

SCALING AGROECOLOGY IN THE SAHEL CASE STUDY





The experience of rural communities in Mali, Burkina Faso and Senegal











AGRECOL Afrique





Scaling agroecology for resilience in the Sahel

The experience of rural communities in Mali, Burkina Faso and Senegal

Key lessons of the Agroecology Plus Six program, a regional initiative undertaken by the Groundswell West Africa network Report written by Janneke Bruil (Cultivate!) and Peter Gubbels (Groundswell International)

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Cover photo: Women enjoying themselves with a dance after a field visit, supplied by the Center for Indigneous Knowledge and Organizational Development, Ghana

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Executive Summary

Over 12 million small scale farmers and their families in the risk prone, dry land areas of the 6 countries of the western Sahel have become **chronically vulnerable** to food and nutrition insecurity. A growing percentage of dryland farm households, estimated now to be over 20% in the Sahel, have become ultra poor, because of continuous stresses and shocks. In 2018, 6 million people in the region were severely food insecure during the lean season. About 1.3 million children suffered from acute malnutrition. This was a 50 percent increase from 2017. The result is a growing "resilience deficit" and an increasing dependence on humanitarian assistance.

In face of such a severe crisis, there is much evidence from across the Sahel that an integrated systems approach to agroecology can enable dryland farmers to transform the existing farming system, overcome the root causes of their food and nutrition insecurity, and greatly strengthen their resilience. This evidence also shows that resilience cannot be achieved only by promoting a few agroecological farming and environmental management techniques. **Agroecology requires an ongoing transition**, which intentionally intensifies and deepens the synergies between agroecological practices, in a continuous process. In order to strengthen resilience, it also must address social aspects of the crisis and contribute to equity, women's empowerment, good nutrition and strengthened local governance. These are essential for community well-being, for overcoming chronic vulnerability and for "leaving no-one behind" as is the mantra of the Sustainable Development Goals.

The critical question is how to take this complex, progressive socio-technical change process to scale.

To find responses, this case study, conducted with rural communities in three rural regions in Senegal, Burkina Faso and Mali, asked: how can this integrated, progressive approach to agroecology be scaled out to enable rural households and communities to strengthen the resilience of their farming system and livelihoods in the Sahel to reverse land degradation, overcome the hunger/debt trap, and adapt to a changing climate. A related question was why, if agroecology is so beneficial, have most efforts to scale up agroecology not yet reached the necessary breadth and depth for a significant resilience impact on the livelihoods of the most vulnerable people in the Sahel? What are the main barriers?

The premise of this case study is that scaling agroecology is not just about the spread of specific farming practices, but also about progressive **intensification**: a step-by-step process through which farmers adopt additional, complementary practices that often work in synergy. It is also about the **institutional uptake** of agroecology (e.g. in policy and research programs, and by other food system actors). Considering these other critical dimensions, scaling of agroecology is best understood in three dimensions: a vertical (upscaling) and a horizontal (outscaling) process, combined with deepening (or intensification) of agroecological practice itself through including social dimensions (i.e. equity, gender).

Starting from this understanding, this case study has identified eleven key "drivers" or "enabling factors" that often contribute to successful processes of taking agroecology to scale. Often, the scaling process is accelerated when initiatives can foster an overlap between these drivers.

Eleven factors that drive the scaling up of agroecology

To present and analyze the work of Groundswell International (hereafter "Groundswell)'s network members in Senegal, Mali and Burkina Faso to promote and scale out agroecology, this case study reviews their field experiences on the basis of these drivers. It teases out the main lessons learned, and distills successes and areas for improvement that rise above context and are relevant for all actors interested in the spread and promotion of agroecology. This review of experience is based on Groundswell's "Agroecology Plus Six" program over 18 months between 2016 and 2017. This eighteen month initiative, supported by the Global Resilience Partnership, was intended to provide a 'proof of concept' for agroecology as the foundation for enabling small holder dryland farmers to reverse land degradation, adapt to climate change, and escape from the hunger and debt trap, by strengthening the resilience of their social and ecological farming system.

Groundswell's strategy to scaling agroecology consisted of 6 inter-linked strategies:

- 1. Progressive intensification and spreading of agroecological practice
- 2. Women's self-empowerment in agriculture and rural livelihoods
- 3. Ensuring equity by tailoring initiatives to the specific needs of the most vulnerable households and groups
- 4. Integrating nutrition into the promotion of agroecology
- 5. Communication and advocacy
- 6. Strengthening local governance

Lessons from each of these strategies are described in detail in terms of process and results in this case study. The cumulative result was that in 18 months, over 9,000 households across 148 villages in Mali, Senegal and Burkina Faso started to practice a combination of agroecological innovations that started to make their farming systems more productive and resilient to prolonged drought, depleted soils and climate change. In addition, the initiative changed attitudes, understanding, organizational capacity, procedures and rural development plans in support of agroecology for resilience.

