



## 3.8 Adopting regenerative agricultural practices for resilient landscapes at scale

### a. Background

There is growing recognition food systems can and must shift from extractive and degrading to more restorative, equitable and productive. Regenerative food systems contemplate a new food economy which endogenizes these values through new management practices supported by the right combination of new knowledge, market signals and policies. Yet, food systems cover vast and diverse areas of terrestrial, marine and freshwater ecosystems, accounting for more than \$10 trillion in annual economic activity. There is significant urgency to unlock widespread adoption of regenerative management practices, given the growing challenges of malnutrition, poverty, climate change and biodiversity loss. This solution proposes a network of *Regenerative Foodscapes* as sentinels for a new regenerative food economy. Regenerative Foodscapes are important food producing land or sea scapes offering the ability to customize and scale up the right suite of solutions given a set of geographically unique biophysical, jurisdictional, market and cultural considerations under a collective action development model. While many regenerative practices may ultimately fit into this game changing solution, we focus on how to accelerate the pace of change across the global food system with a novel network design of collectively managed and promoted Regenerative Foodscapes.

### b. Brief Description

Regenerative agriculture is a system of farming, grazing and fisheries management principles and practices that seek to rehabilitate and maintain the functions of terrestrial and aquatic agroecosystems that guarantee the preservation of the foundation of sustainable food production: soils, biodiversity, water, nutrient cycling. By maintaining and rehabilitating these functions, agroecosystems improve their capacity to regenerate in a changing environment. Securing the regenerative capacity of agroecosystems increases their resilience to climate change events and other environmental shocks. It also positions agriculture and food systems as a large-scale solution provider of environmental benefits, while supporting livelihoods. This includes farming methods moving beyond resource efficiency and into ecological restoration through practices such as conservation tillage, cover cropping and rotations, agroforestry and other forms of diversification, mobile animal shelters and pasture cropping, farmer-managed natural regeneration, integrated pest management, precision nutrient management and various soil and water management techniques that minimize the loss of soil structure and biodiversity and its capacity to recycle nutrients, store water and carbon, and be more cautious to minimize mechanical, chemical and biological activities that can damage long-term soil health and produce negative offsite effects. When adopted at the scale of a land or sea scape, regenerative practices are a foundation towards ecological resilience.

### c. What was/were the source(s) from which this solution emerged?

Regenerative agriculture has emerged from a long history of indigenous knowledge and management practices. Over time, many of these practices were replaced by new technologies which focused on optimizing short term productivity and profits. This solution recognizes the need to integrate old and new ways of producing food, focusing on reconciling the need for highly productive, nutritious and environmentally sustainable food production. This specific solution has been nominated by several food dialogues and members of the drafting committee including ICRAF, CIAT, OP2B and TNC.

### d. What problem is it trying to address within food systems?

The sources of agricultural and food system productivity has indeed allowed us to feed more people; however, these gains come with an expense we now starting to more fully account for. Food systems already cover 50% of the earth's habitable land and they are the primary threat to further biodiversity and habitat loss threatening 80% of mammal and bird species classified as close to extinction by the IUCN. Food systems contribute 25% of current greenhouse gas emissions and current practices have led to 52%



of agricultural lands being moderately to severely degraded. Food systems use 70% of freshwater withdrawals annually and contribute significantly to water pollution with nutrients and sediments. Most wild catch fisheries are overharvested or are at their current maximum production despite growing demand for seafood. With the global population continuing to grow, it is expected we will need to increase food production by 50% by 2050 to meet growing demand. The global food system has lost significant functional agrobiodiversity, with just 9 agricultural crops supplying nutrients for 66% of global food production, putting the food system at great risk for climate shocks. Yet, we need the food system to be transformed to be a net solution provider on these issues. Simply reducing the rate of extraction or degradation does not provide the operating leverage needed on issues such as climate change or biodiversity loss. Research has demonstrated the potential to regenerate natural capital through intensive food production practices. Despite growing scientific evidence of these risks, senior level management and decision-maker attention and prioritization of scaling up solutions through the food system remains low. Therefore, the central problem is how to scale up these solutions at a pace relevant to planetary challenges.

