# Exploring the Resilience of Restoration Efforts Under Climate Change: *The value of applying foresight analysis for accelerating the impacts of the Great Green Wall Initiative*

**Acknowledgments:** This brief is the result of a SHARED led indicative participatory foresight analysis for the Great Green Wall (GGW) as part of the European Union funded Regreening Africa program building on data from World Overview of Conservation and Technologies (WOCAT) and affiliated Carbon Benefits Program (CBP), the Regreening Africa Land Degradation Dynamics Component and the CIFOR-ICRAF Trees and forest genetic resources, and biodiversity theme.

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# Background

Land degradation is prevalent in Sub-Sahara Africa, negatively impacting agricultural ecosystems and productivity, food security and livelihoods and exacerbating the impacts of climate change and the poverty gap. The economic, social and ecological costs of land degradation have prompted an unprecedented commitment to land restoration linked to the Land Degradation Neutrality (LDN) framework of the United Nations Convention to Combat Desertification (UNCCD).

The Great Green Wall (GGW), a bold initiative, is one of the major programs meant to restore 100 million hectares of degraded landscapes across 11 countries while sequestering 250 million tons of carbon and creating millions of green jobs by 2030. The Pan African Agency for the Great Green Wall (PAAGGW), an African Union agency, coordinates the GGW actions in the 11 countries, supported by the GGW Accelerator which is injecting new political ambition into the financing and materialization of the GGW Objectives.

Achieving the targets of the GGW is made more challenging by the variability and uncertainty of climate change impacts. The most recent Intergovernmental Panel on Climate Change (IPCC) report[1] states that, in Africa, weather and climate events have already exposed millions of people to food insecurity and reduced water security and continue to drive displacement and increased human vulnerability. The report goes on to highlight that severe climate data constraints and inequities in research funding and leadership reduce overall adaptive capacity. Accelerated and coordinated support is critically needed to enhance mitigation and adaptation action.

The European Union (EU) funded Regreening Africa program which has successfully restored 1 million hectares of degraded land and improved the resilience for 500,000 households in 8 countries in Sub-Saharan Africa, is supporting the GGW efforts through various mechanisms. The Stakeholder Approach to Risk Informed and Evidence Based Decision Making (SHARED) Hub, supports the Regreening Africa program by applying stakeholder engagement principles and processes to enhance inclusive and evidence-based planning, implementation and decision making to support the massive scale up of restoration efforts. One of the approaches in the SHARED Hub tool kit is strategic foresight analysis.

**SHARED**
The Decision Hub

The Stakeholder Approach to Risk Informed and Evidence Based Decision Making process is a tailored method for stakeholder engagement, managing relationships and brokering multi-stakeholder and cross-sectoral partnerships. The SHARED process is founded on a principle of fostering systems approaches and inclusive, evidence-based decision making.

In this brief, we reflect upon the value of applying foresight analysis to support land restoration initiatives, and in particular, the institutions and stakeholders of the GGW Initiative in effectively achieving critical targets. As a case example, the brief also provides some indicative outputs from a foresight exercise carried out with GGW stakeholders during the GGW Knowledge and Impact Workshop, pre-residential seminar held during January 19-21 in Bamako, Mali, 2023.

# What is foresight analysis?

Foresight has been defined as **"a systematic, participatory, future-intelligence gathering and medium-to-long-term vision-building process aimed at enabling present-day decisions and mobilizing joint action."[2]**

Foresight sets out to **"steer a course between the unsettling uncertainty and unpredictability of the future and the need for data, information and intelligence to shape this future, without resorting to wishful thinking, prophecies, predictions or forecasts."[3]**

> Foresight analysis is a participatory process for looking to the past and present to envisage and prepare for alternative futures, which allow us to make strategic decisions today toward the desired future.[4]

Foresight analysis provides a framework and a set of interactive tools to plan for high levels of uncertainty and complexity and get comfortable with the strategic direction, roadmap and the ability to be resilient, agile and adapt to a changing world.

There is an opportunity to build upon past lessons learned while taking into account the rapidly changing world, growing complexity and critical uncertainties being faced. Foresight analysis serves as a means to prepare for a desired and shifting future and accelerate the pace of achievements of the GGW pillars and objectives.

# How is a foresight analysis carried out?

While there are several ways to carryout foresight analysis, this section builds upon and refers to the framework developed and elaborated by Chesterman et al. (2020)[5] which focuses on climate resilient agricultural and natural resource systems in Africa and draws upon the SHARED principles and approaches to systems based, inclusive and evidence-based decision making, a centre piece of the EU funded Regreening Africa program (2022).[6]

The Framework (**Figure 1**) has two main stages, the steps, and the proposed questions to guide the evidence, experience, and uncertainty informed approach to defining the pathways and practical actions using a transformative lens.[7]

**The two stages include:**

**A** The **situational analysis** in which the context is articulated, and existing evidence, and cross-sectoral and emerging trends are reviewed and analyzed and then interpreted to understand what is happening and why; and

**B** **Long-term future planning** in which stakeholders jointly prepare transformative pathways taking into consideration:

1. The future that stakeholders want to experience and a deep analysis of obstacles to overcome to achieve that future;
2. What may happen that has not been thought about; and
3. What will be done differently, particularly in terms of strategic partnerships, innovations and interventions, and policy actions.

