

Several governments have adopted payment for ecosystem services (PES) schemes to address specific climate change issues in their respective countries.

CRS has been working on developing targeted yet flexible long-term scalable landscape restoration solutions.





to accurately map and track changes in climate, to better understand soil nutrient needs and to gauge the impact of/empower local communities to address climate change while strengthening food security, nutrition and livelihoods.

At the grassroots level, practitioners are working continuously to support governments, communities, and individuals to develop, test, refine and scale-up appropriate landscape restoration approaches. For example, CRS has been working on developing targeted yet flexible long-term scalable landscape restoration solutions, supported by scientific evidence of current and future impacts of climate change. One recent example comes from CRS' Water-smart agriculture project in the "dry corridor" of Central America (a more in-depth cost study can be found in [Annex 1](#)).



CRS' Water Smart Agriculture Project

In the "dry corridor" of Central America, CRS supported 3,000 small-scale producers to learn and replicate "water-smart technologies" (permanent soil cover, improved fertilization with 4R training, crop diversification, cover crops and minimal/zero tillage, agroforestry) to improve soil quality, water use/absorption/retention, and biodiversity. To scale up, they trained 60 professional extensionists and 400 lead farmers and worked with research institutes to develop climate modeling to predict crop performance and the impact of climate change over time. At the end of the first phase of the project in 2020, CRS conducted a rigorous cost study to quantify the gains made by the program and found the following:

-  **Farmer income went up by USD \$1 for every 41 cents spent;**
-  **It cost the project an average of USD \$2.69 to sequester a metric ton of CO₂, which is far less than figures from various sources that pin a metric ton at USD \$10- USD \$35 through PES;**
-  **Yields of coffee, beans and maize were higher by 28, 60 and 43% respectively than control plots using traditional production methods;**
-  **Soil carbon levels increased by 14% while moisture levels increased 23% during the canicular dry period vs. control plots.**



US Government Policy and Programs Advancing Landscape Restoration

Evolving USG Approach to Global Leadership in Addressing Climate Change

“notwithstanding good intentions, present adaptation measures are too fragmented and small scale for the challenges ahead. There is a widening gap between what we are doing and what is needed as the climate continues to change.”

As the specter of climate change looms larger by the year, the USG led by the Biden-Harris Administration is stepping-up efforts to strengthen the USG leadership role in global climate change adaptation/mitigation. The administration created the country's first ever [“Climate Task Force”](#) and has reaffirmed commitments to the SDGs, the Paris Agreement (rejoining immediately upon Biden's election to the Presidency) and other existing multilateral efforts to address climate change. The USG recently acknowledged that, “notwithstanding good intentions, present adaptation measures are too fragmented and small scale for the challenges ahead. There is a widening gap between what we are doing and what is needed as the climate continues to change.”²⁹ As a result, the Biden-Harris Administration have worked to integrate climate change into a whole-of-government approach covering 19 US departments, agencies, and sub-agencies in a concerted push towards achieving climate change adaptation and mitigation goals. As part of this whole-of-government approach, several key strategies have been updated to reflect the shift, including the USG climate, resilience (still in draft form), food security, and water policies. New implementation mechanisms have also been developed under the Biden-Harris Administration to spearhead efforts to achieve USG climate change and food security goals under this new whole-of-government alignment.³⁰

Updated USG Policies Incorporate Landscape Restoration

The USG has developed and/or updated several global policies related to addressing climate change in efforts to put their whole-of-government approach into practice and to link more closely with recent global climate change initiative/pacts. These expansive policies more closely align the USG with evolving approaches grounded in locally-led development, equity and inclusion, private sector engagement, NbS³¹, and evidence, technology and innovation, underpinned by rights-based, gender responsive and socially inclusive approaches to support partner countries to reach the most critical populations (most vulnerable, women, youth, indigenous peoples, marginalized and underrepresented populations). All of these policies recognize the importance of landscape restoration as an impactful tool to address and adapt to climate change and integrate or link landscape restoration activities throughout. A summary of landscape restoration approaches in each policy document can be found below.

2022-2030 USAID Climate Strategy: The strategy notes that sound management of land and ecosystems is the only currently available and affordable approach to remove greenhouse gases from the atmosphere at large scale and commits the USG to supporting landscape restoration for climate-resilient food systems including development and wide-spread adoption of diversified, climate-resilient agriculture, livestock and fisheries across value chains. The USG has grouped their landscape

restoration for food security, nutrition and ecosystem resilience activities under their Ecosystem-based Adaptation approach (EbA), which will work to strengthen capacity in natural resource management to manage and reduce climate risks, and will promote implementation of NbS including conservation, management and restoration of forests, mangroves, peatlands and degraded agricultural lands.³²

Global Food Security Strategy for 2022-2026: This strategy was updated to more adequately address the impacts of climate change than previous strategies, acknowledging the many benefits that natural ecosystems provide (support for soil formation/conservation, pollination, pest suppression, floodwater storage, improved water quality and quantity, and habitats for micro-rich wild foods) and the importance of landscape restoration as a way to strengthen resilience of people and the ecosystems they inhabit. The policy interweaves EbA and includes intermediate results focused on enhanced climate adaptation and mitigation and improved natural resource management, with landscape restoration approaches that include ecosystem-based adaptation, watershed management, forest and rangeland management and biodiversity conservation. This iteration of the strategy has a special focus on healthy ecosystem and biodiversity, responding to climate change and food insecurity systematically to build resilience of people and ecosystems while reducing reliance on emergency food assistance.

Global Water Strategy (2022-2027): Two of the four main objectives of this policy specifically mention climate resilience, the first (objective 2) being equitable access to safe, climate resilient water and the second (objective 3) improved climate-resilient conservation and management of freshwater resources and associated ecosystems. This strategy prioritizes community-led climate change adaptation, resilience and NbS, including watershed restoration and conservation to maximize groundwater recharge and storage.³³

The One-Health approach is a collaborative, multi-sectoral and transdisciplinary approach, working at local, regional, national and global levels with the goal of achieving results that recognize the interconnection between people, animals, plants and their shared environment.

USAID Resilience Policy (revision): While this policy is yet to be published, it includes a new approach related to landscape restoration for food security and nutrition called the One-Health approach. The One-Health approach is a collaborative, multi-sectoral and transdisciplinary approach, working at local, regional, national and global levels with the goal of achieving results that recognize the interconnection between people, animals, plants and their shared environment. This includes conserving natural resources and supporting climate-smart practices that include landscape restoration (climate-resilient agriculture, watershed management, agroforestry, etc.) while sustainably meeting food security, public health (nutrition included) and livelihoods needs.³⁴

The USG has several other policies and frameworks, including a [2022-2026 Global Food Security Research Strategy](#), [Global Coordination Nutrition Plan \(2021-2026\)](#), [USAID Biodiversity Policy](#) (last updated 2015), [Environmental and Natural Resource Management Framework](#) (2019), and [Strategic Framework for Early Risk Reduction and Resilience](#) (2022). The culmination of these reinforce climate change in every aspect of USAID's work, link climate adaptation and landscape restoration between humanitarian and development activities, and provide the USG and partners with a roadmap to coordinate, unify and elevate environment, climate change and natural resource management (including landscape restoration) across the agency and across the globe.

USG Programs Address Climate Change through Landscape Restoration and Resilience-building

In order to implement the nature-based climate change adaptation goals detailed in the aforementioned policies/strategies, the USG leverages both existing and new mechanisms to oversee programs/projects:

Feed the Future (FTF) continues to be the USG's central implementation program for addressing climate change, food security and nutrition. In 2022, FTF added 8 target countries (totaling 20) with an added investment of USD \$760 million in funding for FTF activities. Each country has, or is in the process of developing, a Global Food Security Strategy Country Plan that is centered around adapting to climate change, and plans are flexible based on the underlying causes of climate change and the needs of the most vulnerable populations in each country.³⁵



Feed the Future project in Mozambique

USAID FTF funded the Land O' Lakes Venture 37 project, Resilient Agricultural Markets Activity in the Beira Corridor (RAMA-BC) (2016-2022), to address a complex web of interconnected shocks and stresses felt by small-scale producers, including land degradation (poor soil fertility, emergent crop and livestock pests and diseases) and climate change (drought, flooding, cyclones) challenges EbA. Landscape restoration efforts included vermicomposting to increase soil fertility, intercropping with nutritious climate-resilient root crops to stabilize soil, cover cropping to aid in water retention and diversify diets, and integrating crops and livestock to aid in fertilization while managing fodder regeneration. These landscape restoration activities coupled with other resilience building measures (e.g., savings groups, market access, nutrition behavioral change communication), yielded impressive results, including:

-  **40% increase in intercropped maize over fields sowed solely with maize.**
-  **58% less damage from pests like armyworm and noxious weeds.**
-  **Farm labor time cut by 33-66%.**
-  **37,642 individuals applying improved management practices or technologies.**
-  **Increased yields and decreased cost of fertilizer, pesticides and herbicides resulted in a 2.5x higher return on investments in labor and agricultural inputs.**
-  **Vermicomposting had 80 times more NPK than normal soil and greatly improved aeration and water retention.³⁶**

FTF has also recently launched their [Vision for Adapted Crops and Soils \(VACS\)](#) in partnership with the African Union and FAO, to invest in improvement of crops through promoting and strengthening traditional food crops (including developing markets for nutritious indigenous foods), and improving soils through increased access to knowledge on what to grow, where and which soil management practices apply (this includes soil mapping and analysis, and restorative practices). This initiative will initially focus on Africa, with an initial investment of USD \$100 million from the USG.³⁷

Food for Peace (FFP) Non-emergency Development Food Security Activities (Title II) is another mechanism for the USG to implement landscape restoration, food security and nutrition activities through a long-standing global food security support program. FFP non-emergency projects generally last five years and

These landscape restoration efforts are part of a multi-sectoral approach to build community resilience to climate change.