**e. Why is addressing that problem important for achieving the goal of your ACAI?**

As documented by the Food and Land Use Coalition (FOLU) report in 2019, the scale and diversity of global food production offers both an enormous challenge and a promising opportunity. Under the business as usual scenario, food production systems continue on their current trajectory, expanding by 400 million hectares and becoming a largest net source of greenhouse gas emissions. Yet, there is \$4.5 trillion of economic opportunity available to food system actors through 2030 by implementing solutions that lead to better outcomes. Dietary choices and demand signals are central to this solution. Often, both male and female farmers are willing to make decisions to diversify their cropping systems; however, they lack available markets and marred by restrictive policies. National policies governing both supply and demand often reinforce economic models of financial comparative advantage without taking a full accounting of ecological or human health impacts. Therefore, the opportunity is to more quickly integrate and scale-up projects focusing on regenerative management practices adopted in unique and context specific land or sea scapes as the necessary evidence to inspire broader changes.

**f. How can this solution address the problem?**

A range of management practices which rebuild soil health, sequester atmospheric carbon dioxide, protect habitat from conversion to agriculture and integrate more agrobiodiversity in food production are well understood, but are not widely adopted. The central problem our solution addresses is one of scale and pace of transition to regenerative food systems given the environmental pressures of climate change and biodiversity loss. A second problem our solution addresses is recognizing and respecting the unique diversity and cultural aspects food production represents. A third problem our solution addresses is the economic importance and livelihoods component of food production for a growing population. While there is certainly more to learn about regenerative management practices, what is known presently can make a major impact on our central problem.

What is proposed is to build a coalition of strategic partners who will invest together in building a network of Regenerative Food Scapes -- living laboratories of food production situated in diverse, representative land and sea scapes demonstrating the transformative environmental, economic and social impacts of regenerative production. Foodscapes become a collective action agenda which contemplates the unique biophysical, policy, market and cultural considerations of a food production geography. Regenerative solutions will be prioritized for investment and scaling with the support of a diverse group of enrolled actors, starting with gender-differentiated farmers, ranchers or fishing communities. Building peer-to-peer (farmer-to-farmer) learning networks at the Foodscape level is an essential part of addressing the full range of cultural, operational and financial decisions which are necessary to work through. Gender aware policy action must be identified and jointly developed to support an optimal transition. New business models involving new input bundles or offtake markets together with financing solutions are key.



Unique gender based impact assessment data can be shared across the network of global foodscapes and partner organizations. Particular attention will be paid to sharing data with strategic investors and governments in order to accelerate adoption outside of the initial foodscape investment areas.

While it is important to start implementing this action agenda in a group of initial foodscapes immediately, it will be important to sponsor a strong gendered action research agenda to ensure the rapid dissemination of knowledge. Likewise, it will be important to create an open and accessible network supportive of the positive contributions of all actors across the global food system. It will be important to have a diverse and representative set of food production land and seascapes with formal recognition of member-states at the outset.

**g. Why does this solution align to the definition and criteria for a ‘game changing solution’ developed by the Summit?**

Food systems are vast, spread across the world’s managed land, marine and freshwater environments and accounting for more than 10% of global GDP. Food systems are governed by the independent actions of one billion farmers, ranchers and fishermen and 7.5 billion consumers. Yet, we must catalyze much quicker changes to a regenerative food system in some manner. With approximately 500 million smallholder farmers operating in about 75% of the world’s agricultural land and producing about 70% of food globally, the potential adoption and impact of regenerative agriculture practices is enormous. Many of these practices are low-cost with most of the investments going into the establishment phase, diminishing in subsequent years as soils build up and are coming back healthier. Many of these practices are also nothing new: for example, agroforestry has been practiced for millennia, and no-till has been used as far back as 10,000 years ago. Member-states committed to the achieving the SDGs and other development goals are strategically positioned to provide the necessary environment and investments to flourish regenerative agriculture at scale. While we now witness many member states setting their own targets against international commitments, investments are only gradually aligning to achieve them. Not all will be at same pace, so progress will be staggered and incremental. This will/can be accelerated by the private business sector’s shift to ‘regenerative’ practices in their land-based operations in pursuit of long-term business sustainability and compliance to national and international triple-bottom line standards and voluntary guidelines.