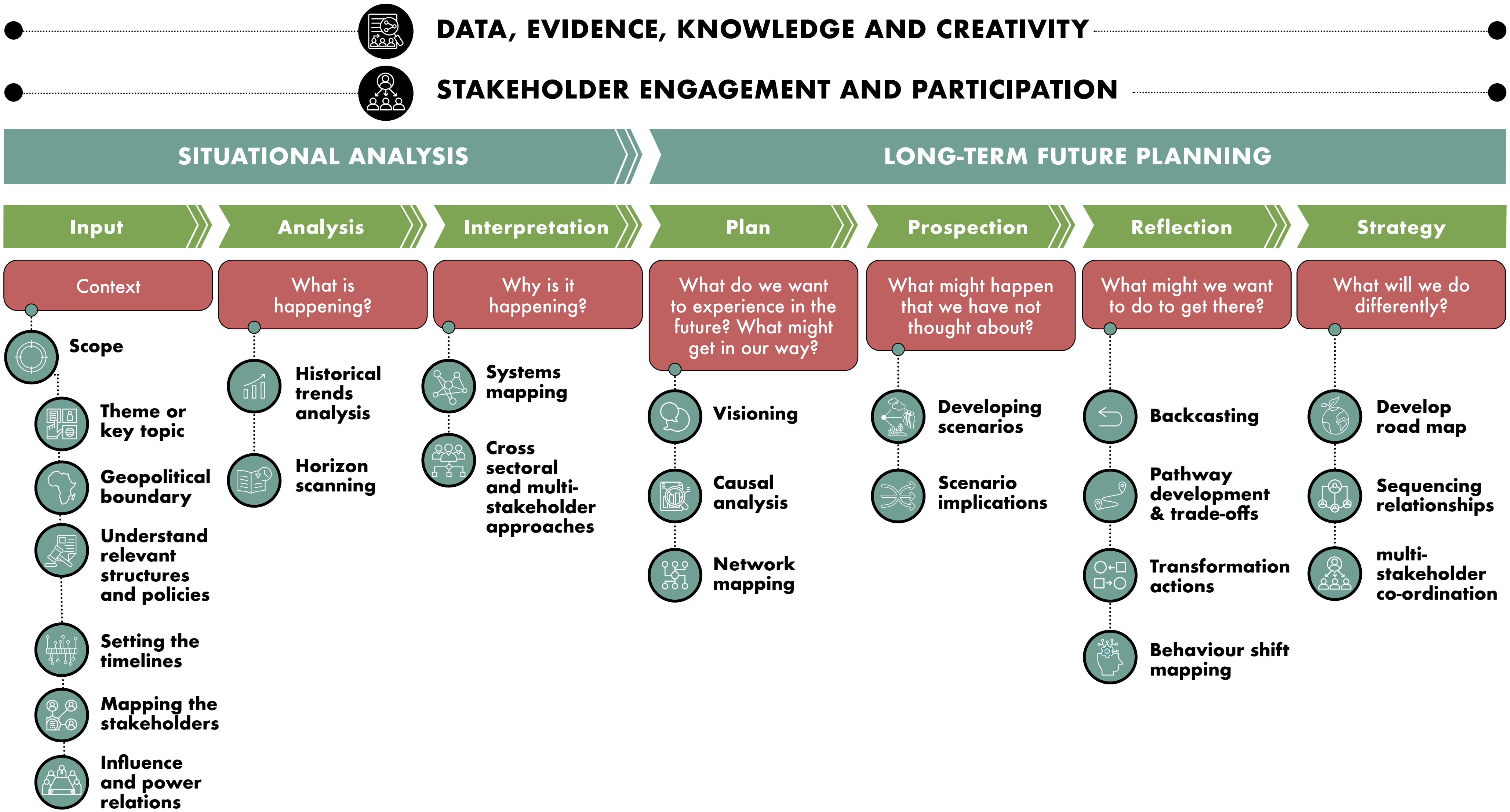




***Figure 1.*** *Foresight framework (Chesterman et al., 2020)*

A user-friendly flow for a full strategic foresight process based on the framework described above is shown in **Figure 2** and outlines the steps of a full strategic foresight process. The foresight process and different steps can be adapted to specific contexts and scales and readily facilitated by foresight trained facilitators.

**FLOW FOR A FULL STRATEGIC FORESIGHT PROCESS**

**1 Set the scope**

- Define the theme, problem statement, timeline
- Set the geopolitical boundary
- Map existing institutional arrangements, selecting existing targets and national priorities
- Map the stakeholders

**2 Analyse the trends and scan the horizon**

- Create a plan to identify, develop and analyse relevant historical trends
- Using the STEEP framework, organise diverse evidence sources
- Analyse the trends to detect 'signals' of disruption or new trends
- Define known unknowns

**3 Analyse causes, drivers and uncertainties**

- Map the elements of system and revisit your stakeholders
- Carry out causal analysis on problems
- Brainstorm and categorize drivers
- Identify the high impact high uncertainty drivers

**4 Development of scenarios and visioning**

- Develop scenario story lines and describe possible futures
- Develop the three-part vision
- Reconcile the vision with scenario desired futures

**5 Identify transformative actions**

- Consider implications of scenarios
- Prioritize outcomes
- Carry out backcasting
- Identify transformative actions

**6 Strategy development and implementation**

- Test existing plans or policies
- Use transformative actions to identify who, what, when, outputs and outcomes
- Define roles and responsibilities

**7 Timebound reflection and evaluation**

- Define a system to monitor progress and assess results
- Examine probable developments
- Update and revise the strategy

***Figure 2.*** *Full strategic foresight process (Chesterman et al., 2022)*

# How can foresight analysis add value to the GGW strategies' development and implementation?

Foresight analysis can add substantial value to inform the development, consolidation, and implementation of the various GGW strategies' and plan. The task of developing, adapting and implementing strategies and plans is enhanced and supported by the inclusive engagement process that considers a systems approach, tailored evidence, a robust vision, underlying causes of social, economic and ecological barriers, critical drivers of uncertain impact and multiple alternative futures and their implications. Strategic foresight poses questions that often go unasked in strategy development and review are meant to clarify what is known and what is not known, revealing and challenging potentially fatal assumptions and expectations built into current policies and plans.[8]

Because foresight analysis is systems based, the process fosters the achievement of the various themes of the strategies and plans including:

- Investment in small and medium-sized farms and strengthening of value chains;
- Local markets;
- Organization of exports;
- Land restoration and sustainable management of ecosystems;
- Climate resilient infrastructure and access to renewable energy;
- Favourable economic and institutional framework for effective governance;
- Sustainability;
- Stability and security; and
- Capacity development.

Using foresight analysis and tools can enable transformative processes to support the development and implementation of effective GGW strategies and plans, several aspects of which are described in the following points.

**1 Systems thinking.** Systems thinking considers interdependencies and interconnections, as well as dynamics of diverse system elements and is viewed as a requirement for citizens, including decision-makers, for coping with increased complexity and preparing for the future.[9] A systems approach recognizes the linkage among disciplines, sectors, institutions, stakeholders, science, practice, policy and scales and ensures that those relationships are considered while ensuring that root causes stemming from economic, social, cultural, ecological, political and institutional dimensions are addressed.