Resilience Food Security Activity in Ethiopia



The **Ethiopia Resilience Food Security Activity** implemented by CRS (2021-2026) aims to strengthen the resilience of communities in 9 Woredas in the Oromo Region while concurrently providing short-term life-saving food assistance. The project incorporates landscape restoration as a major tool to build community resilience to adapt to climate change, training small-scale producers in climate-resilient agriculture to boost productivity and restore degraded landscapes, providing drought tolerant seed varieties to help adapt to recurrent droughts, and training of local government and partners to create GIS maps for environmental monitoring. These landscape restoration efforts are part of a multi-sectoral approach to build community resilience to climate change including development of nutrition clubs and DRR committees, livelihoods/marketing/leadership training and cash for work.



Strengthen the resilience of communities in 9 Woredas in the Oromo Region.



Providing short-term life-saving food assistance.



Train small-scale producers in climate-resilient agriculture.



Train of local government and partners to create GIS maps for environmental monitoring.

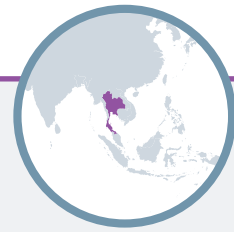


A vanilla farm in Bunyangabu District. The Resilient Vanilla/Coffee Agroforestry Farming Systems project aims to develop and pilot effective approaches to farm diversification for vanilla/coffee and food crops for consumption and sale at market.

[Photo by Elie Gardner for CRS]

focus on building resilience to transition the most vulnerable communities from food assistance into self-sufficiency, to reduce chronic vulnerability and facilitate inclusive growth. This includes addressing chronic malnutrition and the root causes of hunger as well as building resilience to shocks. A key component of the FFP non-emergency activities that sets them apart from FTF is the concurrent provision of food assistance to participants while engaging in resilience building activities, with funding flexible enough to pivot towards funding emergency responses should they arise in the areas where the development activities are being implemented. In 2022, USAID obligated USD \$378 million (roughly 13% of the FFP budget) to fund non-emergency food security awards across 24 programs spanning 12 countries.³⁸

Food for Progress is a USDA-funded program, first authorized in the 1985 Farm Bill that donates US commodities to low/middle income countries to be sold on the local market, with proceeds from the sale used to support agriculture, economic, or infrastructure programs, including landscape restoration. Food for Progress was developed to improve agricultural productivity and to expand trade of agricultural products through both hard and soft infrastructure. Food for progress funding, of which USD \$225 million has been earmarked for 2023, can be leveraged by a wide variety of stakeholders including governments, universities, civil society organizations and NGOs. Several recent projects have focused in part on landscape restoration and climate-resilient agricultural techniques with food security, livelihoods and the environment in the forefront.



Food for Progress project in Thailand

Food For Progress recently provided funding to Winrock International in Thailand for the **Regional Agriculture Innovation Network (RAIN)** project to expand adoption of climate-smart production practices by 30,000 farmers through creation of a regional knowledge hub that will include best practices on landscape restoration for food security, nutrition and livelihoods. RAIN will work with local communities to test and scale climate-smart technologies and practices that increase productivity, profitability, and trade opportunities in the Thai agriculture sector, while simultaneously strengthening environmental resilience through reduction of greenhouse gas emissions and through natural resource regeneration. Through these efforts, as well as capacity strengthening of private and public sector actors, RAIN will increase competitiveness and expand opportunities for agricultural trade through climate-smart production.³⁹



Food For Progress provided funding for the Regional Agriculture Innovation Network (RAIN).



RAIN will work with local communities to test and scale climate-smart technologies and practices that increase productivity.



RAIN will work with local communities to strengthening environmental resilience.



RAIN will work with local communities to increase competitiveness and expand opportunities for agricultural trade.



President's Emergency Plan for Adaptation and Resilience (PREPARE) is a new USG initiative developed by the Biden-Harris Administration and rolled out at COP26 in 2021. It is the first whole-of-government, international climate adaptation initiative developed by a US administration. This initiative further aligns USG with the global priorities to address climate change, including working towards achieving targets set in the SDGs and Paris Agreement, as well as supporting the global push to strengthen early warning systems and climate information services, strengthen capacity to mainstream adaptation into policies, programs and budgets, and to support locally-led climate change adaptation focusing on food security, water, health and infrastructure. This mechanism will help the USG reach its target of helping more than 500 million people in developing countries adapt and manage the impacts of climate change, including through landscape restoration activities such as watershed restoration and management, increasing production of diverse, nutrient rich and climate-resilient crops (including wild and/or underutilized indigenous crops) and strengthening capacity in data collection and analysis to restore soil health, improve livestock food security and to strengthen resilience of landscapes and ecosystems to respond to and recover from severe weather events.

HEARTH activities have begun in earnest in 12 countries, leveraging USD \$85 million thus far from private sector partners.

Under PREPARE, USAID has developed the Health, Ecosystems and Agriculture for Resilient Thriving societies (HEARTH = HEART + EARTH) program, a cross-sectoral partnership aimed at strengthening forest conservation while promoting sustainable agriculture, mitigating climate change and reducing the risk of disease while also helping communities adapt to climate change. HEARTH embodies USAID's new Private Sector Engagement policy, which signals an intentional shift to pursue market-based approaches and investment to accelerate partner country progress towards self-reliance. HEARTH activities have begun in earnest in 12 countries, leveraging USD \$85 million thus far from private sector partners.

As part of PREPARE, USAID will also invest in a variety of climate change initiatives including the following that will support landscape restoration:

- USD \$100 million over five years (leveraged by an equal or greater amount from private sector partners) in the sustainable conservation of forests and the wellbeing, and prosperity of local communities.
- At least USD \$215 million to support CGIAR and their research to help 200 million people raise climate-resilient productivity in South Asia and Sub-Saharan Africa by 25 percent by 2030.
- Expanding critical information and services to Central America through the SERVIR program, a partnership with NASA to provide free and open satellite data to build climate change maps and provide precise data to help build resilience to climate change and address contributing causes stemming from unsustainable land use.⁴⁰



Indonesia

Under PREPARE, USAID is working with the government of Indonesia and Mars Inc. on the Advancing Cocoa **Agroforestry towards Income, Value and Environmental Sustainability (ACTIVE)** project. ACTIVE will promote evidence-based sustainable cocoa agroforestry practices to address climate change, strengthen farmer resilience and improve small-scale producer income while ensuring a high-quality cocoa supply. The project aims to help 9,000 Indonesian farmers to adapt to climate change and manage their farmers with sustainable agroforestry practices that will strengthen ecosystem resilience, reduce an estimated 650,000 tons of CO₂ equivalent, increase farmer yields by 30% and increase farmer income by 15%.⁴¹



Advancing Cocoa Agroforestry towards Income, Value and Environmental Sustainability.



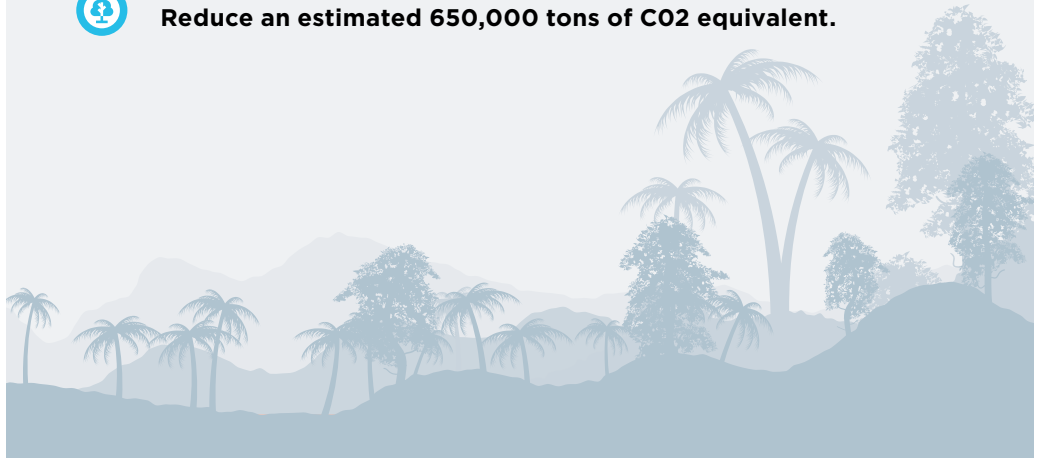
Improve small-scale producer income while ensuring a high-quality cocoa supply.



Help 9,000 Indonesian farmers to adapt to climate change.



Reduce an estimated 650,000 tons of CO₂ equivalent.



Postgraduate soil science student Thabo Masobeng - 25 yrs old, processing soil samples in the laboratory at the National University of Lesotho (NUL), Maseru, Lesotho. A team of six MSc students are part of the Reflectometer Pilot Program led by CRS' Land Restoration Platform.



[Photo by Dooshimafor Tsee for CRS]

The Biden-Harris Administration also created a **Climate Change Task Force** made up of more than 25 cabinet-level leaders from across agencies to work together on a “whole of government” approach to climate change adaptation and mitigation, and updating key climate change, food security, water, resilience and biodiversity strategies to more systematically address the impacts of climate change. What is not abundantly clear, however, is how agencies will work together to more efficiently advocate for, fund and implement climate change adaptation approaches around the globe, including who will be responsible for oversight, and how progress will be monitored. PREPARE’s 16 action points are overseen by USAID and the State Department, but it is unclear how they plan to organize, execute and learn from the “whole-of government” response. Strategy documents include individual targets for people reached, money raised, etc., bureaus detail their own targets and plans for executing commitments detailed in the PREPARE Action Plan, and new initiatives such as HEARTH and One-Health were developed to address different aspects of the plan and satisfy strategies detailed in the new/updated policies, but there is only passing mention in each of the documents and from the different bureaus of how the parts equal the whole.