**h. What is the existing evidence supporting the argument that this solution will work, or at least that it will achieve the initial outcomes described above?**

The world is not lacking in examples of successful regenerative practices adopted by farmers and grazers, backed-up by scientific analysis and promoted by scientists and advocates world-wide:

- Agave-based agroforestry system in the semi-arid drylands of Mexico. This agave-powered agroforestry and livestock management system is demonstrating that native plants, long overlooked, have the potential to regenerate drylands, provide large amounts of inexpensive but essential forage for grazing animals, and alleviate rural poverty. Agave plants and nitrogen-fixing trees, densely intercropped and cultivated together require little or no irrigation to thrive, and are impervious to rising global temperatures and drought. Agaves alone can draw down and store above ground the dry weight equivalent of 30 to 60 tons of CO<sub>2</sub> per hectare (12-24 Ct/acre/year).
- Communities Regreen the Sahel Programme. The program is active in over 200+ communities in Niger, Burkina Faso and Senegal, particularly in arid and semi-arid areas of the Sudano-Sahelian landscape. Farmers are practicing farmer-managed natural regeneration along with other agroecological practices to restore production and ecological functions of degraded drylands.
- There are a growing number of farmers and ranchers adopting regenerative agriculture practices such as no-tillage, cover cropping, intercropping, rotational cropping and intensive rotational grazing in the United States. Some of these farmers and ranchers are entering programs which will provide soil



carbon payments which are provided as part of Scope 3 emission reduction strategies by agri-food sector companies.

- There are also examples of restorative aquaculture and utilizing fisheries data with training to improve coastal or freshwater fisheries that provide examples of regenerative seafood systems.
- New private sector coalitions such as OP2B are developing new models to engage with and supportive regenerative management practices at the landscape level. This offers the potential to provide new business models and financing for new ecosystem service markets as an additional component of a regenerative food economy.

**i. What is the current and/or likely political support for this idea?**

The United Nations Sustainable Development Goals and other international frameworks and agreements provide impetus for regional-national-local actions toward regenerative agriculture. In Europe, there is growing interest in a number of countries, within the scope of the “Farm to Fork” biodiversity strategy, and agriculture policies, and an increasing awareness of healthy foods and wellness growing among consumers and producers in North America. Some countries in the south like India and Nepal have national agroforestry policies that guide investments and programming, while others have enacted organic farming laws. Coalitions, alliances and networks of knowledge brokers and advocates are also growing across the globe: Regeneration International, Regen-Ag, Kiss the Ground, Aranya Agricultural Initiatives, Grounded, Rodale Institute, Savory network, Soil Capital, Soils Food and Healthy Communities, Soil Food-web Institute, Sustainable Harvest International, Terra Genesis International, Carbon Underground, Ecological Farming Association, Land Institute, Timbuktu Collective, Traditional Farmers Association, Global Evergreening Alliance, The Nature Conservancy.

**j. Are there certain contexts for which this solution is particularly well suited, or, conversely, contexts for which it is not well-suited at all?**

Regenerative agriculture has no boundaries: it is applicable and can work across land and seascapes in different agro-eco-climatic regions, from drylands to the humid tropics and temperate zones. Regenerative foodscapes can pick up on new levels of integration and optimization between land and marine environments. The beauty of regenerative agriculture is its wide adaptability across wide socio-ecological contexts because it embodies a universal and broad philosophy and principles of caring for the land on which, food and the survival of mankind depends. Geographically, it works across countries and regions with varying political economies and food systems indicators because regenerative practices are wide-ranging, and can be modified to suit local contexts. However, it should be noted that progress may differ across economies and societies as there are site-specific requirements under consideration. In conflict-laden societies, regenerative agriculture may not be the first and primary action to be taken, but it will be an important element of post-conflict recovery.

**k. Who are the key stakeholders to be further involved in the process of developing and refining the solution idea?**

A wide range of stakeholders, including women, youth and marginalized communities, must be engaged to ensure buy-in and successful deployment and scaling up of regenerative agriculture practices: (i) member states, regional and continental bodies (African Union, Intergovernmental Authority for Development-Horn of Africa, NEPAD, ASEAN, SARDEC, European Commission etc); (ii) conservation agriculture organizations such as IUCN, WWF, and The Nature Conservancy, who is coordinating a platform of stakeholders on a science agenda with IASA and SystemIQ to further document the concept of Regenerative Foodscapes; (iii) global land investors in agriculture, food and chemical fertilizers (Del Monte, Sucden, Mars, Unilever, Syngenta etc); (iv) multi-stakeholder platforms such as “One Planet Business for Biodiversity” (OP2B) which comprised 27 large organizations working under the sponsorship of the French Presidency to address the scaling of Regenerative Agriculture; (v) youth and farmers



organizations e.g., World Farmer Organization; and (vi) the OneCGIAR with its new Research for Development Research Strategy is committing to investigate and support systemic solutions for agricultural and food systems that tackle nutritional, environmental, poverty reduction , social inclusion and climate change goals. Regenerative agriculture options aligns to this multi-objective approach.