Notably, the position and participation of the most vulnerable households and individuals in the respective areas was strengthened. Many women took on new roles as agents of change and gained access to resources, which enabled them to start improving household resilience. There was evidence also of a start towards longer-term changes related to agroecological knowledge, attitudes and practices both at the community, rural municipality and NGO levels. Through a participatory, bottom-up approach, the Agroecology Plus Six initiative fostered community ownership, agency and responsibility. While there are significant lessons for improving the approach, and overcome the challenges identified in the case study, these are significant results in a short time. They provide key insights and principles for the longer term effort of further upscaling agroecology.

Most importantly, there is no predefined, formula for scaling agroecology for resilience. The actual combination and sequencing of agroecological and social innovations depends on what the community needs and prioritizes, and on other highly localized contextual factors. However, Groundswell's experience across the Sahel, revealed three principles "that rise above context" about the most effective process for strengthening the resilience of dryland farmers in the Sahel through agroecology:

PRINCIPLE 1: Spread a progressive process of scaling agroecology in the Sahel

PRINCIPLE 2: Include social dimensions in agroecology

PRINCIPLE 3: Transform governance from the community to the policy making level

In Groundswell's experience, effective scaling of agroecology for resilience is greatly enhanced when local authorities, community leaders and local governance structures have ownership and play a central role in the scaling process. This is because the scaling process for agroecology is most effective when it is **contextually appropriate and based on the community's vision.**

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Overall, specific activities that proved most successful for scaling up agroecology in this initiative included training of farmer-trainers, setting up self-managed women's groups, taking policy-makers on a 'caravan' tour of successful experiences, sharing lessons learned in other networks and conferences, and documenting insights and lessons for wider communication.

This review of the experience of rural communities supported by Groundswell, based on three different country experiences, clearly shows it is possible to quite rapidly scale out agroecology if one applies key principles and processes, although the speed and depth of scaling depends on specific institutional and contextual factors.

This approach is relatively low cost, and can be implemented by most rural actors, if provided sufficient methodological support.

Building resilience in the dry lands of the Sahel by transforming the social and farming system is a long term, gradual process. Two years is relatively little time to strengthen local institutional capacities sufficiently for agroecology to reach the necessary scale. Many more years, and iterative cycles in applying and deepening the process are required to reinforce the organizational and leadership capacities required to embed this resilience approach into the local social and institutional fabric as the new 'norm' and to scale it out to millions of farm households.

Introduction

A growing percentage of the Sahelian population is becoming chronically vulnerable to food and nutrition insecurity. This case study documents an action-research initiative in three dryland farming areas in Sahel that aimed to scale out an innovative, integrated, synergistic approach to strengthening the resilience in the region.

A critical assumption of this approach is that agroecology is essential to transform existing farming systems for resilience. Specifically, this involves strengthening the absorptive and adaptive capacities of rural communities to shocks and stresses affecting their livelihoods.

Once a foundation of intensified agroecological farming is in place, it serves as the basis on which to **integrate aspects of equity, women's empowerment, and nutrition, tailored to the needs of the most vulnerable groups, while further intensifying the agroecological practice**. Groundswell developed and tested an innovative methodology to do so.

The case study, conducted in three rural regions in Senegal, Burkina Faso and Mali, asked the question: how can this integrated approach to agroecology be scaled out to enable rural households and communities to strengthen the resilience of the farming system and related livelihoods to reverse land degradation, overcome the hunger/debt trap, and adapt to a changing climate?

This case study first explains the reasons for promoting agroecology in the Sahel. It outlines various pathways for scaling up agroecology, identifying 11 'drivers' of the process. These drivers then serve as an analytical lens described in the literature through which the study analyzes lessons from the strategies and results of Groundswell's scaling up initiatives in the Sahel. The case study ends by highlighting the remaining challenges to and key principles for scaling agroecology in the Sahel that emerge from the practical experiences in Mali, Burkina Faso and Senegal.

1. Rationale for agroecology in the Sahel

The resilience crisis in the Sahel

An estimated 12 million small scale farmers and their families in the risk prone, dry land areas of the 6 countries of the western Sahel have become chronically vulnerable to food and nutrition insecurity. A growing percentage of dryland farm households, estimated now to be over 20% in the Sahel, have become ultra poor.