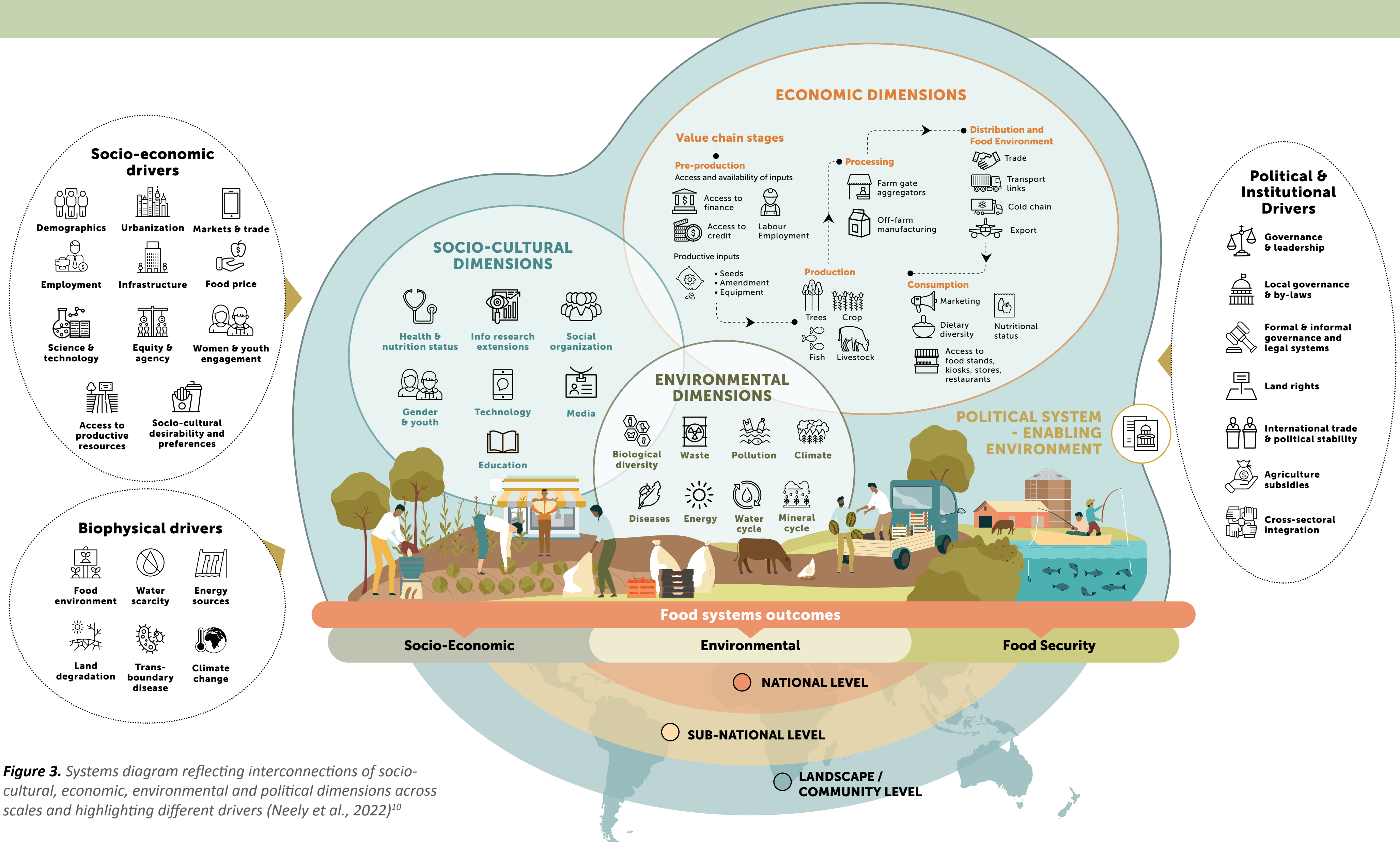



***Figure 3.*** *Systems diagram reflecting interconnections of socio-cultural, economic, environmental and political dimensions across scales and highlighting different drivers (Neely et al., 2022)[10]*

**2** **Stakeholders.** Foresight analysis is an inclusive process, which engages stakeholders of different types and at different levels (local, national, regional and continental) and requires continuous stakeholder mapping, engagement and management for equitable and collaborative relationships. The more diverse the stakeholders are, the richer the insights, knowledge sharing and creative inputs will be and the more effective and transformative the defined pathways will be. Stakeholder engagement throughout the foresight process will build the required sense of co-ownership - essential to building individual and collective roles, responsibilities and accountability from co-design through implementation of the GGW strategies and plans. This approach can be efficient for optimising effective coordination, relationships and cohesion among the GGW partners, actors and stakeholders.