Global Initiatives for Landscape Restoration

As the world has come to understand the importance of leveraging landscape restoration to help communities adapt to climate change and strengthen food security, nutrition and livelihoods, many ambitious initiatives have been launched with increasing global support. These partnerships between countries and the international community are not without their challenges, but they show that when the world works together it can achieve great results in the fight against climate change and landscape degradation. Below are several larger-scope initiatives that highlight the level at which landscape restoration can be approached and achieved:

Bonn Challenge: Launched by the Government of Germany and the International Union for Conservation of Nature in 2011, this ambitious, legally binding program aimed to restore 150 million hectares of degraded and forest landscapes by 2020 and 350 million hectares by 2030. Currently, more than 70 pledgers from more than 60 countries are in the process of restoring 210 million hectares (the initial goal of 150 million hectares was surpassed in 2017), working to achieve SDGs, Aichi Biodiversity Targets, the Land Degradation Neutrality (LDN) goal and the Paris Agreement. Participants leverage Forest Landscape Restoration (FLR) principles to strengthen agroforestry and silviculture, plant forests and woodlots (allowing for natural regeneration where possible), protect watersheds and control erosion, restore mangroves and improve fallow. Many of these activities directly work to strengthen food security, nutrition and livelihoods, while building environmental resilience.⁴²

Africa Forest Landscape Restoration Initiative (AFR100): This initiative was started in 2016 as Africa's organized contribution to the Bonn challenge and is a country-led effort to bring 100 million hectares of land in Africa into restoration by 2030. So far, 34 countries have committed to the initiative and 130 million hectares have already been committed for restoration. AFR100's goals are to accelerate restoration to enhance food security, increase climate change resilience and mitigation and combat rural poverty. Less than a decade old, there are already a multitude of examples where countries are engaging in landscape restoration for food security, nutrition and livelihoods with support from local and international NGOs, research alliances, climate funds and the private sector.⁴³



The Democratic Republic of the Congo

As part of a sub-initiative of **AFR100 (The Restoration Initiative)**, taking place in ten African and Asian countries with support from FAO, UNEP and IUCN, a project in DRC aims to help 5,000 of the most vulnerable households in Kabare and Ngweshe revitalize 5,800 hectares of the region's ecosystem. The project will prevent soil erosion and increase soil fertility to strengthen food security and livelihoods. 30,000 hectares of forest in the Kahuzi-Biega National Park will also be protected and improved to help sequester more than one million tons of greenhouse gas emissions by 2038.⁴⁴



AFR100 (The Restoration Initiative), taking place in ten African and Asian countries with support from FAO, UNEP and IUCN.



Prevent soil erosion and increase soil fertility to strengthen food security and livelihoods.



Help 5,000 of the most vulnerable households in Kabare and Ngweshe revitalize 5,800 hectares of the region's ecosystem.



30,000 hectares of forest in the Kahuzi-Biega National Park will also be protected.



Using an integrated landscape approach, these countries are integrating sustainable land management into policy and practice.

Great Green Wall (GGW)/GGW Accelerator: Africa's flagship initiative to combat climate change and desertification to address food insecurity and poverty was launched in 2007 by 11 African countries in the Sahel-Saharan region of Africa. Participating countries have pledged to restore native plant life to 100 million hectares of degraded land, sequester 250 million tons of carbon dioxide and create 10 million jobs by 2030. The initiative has since grown to more than 20 countries, has expanded to North and Southern Africa, and has mobilized more than USD \$19 billion in support. Using an *integrated landscape approach*, these countries are integrating sustainable land management into policy and practice, developing a green economy based around these practices, strengthening resilience through landscape restoration and early warning and response systems, and creating robust research and development, communications, marketing and advocacy programs. Specific activities related to landscape restoration for food security, nutrition and

livelihoods include agroforestry and multipurpose gardens, watershed management, soil restoration, reforestation and markets development/facilitation.⁴⁵ As of January 2023, 18% of the green wall has been completed with over 20 million hectares of land restored, 350,000 jobs created and 10 million people trained in sustainable land and water management practices with USD \$90 million generated by landscape restoration project activities.⁴⁶ There is still a lot to be done to achieve the objectives of this initiative, but the achievement thus far has been significant.

20 x 20 Initiative: This landscape restoration regional partnership started in 2014 in Latin America and the Caribbean that aims to bring more than 50 million hectares of degraded land into the process of conservation and restoration by 2030. Responding to the Bonn Challenge, this initiative has commitments from 18 countries and three regional programs that have already committed to improve more than 52 million hectares of land by 2030. To date, 8.2 million hectares of degraded land are under restoration and 14.6 million hectares of land have been put into conservation to protect them from degradation. The initiative is supported by more than 85 technical organizations and has leveraged over USD \$3 billion in private investment. Programs are centered on six key techniques including reforestation (natural and assisted) and avoidance of degradation and deforestation, bringing ecological functionality to entire landscapes, protecting biodiversity and storing carbon, boosting crop yields while protecting water sources and strengthening soil health through agroforestry, silvopasture, sustainable grassland management and other low-carbon farming techniques.⁴⁷

To date, 8.2 million hectares of degraded land are under restoration and 14.6 million hectares of land have been put into conservation to protect them from degradation.

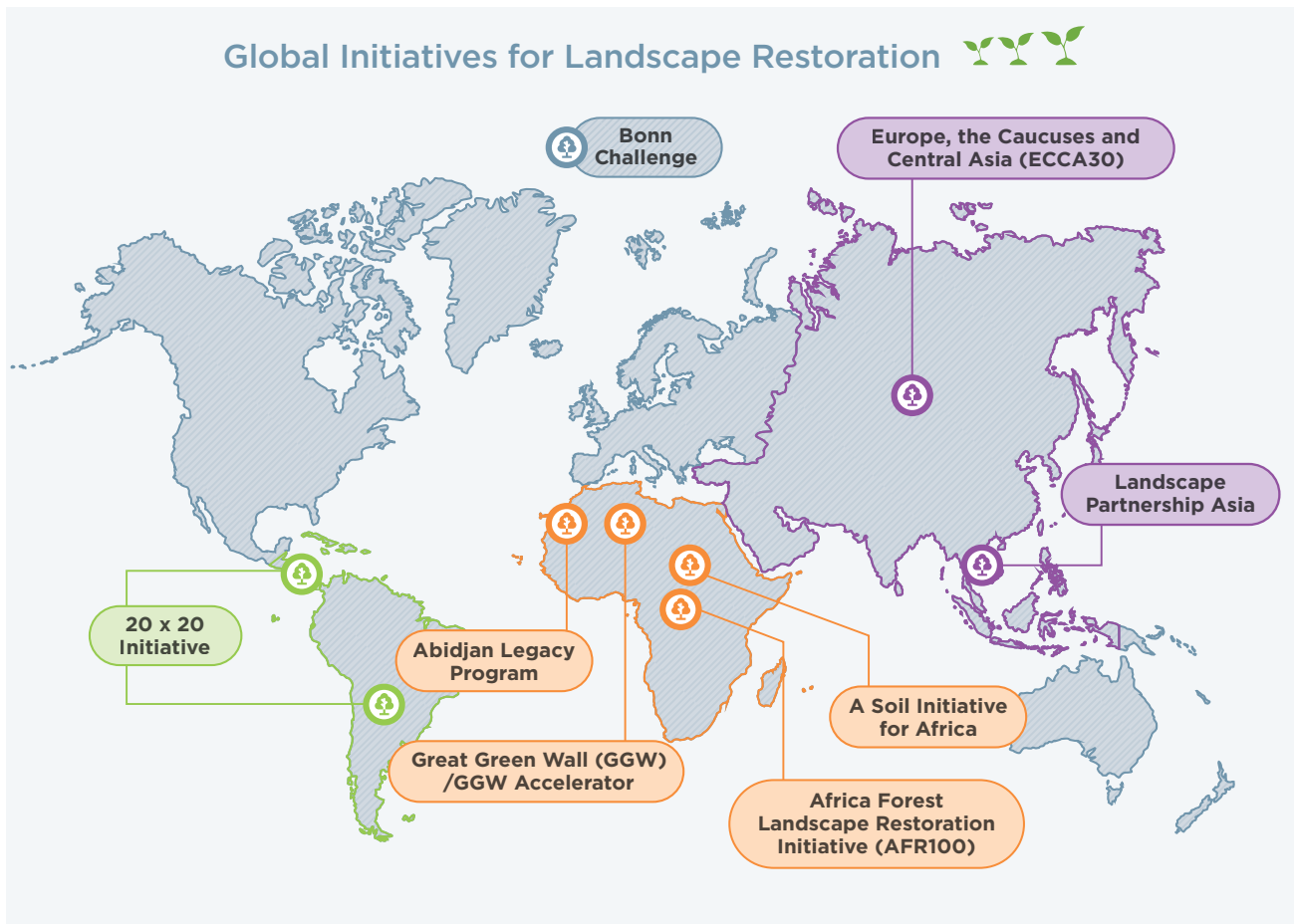
Landscape Partnership Asia: Developed by the Asian Forest Cooperation Organization, this initiative was launched in May 2022 by 14 countries aiming to restore a minimum of 10 million hectares by 2032. Drylands make up about 41% of the world's land area and around 30% of the world's drylands are in Asia. Most of these drylands need restoration and the inhabitants need support to increase resilience through food security and livelihoods. The initiative aims to build robust multi-sectoral partnerships and networks of "engagement landscapes" to organize activities, mobilize resources, create a knowledge hub and deploy proven scalable solutions to restore landscapes and contribute towards the global commitments made in the SDGs, Paris Agreement, etc. Landscape restoration approaches that will contribute towards building resilience in food security, nutrition and livelihoods include developing integrated agro-pastoral systems and payment for ecosystem services.⁴⁸