In 2018, 6 million people in the region were estimated to have been severely food insecure during the lean season. About 1.3 million children suffered from acute malnutrition. This was a 50 percent increase from 2017.

AGRICULTURE AND FOOD SYSTEMS IN THE SAHEL ARE IN CRISES

The number of people affected by food crises in 6 Sahel countries from 1965 to 2012 increased to over 20 million in 2014, and has remained there to 2018



Source: Adapted and updated from USAID Sahel JPC Strategic Plan: Reducing Risk, Building Resilience and Facilitating Inclusive Economic Growth³

Root causes

The structural reasons for this severe crisis in the Sahel include the incremental degradation of fragile and drought prone ecosystems, high demographic pressure, the grabbing of land, water and other resources, misguided agricultural development policies, and the low capacity of vulnerable populations to adapt to the stresses of rapid environmental change and climate shocks. Farmers have to cope with declining soil fertility, degradation of natural resources, erratic rainfall, and the periodic shocks of major droughts.

Gender inequality, poor nutritional practices and inadequate technical and social services exacerbate the crisis. According to 2017 figures, 5 out of the 10 countries where it is most difficult for girls to get an education are located in the Sahel region (i.e. Mali, Burkina Faso, Chad, Guinea and Niger). In addition, the Sahel region is experiencing major security problems of increasing militancy, conflict and violence, particularly in Mali, Niger and Burkina Faso. The resulting population displacements further fuel the growing food and environmental crisis, in turn contributing to the conflicts. Conflicts and climate shocks have been reported to displace about 3 million people across the Sahel, pushing hundreds of thousands to flee, some migrating as far as Europe.

In this context, traditional farming practices that were once widespread in the Sahel, such as fallow, can no longer sustain livelihoods. In order to survive, an ever-increasing percentage of households tend to engage in negative coping mechanisms. This includes selling their harvest to pay back loans, eating their seed stocks, borrowing money from usurers, cutting down on the number of their daily meals and selling their physical assets.

These desperate responses to long-term stresses and periodic shocks further increase the vulnerability of these populations, making this a growing crisis.

The result is a growing **"resilience deficit"** and an increasing dependence on humanitarian assistance. These desperate responses to shocks further increase the vulnerability of these populations.

At the level of the Sahelian household, this resilience deficit often causes more and more households to fall into a debt-hunger trap, characterized by a continuous (or sometimes sudden) increase of vulnerability as the resilience of their livelihood systems collapse. It means they are extremely vulnerable to the slightest shock; there is no time to recover from a major shock as in the past. The ancient metaphor of a peasant farmer standing in water that is right up to his or her nose comes to mind, as even small ripples (shocks) can have devastating consequences for many rural people in the Sahel.

The response to this situation has been an agricultural model that has exacerbated rather than improved the crisis.

Agroecology: a different approach

The dominant approach to agricultural development in the Sahel has strongly favored "Green Revolution" thinking. It is based on the use of chemical fertilizers, herbicides and pesticides, irrigation, high mechanization, a focus on singular commercial export crops, promotion of single commodity value chains, investment in areas of good rainfall and fertile soils while ignoring less favorable dryland areas. The focus is almost solely on achieving high yields of a few crops. This approach has worked to a certain extent in favorable areas with regular rainfall, but not in the drylands of the Sahel. There, such costly technologies are too expensive, too ineffective, or both.

Seeking solutions, an increasing number of farmers are experimenting with more accessible soil restoration and water management practices that combine 'old' and 'new' ecological knowledge. These practices have shown great promise to increase soil fertility, productivity, sustainability of the natural resource base, and resilience.

They evolve around a set of farming principles also known as 'agroecology' (Box 1). **The Stockholm Resilience Center believes that food is at the root of all Sustainable Development Goals and that a transition from the industrial agricultural system to a more diverse agroecological alternative is key to a sustainable global future.**

Farming communities are generally engaging in agroecology with the support of civil society, academic and political allies.

The critical role of agroecology in building resilience

Agroecology is a multi-functional approach to farming that is productive, economically viable, socially just, resilient to climate change, sustainable and nutrition sensitive. **The underlying premise of this case study is therefore, that the progressive agroecological intensification of farming systems is the essential foundation of any effective approach to resilience in the drylands.** Without enabling small-scale farmers to use an agroecological approach to adapt to climate change and to reverse land degradation, all other initiatives to strengthen resilience cannot succeed.