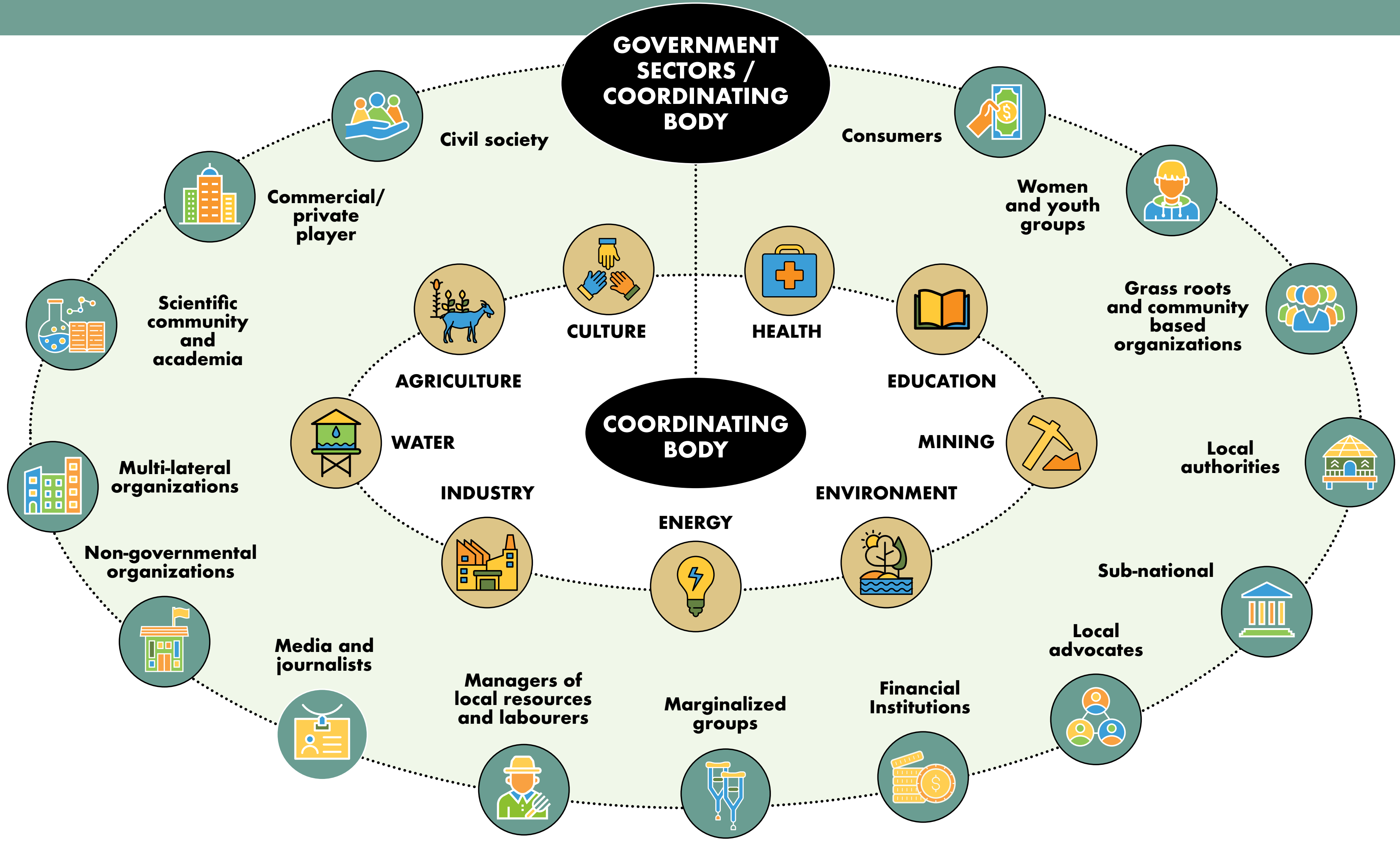



***Figure 4.*** *Indicative stakeholder groups that are influenced by or influence landscape and livelihoods resilience*

**3** **A robust vision.** Jointly developing a vision that takes into account how the system and quality of life must be, what has to be in place to achieve that, and what has to be in place to increase resilience and sustain that vision in the long term.

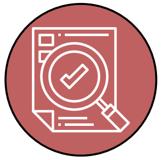
**4** **Evidence.** Evidence plays a critical role in the foresight analysis and brings tailored data, knowledge and evidence into the process to clarify what we need to be aware of, what is emerging and what we may need to know. Multi-dimensional trends that are related to large scale restoration initiatives are analysed to understand changes over time and emerging characteristics around, for example, society (social demographics, population growth, urbanisation, conflict and insecurity and migration); technology (technological change, equity of access and capacity, research and development); economic (poverty, income distribution, and unemployment); ecological (land use and land quality, agricultural productivity, climate change impacts) and political (regional integration, policy influence, human rights, tenurial relationships, etc.).



**5** **Drivers, uncertainty and scenarios.** Embracing a wide range of drivers of change, their level of uncertainty and impact and narrating alternative futures serve as a critical dimension of foresight analysis bringing uncertainty to the forefront as input to scenarios of alternative futures. Drivers are factors, issues or trends that cause change thereby affecting or shaping the future. When preferred alternative futures are described these can be used to integrate areas of uncertainty into the vision.

**6** **Coordination.** Enhancing effective coordination across sectors, stakeholders, countries, partners and scales to ensure communications and knowledge exchange, fund raising, policy coherence and linkages across science, practice and policy accelerate the achievement of the GGWplans and strategy goals.

**7** **Long-term, transformative planning and adaptive implementation.** Supporting the anticipatory awareness that emerges from bringing people, evidence, a vision, a sense of the impacts of uncertain drivers of change, innovative actions and a means for monitoring and assessing progress and managing adaptation.



# How can foresight analysis support the use of existing evidence and exploration of key questions to guide future land restoration programming?

Drawing on SHARED principles, foresight analysis can support the GGW to explore and understand the evidence and drivers with uncertain outcomes that may define the impacts of land restoration actions on current and future restoration and guide future decisions. As an example, it is important to know how resilient restoration practices will be under different climate scenario pathways, the Shared Socio-Economic (SSE) Pathways of the IPCC.[11]

Key questions for which existing and tailored evidence can support related decision making are shown in the Box 1 below. An indicative study to respond to these questions is being carried out for Regreening Africa country projects by the CIFOR-ICRAF and WOCAT in support of the GGW Initiative and some examples of the data are found below.

## BOX 1

### Guiding questions to understand how resilient land restoration actions may be under different climate scenarios

- What restoration practices are currently being used and working in which locations?
- What are the expected climate change impacts (precipitation/temperature) using the SSE Pathways in different locations?
- At what level are the current restoration practices sequestering carbon/reducing emissions?
- How will climate change affect the rate of carbon sequestration/emission reductions of restoration practices?
- How does existing land health/land degradation influence the impacts of carbon sequestration?
- Will our most prevalently used tree species still be viable under extreme climate scenarios?[12] How will that affect the area under different agroforestry practices?
- How transferable are practices to other areas if needed based on increasing temperature and reduced rainfall and are there social barriers to their transfer?
- What recommendations would likely be given to increase the resilience of restoration practices for a warmer and drier climate? Such as increased clustering of practices (e.g. diversifying tree species or combining farmer-managed natural regeneration (FMNR) and demi-lunes to support greater water holding capacity, decrease erosion and increase soil organic carbon).

Using foresight analysis processes and tools, stakeholders at various scales will have accessible evidence and insights to support long-term restoration including, for example:

- Selection of trees species and their diversity;
- Localisation and requirements of restoration site;
- Planning approaches for the restoration measures;
- The selection of key indicators of impacts in terms of restoration and other targeted restoration outcomes like carbon sequestration;
- Assessing potential impacts on biodiversity or ecosystem services; and
- Informing long-term management such as costs of restoration measures, value chain implications, advisory services, gender related impacts, among others.

Scaling up restoration efforts are informed by and dependent upon the continuous monitoring and assessment of indicators of progress. This includes the critical evidence of land restoration and can be drawn from scientific evidence such as the Land Degradation Surveillance Framework[13] (LDSF) and citizen science data collected by farmers and stakeholders (e.g. the Regreening App). Bringing together available data, scientific research and citizen science enhances knowledge sharing across scales and enhances engagement of community members in land restoration, building ownership and motivation.

Photo: ©Regreening Africa, Kelvin Trautman

# An example of integrating new evidence to inform restoration efforts under climate change

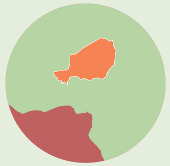
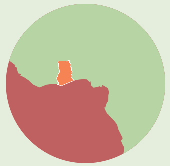
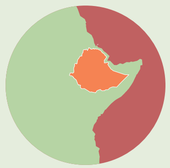
In this example towards responding to some of the guiding questions in Box 1, the SHARED Regreening Africa team collaborated with WOCAT and the Carbon Benefits Project and ICRAF scientists to:

- **A** Review the emission reductions associated with restoration practices;
- **B** Consider how agroforestry species may or may not be suitable under different IPCC SSE Pathways; and
- **C** Take into account the mapped land health/degradation in different countries in the GGW.