Europe, the Caucuses and Central Asia (ECCA30): This initiative established in 2019 aims to restore 30 million hectares of forest by 3030 as part of the Bonn Challenge. The initiative is built on growing political momentum for land restoration enshrined in the Astana Resolution, with support from several multi-lateral and research organizations (UNECE, FAO, IUCN, WRI, World Bank). Thus far, Armenia, Azerbaijan, Georgia, Kazakhstan, Kyrgyzstan, Tajikistan and Uzbekistan have combined to restore over 3 million hectares of degraded land using common NbS like forest landscape restoration.⁴⁹

Abidjan Legacy Program: An example of a single-country initiative, this five-year, roughly USD \$1.5 billion project was conceived in 2022 to restore 20% of Ivory Coast forests by 2030 along with improving agricultural productivity through mechanization and soil restoration, to make current value chains more sustainable (with more significant local processing to generate more jobs for women and youth), and to identify future value chains that are soil friendly and will resist

climate change. This initiative is still in the development process but will hopefully be a scalable example of how country-led landscape restoration can improve food security, nutrition and livelihoods while strengthening local ecosystems and building resilience to climate change.⁵⁰

A Soil Initiative for Africa: This new forest landscape restoration program focuses specifically on restoring soil health in Africa with commitments from 54 countries and support from international NGOs, CSOs and agricultural research agencies to infuse sustainable soil management and strengthening in policies, programs, partnerships and investments. Efforts will continue emerging best practices, including restoration at the landscape level, implementation of science-based and locally adaptable sustainable soil management practices that is community-led and draws on indigenous knowledge and preferences to empower communities to drive their own evidence-based solutions and to determine how best to scale up to adjacent communities.⁵¹



Accountability Mechanisms for Global Initiatives

Many of the international pacts/commitments rely on self-reporting or use different measurement tools that are not utilized by all participants, including the “Restoration Barometer” that tracks progress for the Bonn Challenge. Of 50 countries that made pledges as part of this challenge by the end of 2022¹, only 22 provided information for the 2022 progress report.⁵² The Paris Agreement, on the other hand, does require standardized reporting including transparency reports, national inventory reports, but even the Paris Agreement does not make certain reporting (e.g., financial, technology transfer, capacity-building support) mandatory, suggesting that countries *should, but are not required to*, report on these things.



In Malawi, volunteer members of the community watershed committee are helping maintain a stony wall in the watershed area of Kublang. The watershed committee is made up of volunteers in the community who support and train farmers to maintain the watershed structures.

[Photo by Michael Stulman for CRS]

1 There are currently over 60 countries endorsing the Bonn Challenge.

CRS Strives to Transform Landscapes and Lives

Catholic Relief Services (CRS) is the official humanitarian and development agency of the US Catholic Church. We seek to reduce poverty and hunger for farm families by supporting small-scale farmers, partners and governments to scale (through policy, practice and leveraging funding) proven landscape restoration models to revitalize ecosystems, improve agricultural production and increase food security, income, and resilience for up to 6 million of the most vulnerable people by 2030. Our people-centered interventions are low-risk and affordable to farmers, include a robust climate resilience component, and always focus on soil and water management as the cornerstone of all restoration approaches.

With a range of partners, we are currently scaling up landscape restoration activities across 16 countries, with an additional 42 projects in 23 countries contributing towards our learning and targets as of 2023. CRS' programs operate at both the farm and landscape levels and look at a wide range of factors including, market and income opportunities, climatic and topographical makeup and local knowledge and practices when determining which of the following four interventions to employ alongside a community:

MODEL & LANDSCAPE	INTERVENTIONS	AVE. EST. COST
Drylands Regreening Arid flatlands	<ul style="list-style-type: none"> Farmer Managed Natural Regeneration (FMNR) agroforestry to increase tree/vegetative cover Harvests water by capturing it where it falls 	\$75 per hectare
Water Smart Agriculture Dry geographies with erratic rainfall	<ul style="list-style-type: none"> Applies soil management principles to managing water (manage soil to manage water!) Minimizes soil disturbance, maintains permanent soil cover, and manage fertilizers 	\$400 per hectare
Watershed Restoration Hilly topography w/soil erosion, rainfall runoff	<ul style="list-style-type: none"> Conservation agriculture and watershed structures that slow water flow Increased vegetative cover & trees, reduces soil erosion 	\$450 per hectare
Multi-story Agroforestry Tropical landscapes with >700 mm rain	<ul style="list-style-type: none"> Multi-story agroforestry system which intercroops annual and perennial cash crops with a tree canopy, to generate food, fuel, fodder, and agro-services with links to higher value markets 	\$550 per hectare

Studies show return on investment (**ROI**) from these models is between 1.5 to 2.7. When ecosystem services are included, the benefit-cost ratio is 7.5.² Incentives such as increased yield, income, water availability and labor savings are apparent and accrue to farmers in one to two seasons.

As of the end of 2022 we have already supported the initiation of landscape restoration activities on 900,000 hectares.

By 2030, we aim to support the restoration of 1.6 million hectares of land, to have 1 million farm families to adopt restoration approaches (with an associative impact on six million people), 40% increases in crop yields across the board, 1 million people moved out of poverty and \$126.5 million in external investment mobilized to support wider scaling up of landscape restoration approaches. As of the end of 2022 we have already supported the initiation of landscape restoration activities on 900,000 hectares and are supporting 715,072 to adopt restoration approaches, both well ahead of our 2030 goals.

The most important results, however, are the impacts that landscape restoration is having on the food security, nutrition and livelihoods of communities where we work.



Spotlight on CRS' landscape restoration projects



In Malawi, CRS' watershed restoration work has led to an increase in production by 96% and reduced emergency food requirements after severe drought, saving 10x the cost of the watershed restoration.



Carmelina from Guatemala adopted CRS Water Smart Agriculture methods to renovate a degraded coffee plantation. She found that her coffee plants had more beans and heavier beans and her plot yielded 1,500 lbs. more than similar plots in areas where WSA methods were not used.



² ROI is a calculation of the most tangible financial gains or benefits that can be expected from a project versus the costs for implementing the suggested program or solution. **Cost Benefit Analysis (CBA) is more comprehensive than ROI**, and attempts to quantify both tangible and intangible (or "soft") costs and benefits.

Conclusion

The benefits of landscape restoration have proven to go beyond mere environmental impact and have an important role to play in increasing livelihoods, building resilience, and strengthening the nutrition of small-scale producers and their communities. Making these linkages clearer, as well as their social and economic benefits will be critical to increasing commitment and investment to doing so. It will be necessary to show how landscape restoration can help address persistent inequities around gender but also youth and other marginalized groups.

The myriad international programs and policies addressing the increased need for landscape restoration is laudable, but more needs to be done. Financing mechanisms need more investment, with an added emphasis on a people-centered approach. With added investment is the need for a more comprehensive understanding of what investments are being made, and what the impacts are. Greater coordination and alignment between and across them will help us ensure we are making progress: pledges must turn into action, and action must effectively reverse landscape degradation over sustained periods of time. What are the ultimate impacts for those who have restored the land?

As a global leader, the US government has a role to play in technical advances and further investment. Building upon its adaptation, climate and food security strategies, the USG can galvanize the importance of landscape restoration at a global level and invest in growing the evidence and learning based off its existing footprint of work. Given its commitment to a localization agenda, the USG is uniquely placed to spur investment in people-centered approaches to land restoration.

At a national level, governments and institutions should continue to accelerate landscape restoration as an effective tool to implement their local and national policy priorities towards the SDGs, Nationally Determined Contributions (NDCs) and National Adaptation Plans (NAPs). The national and regional targets being set through the initiatives described above are exciting, and national level investments need to build the requisite capacities and systems to effectively build these approaches, particularly among women, youth, indigenous peoples, etc. Supporting and equipping them to participate in the development and implementation of research and adaptation plans that include local and indigenous knowledge and approaches, as well as setting targets and monitoring outcomes will ensure their effectiveness and sustainability.

At both global and national levels, better coordination across initiatives and commitments, as well as increased policy coherence is largely needed. Lack of clarity around how the many strategies, plans and intended outcomes coalesce will reduce their effectiveness, where agencies may compete for funding, silo approaches, and shift accountability for outcomes.