But what is resilience? Resilience can be defined as "the capacity of a **system**, be it an individual, a forest, a city or an economy, to **deal with change and continue to develop**. It is about how humans and nature can use shocks and disturbances like a financial crisis or climate change to **spur renewal and innovative thinking**."¹⁹ In the context of the Sahel crisis, this means that **the onset of a shock or stresses should be overcome** in a way that progressively transforms the farming system, by overcoming the "resilience deficit" and improve the overall viability and sustainability.

In agroecology, people, communities and rural livelihoods are considered an intrinsic part of system.

For this reason, agroecological practices must be accompanied by equity, women's empowerment, good nutrition and strengthened local governance. These aspects are essential for community wellbeing and the reduction of vulnerability on the pathway to resilience. Box 1

What is agroecology?

Agroecology is an approach to farming that mimics the functioning of local ecosystems allowing for "food production that makes the best use of nature's goods and services while not damaging these resources." It applies ecology and biodiversity to the design of farming systems; uses a whole-systems approach to farming and food systems, and replaces external inputs by natural processes in soil fertility management and biological pest control. Agroecological farming systems are developed on the basis of farmers' knowledge and experimentation and link ecology, culture, economics and society to create healthy environments, food production and communities. Agroecology is considered at once a practice, a science and a movement and thus has a strong socio-political dimension.

Partly based on traditional farming practice and farmer knowledge, especially in the most vulnerable dryland areas, agroecology entails a progressive, sequential process of optimizing the use of, and synergy between, ecological processes for food production based on the priorities, resources and possibilities of rural families. It reduces both risk and dependence on expensive external inputs.

Agroecology is by nature a participatory process that is knowledge (not capital) intensive. It involves a high level of social mobilization for "farmer-to-farmer" and community to community learning. It therefore requires (and in turn, strengthens capacities for) the active participation of village leaders, mayors, women's groups, innovative farmers, local NGOs and municipal governments.

Box 2

How agroecology works for families in the Sahel - two examples

ZAI HOLES

In many parts of Burkina Faso and Mali there has been a revival of the traditional water harvesting system known as "zai holes". These are shallow pits that farmers dig in often rock-hard barren land to allow water to penetrate in which organic matter (crop residues, compost and/ or manure) is placed. The hole is typically between 10 and 15 cm deep and 20–30 cm in diameter in which organic matter is placed. The organic matter attracts worms, insects and termites, which improves soil structure and increases its water retaining capacities. Farmers grow millet or sorghum and sometimes trees in the zai holes. Farmers find zai beneficial because they efficiently collect and concentrate runoff water and function with small quantities of manure and compost. They allow farmers to expand their resource base and to increase household food security. Yields obtained on fields managed with zai are consistently higher (ranging from 870 to 1590 kg/ha) than those obtained on fields without zai which average 500–800 kg/ha.²⁰ Tens of thousands of farmers in the Sahel have been reported to use this agroecological practice, reclaiming hundreds of hectares of degraded lands.

FARMER MANAGED NATURAL REGENERATION (OF TREES)

Farmer managed natural regeneration (FMNR), consists of fostering the growth of already established indigenous trees from underground stumps on agricultural land on previously highly degraded land almost cleared form vegetation. This method is proven to be the most viable method to reintroduce tree cover.²¹ Each season bushy growth will sprout from the stumps often appearing like small shrubs. By selecting the strongest and straightest stems and pruning the rest, trees are very quickly re-established. These trees are trimmed and pruned to maximize harvests while promoting optimal growing conditions (access to water and sunlight). The decomposition of tree-contributed organic matter in agricultural fields plays a vital role to maintain the soil fertility of agricultural fields. The pruned branches can be used in the household as fire wood or sold for cash.

Trials, long-running programs and anecdotal data indicate that FMNR can at least double crop yields on low fertility soils.²² The World Bank's 'Africa Drylands Study'²³ highlighted the impressive benefits in terms of reduction of drought impacts that FMNR) can offer. FMNR was shown to actively reduce sensitivity to shocks, as well as enhance households to cope with the effects of shocks. This study compared a baseline scenario with "no trees", with a low-density tree scenario (whereby 5 trees/ha are regenerated), and high-density trees (10 trees/ha). The study found that in a group of 10 countries in East and West Africa, the projected number of poor, drought-affected people living in drylands in 2030 fell – compared to the "Business as Usual" scenario – by 13 percent with low-density tree systems and by more than 50 percent with high-density tree systems.