Indicative data is shown in **Table 1**, **Table 2** and **Figure 5** as part of a study to understand how sustainable current restoration practices may be under climate change scenarios taking into account baseline and modeled carbon stocks, projected carbon sequestration/emission reduction of current agroforestry and restoration practices, and suitability of agroforestry tree species in different climate scenarios as a means of exploring how land restoration options may fare or need to be changed or clustered in the future.

# Potential for emissions reduction under restoration practices

While a myriad of land restoration practices are currently being implemented across Africa, it is important to understand the benefit of these practices  to climate mitigation and adaptation. The World Agroforestry Centre Regreening Africa Project worked with World Overview of Conservation Approaches and Technologies (WOCAT) and the Carbon Benefits Project (CBP) to assess the mitigation impact of various land restoration practices[14]. The kinds of results shown in **Table 1** can provide land managers with valuable information about appropriate practices in a changing climate. For example, these preliminary findings suggest that within in a tropical dry climate, FMNR has a higher carbon sequestration potential on a high activity clay soil type compared to a sandy soil. In a warm temperate moist climate on high activity clay soil in Ethiopia, the enclosure technology showed the highest sequestration potential, suggesting it could be the case that in wetter conditions in grasslands, livestock exclusion alone may be enough to encourage regeneration, with the need for management by farmers possibly increasing as rainfall decreases. While these theories need to be tested, they do provide information that should be considered to promote the uptake of SLM practices under different soil climate combinations and within a changing climate.

| | PRACTICE/ TECHNOLOGY | CLIMATE | SOIL TYPE | GHG BALANCE T $CO_2$E HA$^{-1}$ YR-1 (20 YR ANALYSIS) | MAIN SOURCES/ SINKS |
|---|---|---|---|---|---|
| **NIGER**  Regions of Tillabéri, Filingué, Ouallam, Téra and Tahuoa | Assisted Natural Regeneration (ANR) also referred to as FMNR | Tropical Dry | Sandy | -2.1 | Biomass |
| **GHANA**  Widnaba Community in Bawku West district, Upper East, Ghana | Farmer Managed Natural Regeneration (FMNR) | Tropical Dry | HAC* | -5 | Biomass |
| **ETHIOPIA**  Amhara | Community-based closed area management (natural Acacia and Gravelia sp. enclosure-excluding animals) | Warm Moist Temperate | HAC* | -7.7 | Biomass |

* High Activity Clay

***Table 1.*** *$CO_2$ emission reduction associated with indicative land restoration practices in Niger, Ghana and Ethiopia (E. Milne, Carbon Benefits Project and WOCAT).*

# Tree suitability under climate change scenarios

Suitability of different tree species used in land restoration practices such as agroforestry, tree planting and FMNR may change under different climate scenarios.  The World Agroforestry Climate Atlas allows users to see the baseline and projected suitability under two different climate socio-economic pathways (SSPs) – 1-2.6 and 3-7.0. **Figure 5** shows the changes anticipated for Faidherbia albida. In this example, the predications seem to show that Faidherbia albida becomes of limited suitability in West Africa under both SSPs.  Having this kind of information in hand, allows farmers, scientists and planners to better understand what to expect under different climate scenarios and plan accordingly[15].