Recommendations for Improved Program and Policy

There is a growing body of evidence on how landscape restoration strengthens food and nutrition security, livelihoods and resilience of humans and ecosystems. Investment and actions to accelerate these efforts are needed. CRS makes the following policy recommendations towards accelerating the response to climate change and improving the ability of communities to cope with its impacts:


United States Government

-  **1 Mobilize \$11.4 billion of climate finance a year by 2024 along with \$3 billion for funding adaptation by 2025 to honor funding commitments for international climate change adaptation efforts.** The Biden-Harris Administration and supporters in Congress need to push for the USG to make good on its commitments. Current funding levels are not sufficient to address the current climate crisis, in particular for those most vulnerable.
-  **2 Maintain and robustly fund important USG-led initiatives like Title II Food for Peace non-emergency development programs that strengthen resilience for smallholder producers.** Congress is [currently debating a bipartisan bill](#) which would require all FFP Title II funds for non-emergency food aid to be spent on U.S. commodities for in-kind food assistance, with no money for other development activities.⁵³ A critical part of the program, these development activities build the resilience of the most vulnerable through adaptation approaches like landscape restoration to improve their long-term food security and strengthening ecosystem resilience. The program with such provisions should be maintained, and funding for such development activities increased.
-  **3 Institutionalize US commitments to landscape restoration detailed in the PREPARE Action Plan, and document collective impact of the many USG initiatives including the 2021-2030 Climate Change Strategy and 2021-2026 Global Food Security Strategy.** As a presidential initiative, the work of PREPARE can be undone with the change of administration. PREPARE should be institutionalized, through legislation, to ensure the US commitment and investment to adaptation and landscape restoration are sustained. Further, the USG should ensure policy coherence, and document the shared impact of the myriad of its investments in landscape work.





Multi-laterals (including USG)

- 4**  **Meet commitments laid out in the Sustainable Development Goals, Paris Agreement, Bonn Challenge and other initiatives.** Translate agreements and policy into practice, towards making climate change adaptation/mitigation efforts more country-led (including strengthening capacity to develop, implement and enforce policy), focusing on the poorest and most marginalized communities/demographics, relying heavily on scientific research/evidence for strategy development, and empowering communities to lead this process and harness indigenous crops/knowledge. Finally, reporting on progress should be compulsory and timely.
- 5**  **Better articulate the impacts of land restoration as a viable solution to improve livelihoods, food security, and nutrition; focus on understanding, applying and learning from the impacts of land restoration and climate-resilient agriculture on these outcomes.** The majority of policy on landscape restoration centers around biodiversity and carbon sinking (reforestation), with less focus on understanding and planning activities around food security and building resilience for better nutrition through improved agricultural practices, soil remediation, etc. Understanding and explicitly making these links will be essential to proving impact beyond environmental ones, in particular contributing to achieving the SDGs.
- 6**  **Donors need strategic coordination amongst themselves, and to work with national and regional bodies to create incentives at the country-level to increase investments in landscape restoration and soil health, as well as empower small-scale producers to develop culturally relevant landscape restoration solutions at the farm and landscape level.** Multi-laterals, with leadership from the USG, can convene donor governments, and work to increase and coordinate financing for this effort. They can also work towards debt reduction and provide technical assistance to address challenges to the enabling environment.
- 7**  **Integrate landscape restoration activities into existing livelihood programs, and humanitarian assistance efforts where feasible.**
- 8**  **Provide longer-term, flexible funding for land restoration and other climate change adaptation efforts.** The ecological, economic and health benefits of ecosystem restoration activities often take years or even decades to be fully realized and adaptation often requires flexibility to shift approaches based on evolving evidence of what works best. Policy and project funding should also include funding for project evaluation years or decades after a project has ended (depending on the climate adaptation/mitigation activities) to gauge the true impact of activities on project/program participants and ecosystems.
- 9**  **Support interdisciplinary, community-led research to understand the drivers of landscape degradation, and to design appropriate land restoration interventions.** While climate science is certainly key to understanding and addressing landscape degradation and climate change, investment should be going to more site- and context-specific research that is community-led and investments should contribute more holistically to understanding unique and local bio-physical political/policy, political, and social drivers of landscape degradation. This includes integrating sociology, anthropology and policy studies to better understand culture, unique perspectives and drivers for landscape degradation and landscape restoration. It is also important to investigate existing local practices and adaptation strategies that are being deployed by communities already—knowing more about how these

practices are building people's resilience to climate change can also assist in building support for landscape restoration efforts.

- 10**  **Localize funds and increase direct funding opportunities.** Donors must increase their funding and assistance for landscape restoration at the local level, aligning with developing countries national policies and strategies, including their Nationally Determined Contributions, NDCs. An example is the Adaptation Fund, launched in 2010, created a Readiness Programme to strengthen capacity of countries to manage and utilize direct funding, including small grants for peer-to-peer learning between accredited countries and countries seeking accreditation. They have developed a rigorous yet achievable accreditation program and provide accredited countries (NIEs) with support to develop, implement and learn from these projects, including the development of a climate finance website that includes case studies, lessons learned and media outreach materials.⁵⁴

National/Regional Bodies

- 11**  **Build consensus on the need to halt landscape degradation and promote landscape restoration as a viable tool to do so.** With this decade being dubbed the Decade on Ecosystem Restoration and the increasing importance of landscape restoration as a key component of addressing climate change, governments particularly in developing countries have the opportunity to construct a vision for landscape restoration. Bringing together key stakeholders including communities, private sector, CSOs, donors, local governments and relevant government ministries will be critical to identify landscape restoration champions and ensure local ownership.
- 12**  **Create the enabling environment to help usher landscape restoration activities, making necessary changes to policy and law.** Governments play an important role in creating incentives and removing disincentives: they can de-risk private sector investment and strengthen people's desire to invest in the land- whether through land tenure or longer land rental periods. Lack of such rights reduce confidence that benefits will ultimately accrue to them, and accessing credit and gaining membership into agricultural associations often depend on land tenure itself. Further, in some countries there exist a multitude of laws, policies and regulations that affect the ability to work on restorative land practices- governments can commit to pursuing policy coherence on relevant issues such as water, soil, and land use.
- 13**  **Strengthen governance structures and understand the need to work across traditional governance geographies.** Strengthening local governance systems, such as natural resources committees, or watershed committees will enable these locally based, multi-stakeholder platforms to usher in shared investment and decision making. Recognizing that landscapes often cross political boundaries, new governance models and alliances must be created, so that the scale of such governance matches the scale of landscapes and eco-regions.
- 14**  **Increase investment in technical capacities and knowledge production, while understanding the pathways for small scale producers to best access and utilize new technologies and data.** Important technological advances and initiatives, such as VACS, which are promoting new seed varieties and digital soil mapping, will only become a reality if small-scale producers can access and utilize them. As such, increases in technology and data must be matched with strong technical capacity of government institutions, and paired with a strong understanding of social change.

ANNEX 1

A CRS Case Study on Landscape Restoration and Quantifying Investment

Under the Water Smart Agriculture (WSA) project (phase one lasted from 2015 – 2020 in partnership with Agua y Suelo Para La Agricultura), nearly 3000 small-scale producers in areas of El Salvador, Guatemala, Honduras and Nicaragua that relied on rainfed agriculture for food security and nutrition were trained in sustainable soil management through WSA practices (permanent soil cover, improved fertilization, crop diversification, cover crops and minimal/zero tillage) and created side-by-side comparison plots with conventional agricultural practices (tillage, chemical fertilizer, no use of cover crops, etc.). To support farmers to select the most appropriate WSA approaches, CRS worked with local partners to develop digital soil mapping to capture soil properties information and inform 4R Nutrient Stewardship. They also established a corps of over 60 professional extensionists and farmer trainers from ten local organizations who worked with over 400 lead farmers to replicate and expand WSA through farmer field schools and individual farmer support. Finally, CRS worked with local and international scientific research institutes to develop climate modeling to predict crop performance and aggregated yields and conducted analysis of household vulnerability to produce detailed GIS maps that illustrate how specific geographic areas in the dry corridor will be affected by climate change in the future.

At the end of the first phase of the WSA project CRS conducted a rigorous WSA cost study (developed by the Salvadoran Foundation for Economic and Social Development) to understand how the investment in WSA can inform the design scope and content for future investments in scaling soil and water conservation agriculture programs for small-scale producers. In this case, the tool determined that WSA creates a practical and cost-effective pathway to reach large numbers of small-scale producers with environmentally sustainable agriculture practices that build resilience and productivity. Cost-effectiveness was determined by cost per additional dollar of net farmer income, metric tons of CO₂ captured, and cubic meters of soil retained. The following encouraging results were found from the study:

- The average cost of increasing farmer net income by one dollar was 41 cents or 20 cents when only considering direct implementation costs. For every dollar invested in WSA, farmer income was increased by USD \$2.46.
- It cost CRS and implementing partners an average of USD \$2.69 to sequester the equivalent of one metric ton of CO₂ and USD \$.37 to generate a cubic meter of soil moisture. The Average cost of capturing a metric ton of CO₂ was between USD \$1.56 and USD \$4.05, which is far less than the figure from varied sources of between USD \$10 to USD \$35 in payments for ecosystem services.
- WSA practices also recorded positive impact on ecosystem health and climate adaption through fostering natural climate solutions:
 - Soil carbon levels increased by 14%
 - Soil moisture during canicular dry period was 23% higher than comparison
 - Coffee yields were 28% higher, beans yields were 60% higher and maize yields were 43% higher

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- Nutrient capture in the soil were determined to have an average value of USD \$6.37 per hectare and taking into account CO₂ capture, the ecosystem benefit of an average WSA plot was valued at USD \$7.70 per hectare
 - Average estimated benefit-cost ratio at 10 years will be 4.3 times. When considering only partner costs, the ratio was 8.6 as scaling will mostly be done by partners.

Results from the analysis showed that the initial investment in the project was estimated to be recovered in 3.5 years (taking into account carbon sequestration, soil nutrients, payments for ecosystem services and the value of water). Finally, over 95% of demonstration farmers growing basic grains and over 80% of demonstration farmers growing coffee reported highly positive reactions and satisfaction with the WSA practices, noting improvements in production, livelihoods, food security, soil quality and drought resilience.