Farmer in East Region of Burkina Faso preparing zai planting pits and half moons, designed to capture water run-off.

Political recognition

At the international policy level, the benefits of agroecology are slowly gaining recognition. FAO's second international symposium on agroecology in 2018, entitled *Scaling Up Agroecology to Achieve the Sustainable Development Goals* (SDGs), was followed by an ambitious Scaling Up Agroecology initiative.²⁴ The Committee on World Food Security launched a landmark report in 2019 supporting global policy making for 'Agroecological and Other Innovations'.²⁵

Similarly, a growing number of countries (including some in the Sahel) have recognized the potential of agroecology for sustainable increases in productivity, enhancing biodiversity, reversing soil degradation and adapting to climate change. Specific national or local policies and programs are being developed that are supportive of agroecology.²⁶ For example, the Agriculture Development Program of the Senegalese city of Ndiob received international recognition as one of the world's best policies to scale up agroecology.²⁷

While these are important steps forward, the promotion of the Green Revolution technologies and approaches (e.g., promoting the use of chemical fertilizers, patented seeds, herbicides, and pesticides) are still perceived by governments and donors as the most promising pathway for agricultural development. Among many governments, there is also growing enthusiasm about 'next generation' biotechnologies and about "big-data" precision farming. These will only further entrench the use of agrochemicals and synthetic fertilizers. This is not an approach that will support the resilience of the most vulnerable people in the Sahel. It is either too expensive or ineffective in most parts of the drylands – or both.

To counter the growing crisis in the Sahel, and support the resilience of the most vulnerable families, it is urgent to shift to another path. Agroecology must be further amplified, both geographically and institutionally, through a process that fully integrates nutrition security, support for women farmers and gives particular attention to the needs of the most vulnerable people. Indeed, scaling up agroecology can be considered the main challenge in food and agriculture today.²⁸

What is keeping agroecology from scaling up?

This persistence of the Green Revolution model raises a central question. If agroecology is so beneficial, why then is it not spreading? For centuries, farmers have innovated and spread knowledge and practices by themselves. **If there is much evidence that agroecology has great potential to address the multiple challenges in the world, why is it not adopted more widely?**

Part of the answer is that what works for a few in one ecological zone may not work in other locations. To apply agroecology requires a high level of adaptation to each specific socio-cultural and ecological context. Agroecology is, therefore, **knowledge intensive.**

Overall, there are several structural factors that keep farmers 'locked-in' to the dominant agriculture system. These include path dependency, export orientation, compartmentalized and short-term thinking, misleading narratives and the concentration of power.²⁹

As a result, there has been very little financial, research and policy support directed to agroecology. For example, on a global scale, less than 10% of the funding that was allocated to the 15 international research centers of the CGIAR was spent on agroecology.³⁰ UK development aid for agroecological projects is less than 5% of agricultural aid and less than 0.5% of total UK aid budget since 2010.³¹

In addition, farmers have not been able to adapt to new conditions because the pace of change is much faster now than in the past. As a consequence, innovation and adoption of agroecological practices has been mostly based on 'ad-hoc', not very systematic cycles of learning, observation and spread. The innate capacity of farmers for knowledge building needs to be strengthened, made more systematic, and accelerated.

Finally, there is also a tendency among practitioners of agroecology when making efforts to scale out agroecology to seize upon opportunities to spread only a few selected innovations or technologies. These are often not sufficient to address the main causes of degradation within a holistic "systems" approach and do not reach sufficient scale. A key principle when designing strategies to scale out agroecology is that the right **"foundational innovations"** must be in place to start and sustain a gradual process of transition toward agroecological intensification for resilient livelihoods. This case study presents one experience with such an approach.

Amplifying an integrated approach to agroecology

Even without government support, millions of smallholder farmers and their allies have started to spread agroecology through "farmer-to-farmer", and community to community learning and exchange.

There are however two major drawbacks about the way this is done in most cases.

First, many practitioners tend to promote a limited set of beneficial practices, rather than support progressive agroecological intensification. In the Sahel for example, the focus has been on one or two innovations, such as composting, or permeable stone bunds along the land's contour.³² Often, these have not been followed up by complementary, more complex farming innovations. While useful and providing significant local benefits, such isolated, singular practices are insufficient to catalyze the systemic change necessary to adapt to climate change, reverse land degradation and build resilience.

Another weakness in the current promotion of agroecology is the tendency to focus on technical aspects of farming, while neglecting the related social issues that are important for resilience.