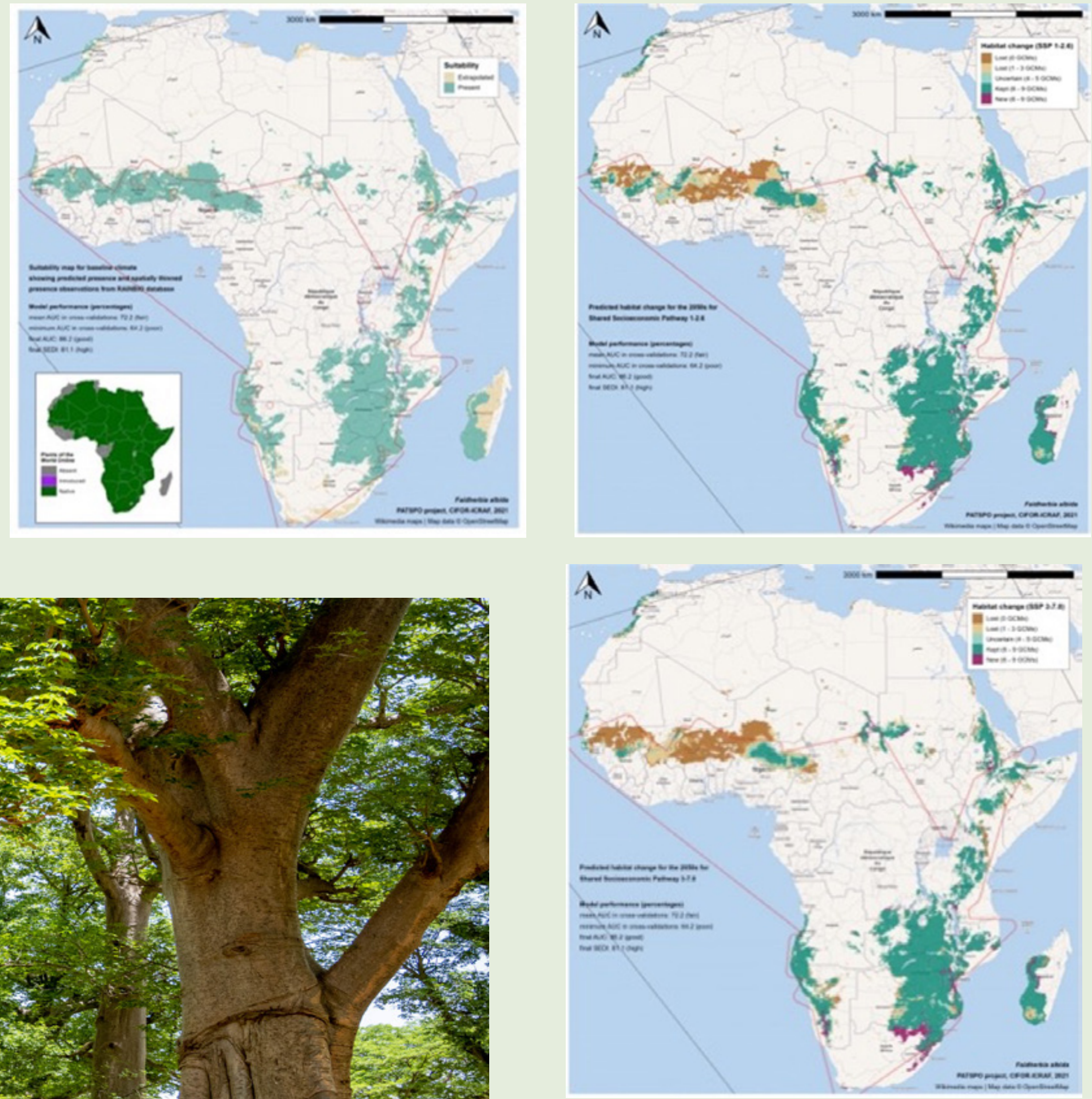
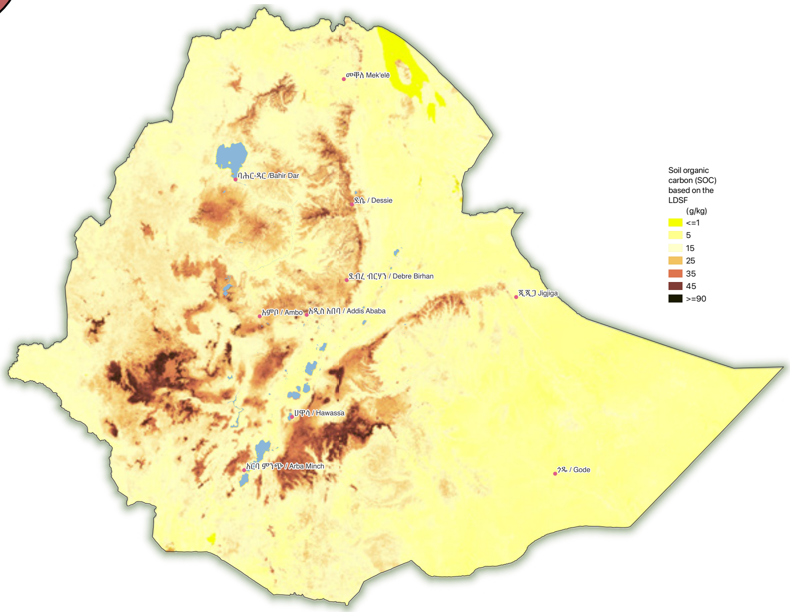
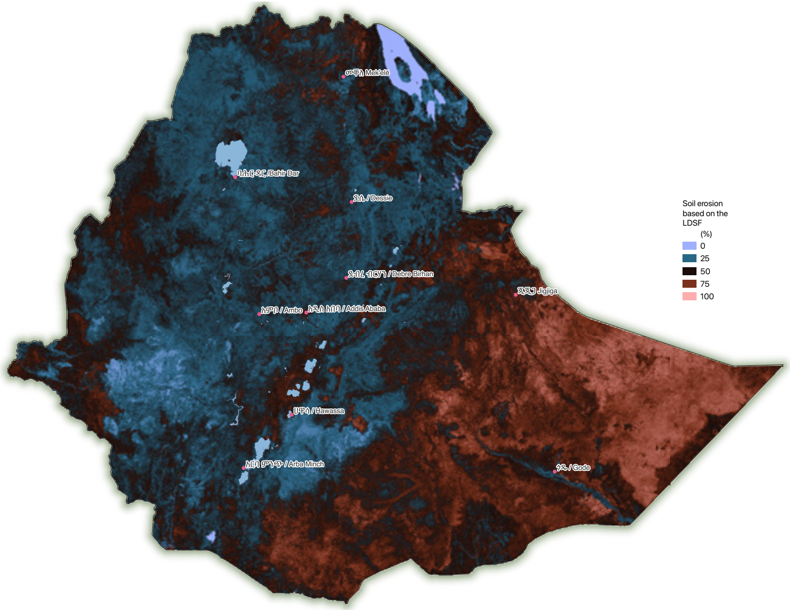


***Figure 5.*** *Predictive maps of suitability for Faidherbia albida as a baseline and under SSPs of 1-2.6 and 3-7.0 (Kindt et al., 2021).*

# Land health, soil organic carbon and tree cover



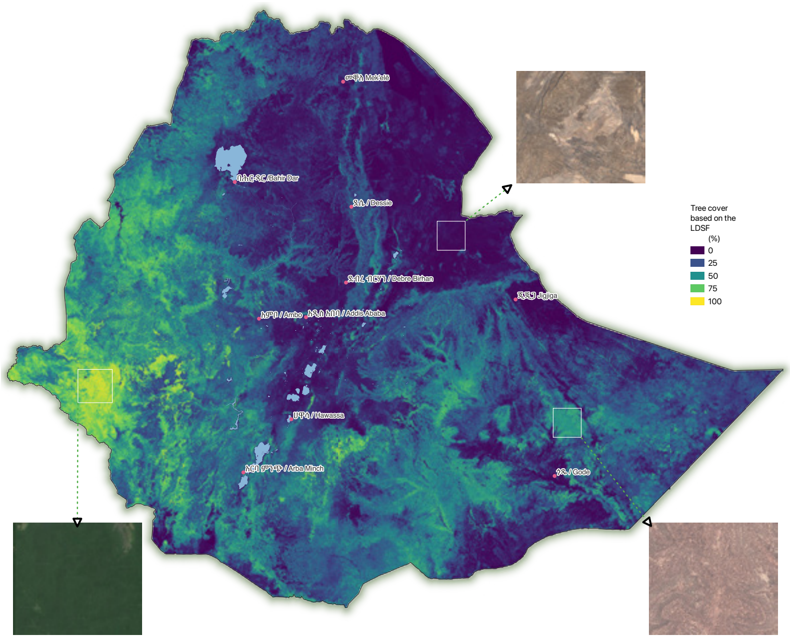




***Figure 6*** *provides a comprehensive view of Ethiopia's land health, showcasing soil organic carbon (SOC), soil erosion prevalence, and tree cover determined by the CIFOR-ICRAF LDSF. These maps collectively yield valuable insights into land degradation susceptibility, tree cover distribution, and overall ecosystem vitality—critical factors for effective land restoration, especially amidst varying climate scenarios. Notably, the SOC map reveals a distinct spatial pattern, indicating both challenges and opportunities for restoration efforts. The substantial contrast in erosion prevalence underscores the urgency for targeted interventions to prevent degradation and enhance resilience, aligning with sustainable agriculture practices. Meanwhile, the distribution of tree cover emphasizes the significance of tailored reforestation strategies, allowing for enhanced carbon capture, biodiversity preservation, and ecosystem stability. Importantly, the correlation between high tree cover, high SOC values, and reduced erosion highlights trees' pivotal role in bolstering soil health and mitigating degradation. This interconnection underscores the pivotal role of trees in enhancing soil health, carbon sequestration, and erosion control. Prioritizing reforestation and conservation efforts in these regions can not only amplify carbon capture and storage potential but also contribute to overall ecosystem resilience. By leveraging this synergy between tree cover, organic carbon, and erosion prevalence, Ethiopia can strategically target restoration initiatives, fostering sustainable land management practices that combat land degradation, mitigate climate impacts, and promote a more resilient and ecologically vibrant future.*