Based on these results the second phase of the WSA project is planned to scale up to 500,000 farmers to put 500,000 hectares of land under restoration by the end of the Decade on Ecosystem Restoration in 2030. As part of scaling up, CRS will work to build and strengthen partnerships for sustainability, influence public and private investment in WSA technologies and continue to build capacity through WSA projects and programs. The key is to keep it simple (proven and simple practices, tools and methods that are tailored for small holder farmers to achieve resilient production while keeping farmer and farm household well-being at the center of program design and adaptation).

ANNEX 2

Summary of Global Agreements/Frameworks Related to Climate Change and Landscape Restoration

AGREEMENT/ACCORD				
Paris Agreement 2015 (Legally binding)	Sustainable Development Goals 2015 (Not legally binding)	Sendai Framework For Disaster Risk Reduction 2015 (Not legally binding)	Global Biodiversity Framework 2022 (Not legally binding)	UNCCD 2018-2030 Strategic Framework 2018 (Not legally binding)
FUNDING				
Global Environmental Facility	Joint SDG Fund	Individual Country Donations to UNDRR	GBF Fund (part of GEF)	Global Environmental Facility and other mechanisms
Green Climate Fund				
Special Climate Change Fund				
Least Developed Countries Fund				
Adaptation Fund				
IMPLEMENTATION				
Nationally Determined Contributions (NDCs)	National Sustainable Development Strategies (NSDS)	Sendai Framework Voluntary Commitments (no formal country plans)	National Biodiversity Strategies and Action Plans	National Action Programs (NAPs)
OUTPUTS				
3 main goals-targets are selected on a country-by-country basis but must be within agreed upon parameters	17 Goals, 69 targets	7 global targets, 38 indicators	4 goals for 2050, 23 targets for 2030	5 objectives, 15 impacts
MONITORING/REPORTING				
Biennial Transparency Report (Enhanced Transparency Framework)	Voluntary National Reviews	Sendai Framework Monitor	GBF Monitoring Framework National Reports	National Reports (roughly every four years)
National Inventory Report (Enhanced Transparency Framework)				
Multi-lateral Assessment (developed countries)				
Global Stock take				

Paris Agreement

The Paris Agreement is a legally binding international treaty on climate change that sets out a global framework to avoid dangerous climate change by limiting global warming to well below 2 degrees Celsius with the desired goal of limiting warming to 1.5 degrees Celsius above pre-industrial levels. It was adopted by 196 parties at the UN Climate Change Conference in Paris on December 12th, 2015 and entered into force on November 4th, 2016. This binding agreement, the first of its kind, also aims to strengthen global resilience to the shocks and stresses resulting from human-induced climate change, including more frequent, severe drought, rain/floods and heatwaves. The Paris Agreement provides a framework for financial, technical and capacity building support for countries who need it and supports countries to organize and achieve their climate change adaptation/mitigation goals through development of nationally determined contributions and assistance with developing and implementing climate change adaptation policy/practice. The agreement itself does not go into specifics regarding adaptation/mitigation approaches, but mentions sustainable management of forests, preserving environmental integrity, incentivizing mitigation of greenhouse gas emissions, strengthening resilience and reducing vulnerability to climate change, and building the resilience of socioeconomic and ecological systems through sustainable management of natural resources, all of which can be done through landscape restoration approaches.

Sustainable Development Goals

The 2030 Agenda for Sustainable Development, adopted by all United States Member Nations provided a shared blueprint of 17 Sustainable Development Goals that contribute towards a multi-sectoral approach to ending poverty, improving health and education, reducing inequality, spurring economic growth and addressing climate change by 2030. These goals built on decades of work on climate change adaptation and mitigation, and while they are non-binding, many countries have integrated them into climate policy/strategy as well as nationally determined contributions as part of achieving commitments to the Paris Agreement. The USG, for example, has aligned its Global Climate Change Policy with the timeline for the SDGs. Several of the SDGs relate to landscape restoration, including SDG15, Life on Land, which aims to protect, restore and promote sustainable use of terrestrial ecosystems, to sustainably manage forests, combat desertification and halt and reverse land degradation and halt biodiversity loss. SDG 15 has a land degradation neutrality target to achieve a land degradation-neutral world by 2030. Landscape restoration can be said to have an impact on all 17 SDGs though, as it is an integral approach to strengthen food security, nutrition, livelihoods, people and ecosystem health, equality and equity, and peace.

Sendai Framework for Disaster Risk Reduction

The goal of this framework is to prevent new and reduce existing disaster risk through the implementation of integrated and inclusive economic, structural, legal, social, health, cultural, educational, environmental, technological, political and institutional measures that prevent and reduce hazard exposure and vulnerability to disaster, increase preparedness for response and recovery, and thus strengthen resilience. This framework works hand-in-hand with the other 2030 Agenda agreements including the Paris Agreement and SDGs and focuses on providing member states with concrete actions to protect development gains from risks associated with natural and man-made disasters. Specifically, it focuses on disaster-risk management as opposed to disaster management, to build resilience of people

and their ecosystems to prepare for, recover from and bounce back quicker from disasters. The framework does not go into detail on specific adaptation approaches to lower risk and strengthen resilience but does have some language that is related to landscape restoration, including strengthening the sustainable use and management of ecosystems and implementing integrated environmental and natural resource management approaches like landscape restoration that incorporate disaster risk reduction elements. The framework also promotes the mainstreaming of disaster risk assessment into land use policy, land degradation assessments and the use of guidelines and follow-up tools informed by anticipated environmental changes. The framework also recommends mainstreaming disaster risk assessments, mapping and management of landscapes that are prone to drought and flooding and preserving ecosystem functions that help to reduce risks. Finally, the framework recommends looking at land use planning in the short, medium and long term to ensure immediate needs are met while resilience is strengthened to support sustainable growth, minimize risk and manage disasters.

Kunming- Montreal Global Biodiversity Framework

The global vision of this framework, developed and ratified through the Convention on Biological Diversity, is to live in harmony with nature by 2050. This framework is linked to the SDGs and seeks to halt and reverse biodiversity loss around the world. The framework is implemented using the Ecosystem Approach, with is a strategy for integrated management of land, water and living resources that promotes conservation and sustainable land use in an equitable way. The framework has 30 targets for 2030, many directly relating to landscape restoration including Target 2, ensuring and enabling that by 2030 at least 30% of terrestrial and inland water areas, and of marine and coastal are under effective restoration, in order to enhance biodiversity and ecosystem functions and services, ecological integrity and connectivity. Other targets include sustainable land management; conserving and cultivating native species; reducing pollution risks; ensuring that areas under agriculture, aquaculture, fisheries and forestry are sustainably managed; restoring and enhancing nature's contributions to people (including ecosystem functions and services like regulation of air, water, and climate, soil health, pollination and reduction of disease risk); building resilience to natural disasters; integrating biodiversity and landscape restoration into policy; eliminating subsidies and harmful incentives that negatively impact people and the environment; and focusing on gender parity and inclusion of the most vulnerable. Achieving all of these targets can be supported through landscape restoration approaches.

UNCCD 2018-2030 Strategic Framework

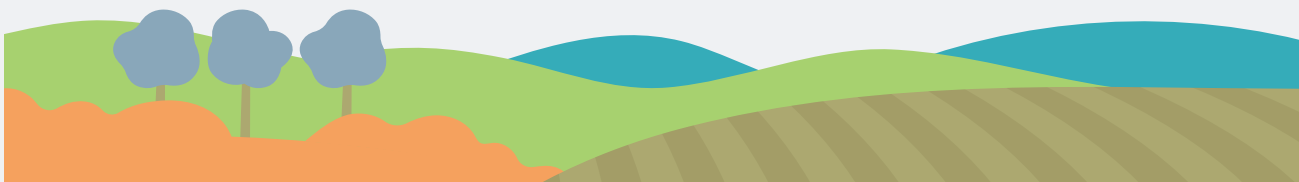
This framework acknowledges that addressing desertification, land degradation and drought will involve long-term integrated strategies that both focus on improved productivity while rehabilitating, conserving and sustainably managing land and water resources. Strategic objectives include: improving the condition of affected ecosystems, combating desertification/land degradation and promoting sustainable land management to contribute towards land degradation neutrality; to improve living conditions of affected populations; and to mitigate, adapt to and manage effects of drought in order to enhance resilience of vulnerable populations and ecosystems. The framework calls for sustainable land management practices, rehabilitation of ecosystem functions and services, drought management and strengthening resilience of people and the environment, and establishing systems for shared information to facilitate networking on best practices, all of which can be fulfilled through landscape restoration.

ANNEX 3

A Summary of USG Policy/Practice Related to Climate Change Land Restoration

		
2022-2026 Global Food Security Strategy	2022-2027 Global Water Strategy	President's Emergency Plan for Adaptation and Resilience
2022-2026 Global Food Security Research Strategy		

USAID Resilience Strategy	USAID (including BHA)	USDA (Foreign Agricultural Service)	Other USG Bureaus
USAID Biodiversity Policy	FEED THE FUTURE		
USAID Climate Strategy	<i>Global Food Security Country Plans</i>		
	FOOD FOR PEACE NON-EMERGENCY DEVELOPMENT ACTIVITIES (Title II Funding)	FOOD FOR PROGRESS	
	<i>Individual proposals from private voluntary organizations and international organizations</i>	<i>Climate Adaptation and Resilience Plans (domestic and international)</i>	
	Annual Results Report	Annual Progress Report	



USG POLICY AND LINKAGES TO LANDSCAPE RESTORATION:

All of these policies integrate common themes of local leadership, equity and inclusion, reaching the most vulnerable, basing approaches on robust scientific research and evidence, private sector engagement, empowerment of women and youth, and utilizing nature-based solutions.