*Figure 6. Soil organic carbon, soil erosion prevalence, and tree cover in Ethiopia as determined by the LDSF (T-G. Vagen, 2023, CIFOR-ICRAF Spacial)*

## BOX 2
## Resources for Exploring Evidence

### Land Degradation Surveillance Framework (LSSF)

The LDSF is a hierarchical field survey and sampling protocol developed by World Agroforestry (ICRAF). It serves as a consistent method and indicator framework for assessing soil and land health at a landscape scale (Winowiecki et al., 2021). In brief, the sites [10 x10 km] are divided into 16 tiles of 2.5 km x 2.5 km.  Within each tile, random centroid locations will be generated for clusters of 1 km2 and the sampling plots will be randomized and for each plot four sub-plots [100m2] are derived. Ground measurements are conducted at the plot and sub-plot level. This randomization minimizes the bias in the sampling and captures the biophysical variability in the landscape. Importantly, this spatially stratified and randomized sampling design serves a dual purpose, acting not only as an evaluation tool but also as a monitoring framework. This framework enables the assessment of a wide array of indicators such as land use and soil health. These indicators, in turn, provide a valuable biophysical baseline for understanding and monitoring various landscape processes.

### World Overview of Conservation Approaches and Technnologies (WOCAT)

The World Overview of Conservation Approaches and Technologies (WOCAT) is a global network on Sustainable Land Management (SLM) that promotes the documentation, sharing and use of knowledge to support adaptation, innovation and decision-making in SLM. Its Global SLM Database, consisting of over 2300 SLM good practices from around the world and serves as the primary recommended database by the United Nations Convention to Combat Desertification (UNCCD) for reporting on the best SLM practices. www.wocat.net

### Carbon Benefits Project (CBP)

The Carbon Benefits Project (CBP) offers user-friendly tools for assessing the climate change mitigation impact of agriculture, forestry, and land management projects. These tools, developed by Colorado State University and partners, are specifically designed to estimate changes in carbon stocks and greenhouse gas emissions. The CBP tools are linked with the WOCAT database, enabling users to import sustainable land management practices from WOCAT into the CBP and export carbon estimations back to WOCAT. https://www.carbonbenefitsproject.org/

### World Agroforestry Climate Atlas

The World Agroforestry Climate Change Atlas for African trees demonstrates how alterations in environmental conditions caused by human-caused climate change are likely to affect the locations where tree species can grow in Africa. This is important for planning tree-based forest landscape restoration and other tree planting activities into the future, to ensure that the right species are chosen for particular locations. The baseline (1970-2000) and future (2050s, 2041-2060) habitat distribution have been modeled across Africa for 127 tree species that were prioritized for the Provision of Adequate Tree Seed Portfolio in Ethiopia (PATSPO) project. The maps developed for the 2050s correspond to two different scenarios: a low emissions scenario (Shared Socioeconomic Pathway SSP 1-2.6) and a high emissions scenario (SSP 3-7.0) projected by nine Global Climate Models (General Circulation Models) as available from WorldClim 2.1. The resolution of our maps is a 2.5 arc-minutes grid (~ 4.6 km at the equator), the highest level of detail that is available in WorldClim 2.1 for making future projections.

# Developing a robust vision

Visioning a desired future is the first step in creating a powerful inclusive strategy and provides the basis for developing appropriate interventions, services, policies and partnerships that will be required to achieve that future. Participatory foresight breaks with the habit of exclusively relying on (foreign or local) technical experts and invites a diversity of stakeholders, from government, private sectors, non-governmental organizations (NGOs), citizens, and communities to participate in discussions[16].

Having a shared and robust vision for the GGW, especially driven by the aspirations of the communities on the ground, as well as the local national, regional and continental stakeholders and partners, supports better coordination, cohesion, sense of purpose, co-ownership and direction among all stakeholders. Such a co-shared vision will therefore be strongly informed by the vision and aspirations of the communities on the ground and their views of successful implementation for the GGW Initiative.

**To develop a robust vision, three mutually supporting steps are required:**

1. What are the desired aspirations associated with different dimensions of the restoration system (e.g. agricultural, environmental, technological, social, economic, cultural, political and institutional)?
2. What has to be in place to support the achievement of those aspirations?
3. What has to be in place to sustain the aspirations and their supporting elements?

Developing a robust vision for the GGW can build upon the currently drafted vision, providing more depth and greater ownership of the desired outcome and the elements required to make the transformative change while taking into account uncertainty.

# Understanding drivers of change to explore feasible scenarios

To complement existing evidence and experience in foresight analyses, scenarios are explored based on drivers of change, and in particular, those that are highly uncertain and highly impactful. Drivers of change within the context of accelerating restoration initiatives include those that are agricultural, ecological, technological, socio-economic, institutional, and policy related. Foresight unpacks these drivers to understand their level of uncertainty and their level of anticipated impact and identifies those that we know the least about in terms of how they will unfold. Some examples of drivers and associated impact and uncertainty levels related to the GGW include those shown in **Table 3**:

| CATEGORY | DRIVER | IMPACT LEVEL (how impactful this driver is) Low, medium, high | UNCERTAINTY LEVEL (how well do we know how this driver will play out) Low, medium high |
|---|---|---|---|
| **Political/Institutional** | Weak organizational structures. Lack of coordination among agencies, institutions, sectors, stakeholders; governance, information flows | High | Medium to High |
| | Lack of high-level political support for environment and enabling policies for land restoration | High | High |
| | Political instability | High | High |
| **Natural Resource-Environment** | Technical barriers – lack of knowledge and techniques to manage fragile lands | High | High |
| **Natural Resource-Environment** | Climate change | High | High |
| **Economic/Agricultural Productivity** | Low investment in physical infrastructure | High | Medium |
| **Socio-Cultural** | Insufficient capacity | High | High |

***Table 3.*** *Defining the drivers of critical uncertainty for scenario building*

Those drivers that are highly uncertain and highly impactful are used to create scenario narratives to help stakeholders think about possible future states and how uncertainties might play out in a structured way. Scenario narratives answer ‘what if’ questions that describe multiple alternative futures spanning a key set of critical uncertainties. Scenarios identify future drivers of change and then plot out plausible directions that they may take. When stakeholders carry out this process, the scenarios reveal the implications of current trajectories, thus illuminating options for action.