Strategy linkage: These strategies are all considered “whole of government” strategies to be implemented and monitored across all government bureaus. The strategies all heavily feature language and initiatives focused on strengthening resilience against climate change both domestically and abroad, and use the USAID Climate Strategy and the President’s Plan for Adaptation and Resilience as top-level guides for development, implementation and tracking of the USG approach to addressing climate change and building resilience.

POLICY/ STRATEGY	YEAR(S)	PRIORITY COUNTRIES	LINK TO LANDSCAPE RESTORATION
USAID Climate Strategy	2022-2030	N/A	<p>The main approaches that will be supported through landscape restoration include:</p> <ul style="list-style-type: none"> • Mitigation: USAID will partner with countries to support activities that reduce, avoid, or sequester six billion metric tons of carbon dioxide equivalent. • Natural and Managed Ecosystems: USAID will support the conservation, restoration, or management of 100 million hectares with a climate change mitigation benefit. • Adaptation: USAID will enable the improved climate resilience of 500 million people. • Finance: USAID will mobilize \$150 billion in public and private finance for climate. <p>USAID will elevate nature-based solutions as key tools to absorb carbon, reduce disaster risk, support livelihoods, and improve food and water security. Intermediate result 1.2 is to strengthen climate resilience of people vulnerable to climate impacts and includes climate mapping, supporting climate resilient agriculture, strengthening the quality and resilience of water systems through improved water resources management, strengthening natural resource management and supporting implementation of NbS including conservation and management of forests, mangroves, peatlands and other landscapes. It will also support research, policy development/strengthening and training regarding implementing adaptation approaches like land restoration.</p> <p>There is a separate section on land use (including agriculture and natural climate solutions), that detail support for sustainable, productive landscapes “that sequester carbon in soils and trees, reduce greenhouse gas emissions, produce higher quantities of food and agricultural products, support diverse livelihoods and protect and restore high-carbon and ecologically sensitive ecosystems.” Finally, there are “key climate considerations” and “deforestation and commodity production” sections that discuss the need to strengthen integration of biodiversity conservation and natural resource management (with a focus on reforestation/conservation) consideration in programming and policies, and the critical role indigenous peoples and local communities play in conserving ecosystems and sustainably managing natural resources.</p>

Global Food Security Strategy	2022-2026	N/A	<p>Policy objectives include inclusive and sustainable agriculture-led economic growth, strengthened resilience among people and systems and a well-nourished population (especially among women and children), all of which can be achieved through landscape restoration. Cross-cutting intermediate result 4 is enhanced climate change adaptation and mitigation and Cross-cutting intermediate result 5 is Improved natural resource management. IR 5 in particular dives into land restoration options including supporting implementation of policies and practices that best advance sustainable agricultural productivity, food security, resilience and nutrition through effective natural resource management and biodiversity conservation. The policy also touches on promoting clear and transparent land tenure (particularly in regards to women, small-scale producers and communities), advancing research and information systems that allow producers and consumers to make informed choices that improve food security, advancing sustainable approaches to food security that integrate resilience and economic and environmental goals in global for a focused on food security, climate and the environment, fostering partnerships with the private sector to support small-scale producers to adapt to climate change and investing in environmentally sustainable and productivity-enhancing technologies and applied science, like landscape restoration. Cross-cutting Intermediate Result 6 is Improved water resources management including restoring and protecting local and regional watersheds through approaches such as landscape restoration. There is also a complimentary result highlighted in the strategy on healthy ecosystems and biodiversity that directs investments to focus on a range of approaches including ecosystem-based adaptation, watershed management, forest and rangeland management, land and resource governance and biodiversity conservation. Finally, when describing how USAID will support the implementation of country Global Food Security Strategies (FTF) and NDCs (Paris Agreement), the strategy details a systematic response to climate change from the priority of building resilience to shocks and stresses, to the need for more environmentally sustainable food and agricultural systems to address the interlinkages of climate change and nutrition.</p>
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Under the 2022-2027 Global Water Strategy, four interconnected and mutually reinforcing strategic objectives that support and are supported by landscape restoration:

- Strengthening sector governance, financing, institutions, and markets;
- Increasing equitable access to safe, sustainable, and climate-resilient water and sanitation services, and the adoption of key hygiene behaviors;
- Improving climate-resilient conservation and management of freshwater resources and associated ecosystems; and
- Anticipating and reducing conflict and fragility related to water.

This strategy prioritizes climate change adaptation, resilience and nature-based solutions to strengthen water security. The strategy acknowledges that improved water resource management is one of the most cost-effective ways to adapt to climate change and is critical for net-zero GHG emissions. Nature based solutions have great potential for carbon storage. The strategy also acknowledges that climate change has increased the frequency and severity of extreme hydrologic events like flooding and drought and has aggravated water stress caused by poor water governance and increasing demand for water. Degraded watersheds are increasingly common, limiting the ability of natural systems to buffer the impacts of increased water extraction, climate change, and pollution. With this in mind, the USG will continue to invest in watershed conservation and water resources management, including water assessment and planning, development of water use agreements, and promote robust responses to climate impacts. The U.S. government will also support conservation, restoration, and sustainable management of watersheds with an emphasis on nature-based solutions that maximize benefits for groundwater recharge and water storage, flood prevention, and the reduction of pollutants.

As part of these efforts, USAID will do the following:

- Work with partner countries to provide 22 million people with sustainable drinking water services
- Mobilize \$1 billion for water security, resilient watersheds, sanitation and hygiene beyond direct USAID investments
- Work with partner countries to measurably improve regional water and sanitation institutions.

Under the four main objectives, most intermediate results can either be achieved through or support landscape restoration. A few specific mentions include: IR 3.2 is enhanced reliability and quality of water resources through watershed management, including protection, restoration and nature-based solutions (soil conservation, increasing water-related ecosystem services, upstream reforestation construction of infiltration ponds, sand dams and vegetative buffer strips. IR 3.3 is improved climate resilience of water resources management. IR 4.1 is to strengthen capacity to predict, prepare for and adapt to shocks impacting water and sanitation, IR 4.2 attempts to address humanitarian water needs, IR 4.3 aims to strengthen cooperation over water to reduce conflict and IR 4.4 is increased coherence across the HDP nexus to water and sanitation programming.

[USAID Global Resilience Policy \(draft form\)](#)

Update in process 2023

15: Burkina Faso, DRC, Ethiopia, Haiti, Kenya, Madagascar, Malawi, Mali, Mozambique, Nigeria, Niger, Somalia, South Sudan, Uganda, Zimbabwe

This policy emphasizes the importance of addressing climate adaptation and mitigation through approaches like landscape restoration. Among its illustrative list of shocks and stresses, environmental shocks including droughts, floods, storms, and heat waves due to climate change are included under shocks. and land/soil degradation, pollution and biodiversity loss are included under stresses. The aspect of the policy most linked to landscape restoration is the goal of the One Health initiative, which aims at conserving natural resources and supporting climate-smart practices while sustainably meeting food security, public health, and livelihood needs helps to prevent the negative impacts of uncontrolled development and degraded ecosystems. Thus resulting in healthier, more resilient communities that are better able to withstand shocks and stresses. One-Health is linked in the strategy to the HEARTH initiative, which generates cross-sectional partnerships with the private sector to conserve and restore high biodiversity areas and improve the health, well-being and prosperity of the communities that depend on them.

Principle 4 of the policy, to strengthen systems for resilience and resilient systems includes landscape restoration approaches (watershed management, communal land restoration) as well as approaches that support at-risk communities while they implement landscape approaches (food, vouchers, school feeding. Skills building, employment opportunities, diversified livelihoods).

This policy also includes important information on planning for shocks and changes in context and provide operational and funding flexibility to address these shocks/changes through adaptive management approaches (including during/through landscape restoration).

2014 (currently in the consultation phase to update)

11: Brazil, Indonesia, Colombia, Peru, Madagascar, Philippines, Tanzania, DRC, Papua New Guinea, Vietnam, Kenya. Regional investments in Asia, Central Africa and South America

The vision of the Biodiversity Policy is to conserve biodiversity for sustainable, resilient development. All of its major objectives can be tied to landscape restoration:

- Support enabling conditions for biodiversity conservation;
- reduce priority drivers and threats to biodiversity
- integrate conservation and development for improved biodiversity and development outcomes;
- build partnerships to mobilize resources in support of biodiversity conservation;
- influence key international policies in support of biodiversity conservation;
- apply science, technology, and learning to enhance biodiversity conservation practice

This policy is very important in that it recognizes that conservation biodiversity has traditionally been framed as a challenge to protect species, habitats and ecosystems, to stop extinctions and conserve what is a shared global heritage that has intrinsic value, which is important, but not the only important aspect of the conservation. Biodiversity conservation also helps to maintain the natural earth processes that create the environmental goods and services that enable development – food, fiber, fodder, pollination, clean water, fertile soils and wood.

In discussing linkages between biodiversity and development, the policy notes that biodiversity and healthy ecosystems provide goods and services critical to human well-being (clean water, food, reduced natural disaster risk) and can help sustain development outcomes, can help diversify livelihoods promote gender equity, increase government transparency, and contribute to peace and security. Landscape restoration as a biodiversity conservation approach can help to achieve all of these linkages.

In this version of the policy USAID vows to take steps to transform the relationship between biodiversity conservation and development to increase or sustain conservation and development outcomes, including better understanding how biodiversity and ecosystems provide goods and services that can sustain development outcomes, and to understand tradeoffs between conservation and other development goals. It also recognizes the need to counteract some of the key barriers to conservation including lack of financial sustainability, corrupt and insecure land resource tenure. All of these issues can be addressed as part of landscape restoration efforts.