## SCENARIO NARRATIVES TO UNDERSTAND ALTERNATIVE FUTURES FOR DIFFERENT LEVELS OF CLIMATE CHANGE AND COORDINATION

**Effective coordination** has often been cited as a critical requirement for advancing the goals and objectives of the GGW. One indicative example of a narrative with storylines within the structured scenario of **extreme climate change impact** and **high levels of coordination** among GGW institutions, partners and stakeholders might include:

**1** This **scenario** was entitled **"it grows"** by GGW Initiative participants and considered to be characterized by, for example:

- Systems programming that integrates planning implementation, monitoring, evaluation and learning and adaptation and is supported by a high level of political will and dedicated resources to support the GGW efforts.
- A multi-purpose and effective platform for knowledge and information sharing across stakeholders, partners, countries.
- Regional coordination to support cross-country dialogues and policy and transboundary efforts for trade optimization, investments in value chains, conflict resolution, enhanced food security.
- Greater capacity at local level for communication, knowledge sharing, agricultural production and restoration practices, food security and nutrition.
- Participatory and coordinated dissemination and uptake of restoration practices that are more resilient and cohesive management of resources that result in greater water conservation, improved biodiversity, reversal of land degradation and increased ecosystem services.

**2** An alternative and less desirable scenario would be **extreme climate change impact** with **low levels of coordination** which would likely yield only small areas of successful restoration by local actors or national coalitions that are well functioning but as a whole, for example, there may be a lack of political support, low motivation and uptake of restoration by communities, poor knowledge sharing, accelerated degradation of agricultural and natural resources, and greater climate related impacts.

Such an understanding can then support the partners of the GGW to assess how current trends, drivers of change, and key uncertainties might influence the projected impacts of the current restoration efforts, the barriers and opportunities to consider, and what transformative actions will need to be put in place to achieve the desired future outlined in the GGW strategies and plans.

The successful implementation of the GGW strategies, plans and programmes requires structured and effective coordination across the various partners, sectors and stakeholders within and across different governance levels (local, national, regional and continental). During the regional virtual event series on *Considering Barriers and Solutions for Accelerating the Great Green Wall Impacts*[17] effective coordination was viewed as a critical barrier to achieving the GGW objectives.

**The opportunities for effective coordination included:**

- Among stakeholders, sectors, partners and scales;
- Communication and knowledge exchange across countries;
- Across science, practice and policy;
- Fundraising, and
- Policy coherence and political will.

The foresight analysis approach fosters a deeper understanding of how effective coordination contributes to the preferred future; clarifies the transformative efforts involved in implementation actions, partnerships and policy influence, among others, that will lead to the desired future and support consolidated cohesion to substantially transform relationships and trust among the stakeholders.

## LONG-TERM, TRANSFORMATIVE PLANNING, IMPLEMENTATION AND ADAPTATION

**One of the key objectives of using foresight analysis is to support long-term planning in an uncertain and complex world. Foresight creates 'anticipatory awareness', which is the ability to anticipate that a particular problem may be experienced in a particular task or situation**[18]. Foresight analysis provides the means for stakeholders to assess the trends and state of the system and gauge the impacts of unexpected or uncertain drivers and prepare for the future trajectory desired.

Anticipatory awareness development through the foresight process challenges organisations to reflect on traditional ways of working and consider different and transformative interventions, partnerships and institutional and policy changes to achieve the vision using tools such as backcasting. **Backcasting is an approach that starts with the defining of a vision or desirable future and then works backwards to identify key actions, partnerships, policy changes that will connect that desired future to the present.** Foresight supports the sustainability and adaptability of strategic interventions. Since the premise of foresight is that the future is still in the making and can be actively influenced or even created, it creates confidence in stakeholders' ability to plan in an unpredictable future.

**A part of successful and adaptive implementation is the value of locally-driven and networked solutions which includes building creativity and experimentation into the development of solutions that are grounded in local and scientific knowledge**. Foresight analysis and its related tools can unlock the creative and innovative minds of the stakeholders. Foresight processes encourage novel thinking, the development of new perspectives and insights and enriches their understanding of what the possible futures could be and involve. It enables stakeholders to get comfortable with different possible scenarios for the future and take those into consideration in their planning and adaptive implementation. The reflection on what can be done differently can integrate new technologies and their impact in existing thinking and planning, and to make plans considering, for example, possible critical technological changes in the future.

A key value of foresight analysis is to increase the social, economic, and environmental resilience taking into consideration the uncertainty and complexity of the world especially associated with the impact of climate change, considering the diversity of plausible scenarios outlined in planning. **The foresight process provides the evidence base and supports creativity for solution finding and impact pathways while ensuring the planning and implementation are carried out with a flexible, agile and adaptable approach.** Foresight supports mainstreaming climate change adaptation and resilience and managing an enabling policy environment to be better prepared for different future trajectories.

## RECOMMENDATIONS FOR INTEGRATING FORESIGHT IN GGW STRATEGIES AND PLANS FOR THEIR DEVELOPMENT, IMPLEMENTATION, MONITORING AND ADAPTATION

The GGW Initiative presents a huge opportunity to scale land restoration and sustainable livelihoods. Integrating foresight can add significant value to accelerating the best possible outcomes. The following strategic recommendations may be considered.

- **Invest in consolidating trends and drivers analysis across related sectors** and conduct regular interval scanning of current data relevant for integration into the GGW strategies and plans and to inform adaptive management.
- **Use foresight analysis to elaborate unanswered questions around which practical evidence and models can be developed** (e.g. how sustainable are current investments in land restoration practices and what can be put in place to prepare for different climate change outcomes).
- **Conduct an inclusive stakeholder engagement process building on SHARED** to develop a co-shared and robust vision for the GGW long-term.
- **Conduct participatory foresight analysis processes to inform GGW strategies and plan development** and their implementation and tailor them to different scales which can be applied at different intervals and topics. Examples might include: a foresight analysis process can be used to develop transformative plans at the country level guided by the GGW National Coalitions and engaging community to national level stakeholders; a foresight analysis to design an effective knowledge sharing platform for the GGW; or applying a foresight analysis to characterize effective policy influence and outreach.
- **Apply foresight analysis to jointly plan among scientists, practitioners and policy makers** using a systems perspective to execute integrated land restoration practices for farming and pastoral systems.
- **Develop capacity of a network of GGW affiliated foresight analysis experts to facilitate foresight** analysis processes for GGW priorities, building a foresight culture to support planning, learning, and adaption processes for the GGW.

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WOCAT

GREAT GREEN WALL

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