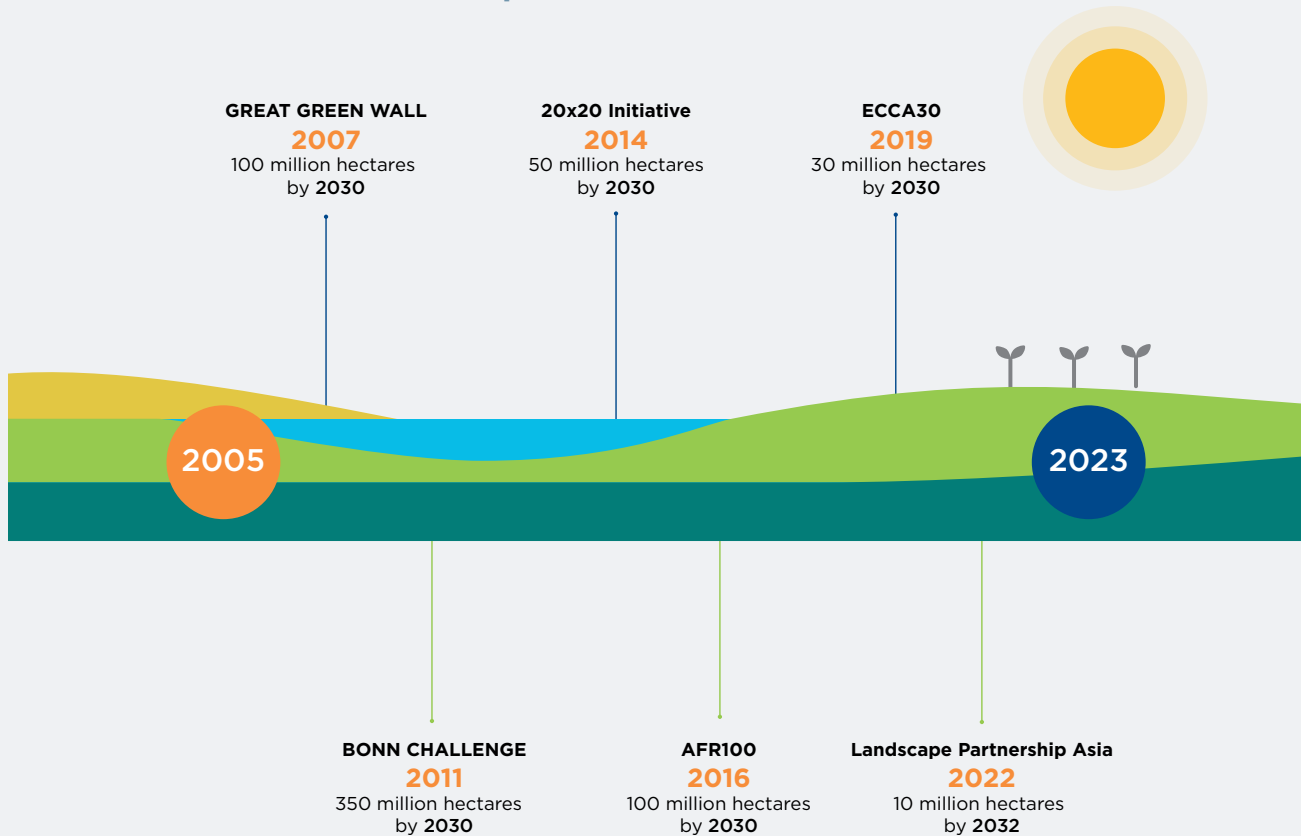
Finally, this policy confirms USAID commitment to using ecosystem-based adaptation approaches towards achieving international policy/development goals, discusses the importance of involving the private sector in incentivizing/sustaining conservation effects, and reflects on the role of women as drivers of adaptation, including understanding their needs/drivers, cultural context, etc., which is very important when developing landscape restoration programming.

This policy mandates that all USAID development programs undertake an environmental impact assessment, including impact on local ecosystems and practices that contribute to landscape degradation.

ANNEX 4

Timeline of Regional/Global Land Restoration Initiatives

🌱 Landscape Restoration Initiatives 🌱



Santos López is a farmer in the community of Jocotán, part of the Dry Corridor of Guatemala. He's part of the Agriculture School from the project RAÍCES. Currently he is experimenting with two corn plots; the first one he uses the traditional approach he learned from his family and for the second one he applies the WSA approach to compare the advantages and disadvantages of each one.

[Photo by Dinorah Lorenzana for CRS]



Endnotes

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- ³ United Nations, The United Nations World Water Development Report 2023: Partnerships and Cooperation for Water. UNESCO, Paris. <https://unesdoc.unesco.org/ark:/48223/pf0000384655>
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- ⁶ Global Land Outlook Second Edition, UNCCD, https://www.unccd.int/sites/default/files/2022-04/UNCCD_GLO2_low-res_2.pdf
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- ⁸ IPBES Global Assessment Report - https://www.ipbes.net/sites/default/files/inline/files/ipbes_global_assessment_report_summary_for_policymakers.pdf
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- ¹⁰ IPCC, *Sixth Assessment Report Fact Sheet – Food and Water*. 2021. https://www.ipcc.ch/report/ar6/wg2/downloads/outreach/IPCC_AR6_WGII_FactSheet_FoodAndWater.pdf
- ¹¹ WWF, *Water Scarcity*, <https://data.unicef.org/resources/sofi-2023/#:~:text=Key%20Findings,includin%20the%20war%20in%20Ukraine>
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- ¹³ *Restored Land, Healthy People, Green Recovery*, UNCCD, https://www.un.org/pga/75/wp-content/uploads/sites/100/2021/02/UNCCD_Solution-Brief.pdf
- ¹⁴ Uris Lantz C. Baldos, Thomas W. Hertel, Debunking the 'new normal': Why world food prices are expected to resume their long run downward trend, *Global Food Security*, Volume 8, 2016, Pages 27-38, ISSN 2211-9124, <https://doi.org/10.1016/j.gfs.2016.03.002>
- ¹⁵ Ecosystem services are the benefits people obtain from ecosystems. These include products obtained from ecosystems (e.g., freshwater, food, fuel, genetic resources, natural medicines, etc.); benefits obtained from the regulation of ecosystem processes (e.g., water erosion, waste, climate and natural hazards); cultural services (e.g., cultural diversity, educational values, social relations, heritage, etc.) and services that are necessary for the production of other ecosystem services (e.g., primary production, nutrient cycling, and water cycling). This definition is from the Millenium Ecosystem Assessment, 2005, Island Press, Washington DC.
- ¹⁶ *It's time we treat the transformation of food systems like the emergency that it is*, IFAD, July 20, 2023. <https://www.ifad.org/en/web/latest/-/it-is-time-we-treat-the-transformation-of-food-systems-like-the-emergency-that-it-is>
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- ¹⁸ *UN Calls on countries to meet commitments to restore one billion hectares of land*, UNEP, June 3, 2021, <https://www.unep.org/news-and-stories/press-release/un-calls-countries-meet-commitments-restore-one-billion-hectares#:~:text=It%20can%20be%20highly%20efficient,adapt%20to%20climate%20change%2C%20with>

- ¹⁹ The UNCCD defines Landscape restoration as the ecological process to restore a natural and safe landscape for humans, wildlife, and plant communities. This process paves the way to protect our ecosystems, create economic development, help prevent natural disasters such as floods, and increase soil productivity and food supplies.
- ²⁰ IPCC A Special Report on Climate Change and Land (eds Shukla, P. R. et al.) (in the press, 2019); <https://www.ipcc.ch/srccl/>
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- ²⁵ Helen Ding, et al. *Roots of Prosperity: The Economics and Finance of Restoring Land*, World Resources Institute, December 19, 2017. <https://www.wri.org/research/roots-prosperity-economics-and-finance-restoring-land>
- ²⁶ UNEP, *Decade on Ecosystem Restoration*. <https://www.unep.org/explore-topics/ecosystems-and-biodiversity/what-we-do/decade-ecosystem-restoration#:~:text=Between%20now%20and%202030%2C%20the,greenhouse%20gases%20from%20the%20atmosphere.>
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- ²⁹ *PREPARE ACTION PLAN*, September 2022, page 2. <https://www.whitehouse.gov/wp-content/uploads/2022/09/PREPARE-Action-Plan.pdf>
- ³⁰ *Fact Sheet: Biden Administration Releases Agency Climate Adaptation and Resilience Plans from Across Federal Government*, White House, October 7, 2021. <https://www.whitehouse.gov/briefing-room/statements-releases/2021/10/07/fact-sheet-biden-administration-releases-agency-climate-adaptation-and-resilience-plans-from-across-federal-government/>
- ³¹ Nature-based solutions are actions to protect, conserve, restore, and sustainably use and manage ecosystems to support climate change adaptation and mitigation efforts, preserve biodiversity, and enable sustainable livelihoods. They are actions that prioritize the importance of ecosystems and biodiversity and are designed and implemented with the full engagement and consent of local communities and Indigenous Peoples, who hold generational knowledge on protecting nature. This definition is from the UNDP Climate Dictionary <https://climatepromise.undp.org/news-and-stories/climate-dictionary-everyday-guide-climate-change>
- ³² EbA is a nature-based method for climate change adaptation that addresses food security by strengthening and maintaining natural systems and the goods and services they provide. EbA approaches to address food security can also provide additional benefits, including contributions to health, sustainable land use, economic growth and water security, as well as reduced greenhouse gas emissions and increased carbon storage.
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