In some countries, governments have recognized the importance of sustainable land use, and supported initiatives to spread a limited set of agroecology practices across a wide territory. Rarely, though, have such initiatives integrated wider aspects of resilience, such as improving nutrition, empowering women in agriculture, addressing the needs of the most marginalized households, or to strengthening local governance in support of agroecology, let alone all of these aspects. As a result, the overall resilience impact of such initiatives was limited.

In summary, most efforts to scale up agroecology have not yet reached the necessary breadth and depth for a significant resilience impact on the livelihoods of the most vulnerable people in the Sahel.

It is for this reason that Groundswell embarked on an ambitious initiative in three Sahelian countries to integrate these aspects into agroecology and at the same time, pilot ways to scale up this approach to enhance resilience.

Before we present this initiative, in the following chapter we first examine what can be understood by 'scaling agroecology' and what are the documented pathways to do so.

2. Pathways to scale up agroecology

What is scaling up?

The use of the word 'scaling' in the context of agroecology is contested (box) in policy circles and in the literature. Yet it is the most widely used term to express the concept of spreading agroecology.

One definition of scaling up agroecology, used by Mier y Terán Giménez et al. in their 2018 paper is: "a process that leads ever-greater numbers of families to practice agroecology over ever-larger territories and which engages more people in the processing, distribution, and consumption of agroecologically produced food."

This definition emphasizes increasing the numbers of food producers and other actors adopting agroecology related practices. While useful, it does not fully embrace other critical dimensions of scaling.

Scaling agroecology is not just about the spread of specific farming practices, but also about their progressive intensification by adopting additional, often complementary practices, that build on each other, or work in synergy. In addition, scaling involves the institutional uptake of agroecology (e.g. in policy and research programs, and by other food system actors).

Considering these other critical dimensions, scaling of agroecology is best understood in three dimensions: a horizontal (outscaling), and a vertical (upscaling) process, combined with deepening (or intensification) of the agroecological practice itself.³³

Three dimensions

The first dimension, horizontal scaling, comprises the geographical and social spread to more people and communities. The second, vertical scaling, is mostly institutional in nature, and has to do with supportive markets, consumers, research and policy (such as scaling back subsidies for agro-chemicals, environmental regulations or public purchasing arrangements). The third dimension, 'deepening', relates to the progressive intensification of agroecology in the farming system. Often this involves optimizing the synergies between various practices.

Thus, effective scaling of agroecology for resilience requires building bridges between these dimensions; as well as between local-level technical actors, political and institutional actors, and science/research. There are several key factors that drive these processes.

Box 3

A note on the term 'scaling'

Most of the literature on agricultural transitions and processes of scaling up agroecology strongly emphasize their piecewise, usually disorganized ('messy'), and non-linear nature. Indeed, trial and error is inevitable in the process. Innovations are often refined and improved further along in the transition. Scaling up agroecology, therefore, involves a range of possible pathways, whose direction, speed and scale can be influenced, but can never entirely be controlled by individual actors or by actions such as state policies.

In that light, the term 'scaling up' has been contested in the context of agroecology. The term has a strong connotation of linear uptake, as it is borrowed from technical processes of market increase or expansion, as well as the 'technology transfer' paradigm in agriculture. As will be made clearer below, this is inconsistent with how agroecology tends to develop.

To address this issue, writers have coined alternative terms and concepts to refer to the spread and growth of agroecology. These include massification and amplification. However, recognizing that there are problematic aspects to either term, for reasons of simplicity and easy reference, this case study continues to use the term '(up) scaling'.

Short introduction to key drivers of scaling

Agroecology transition and scaling processes are increasingly gaining attention. One of the most commonly used descriptions is Steve Gliessman's 5-level transition framework.³⁴ In this framework, levels 3, 4 and 5 refer to processes of scaling: the redesign of food production systems (integrating crops, trees, fisheries and/or livestock), increasing connections between producers and consumers and a wider transformation of the "enabling context", consisting of policies, rules, relationships, institutions and culture. This framework however is limited in explaining the mechanisms for how to transition from one level to the next.

To complement this thinking, other authors have identified key 'drivers', 'factors', 'enablers' or 'domains' of processes of taking agroecology to scale. It is important to note that these drivers often play out at different scales: from the household to the international level.

Box 4

Foundational practices in the Sahel

In the context of the Sahel, five 'simple', accessible and proven agroecological practices that address the major issues affecting farmers are often required. In Groundswell's experience, five practices form the basis for transforming local farming systems to arrest land degradation and to adapt to climate change. For this reason, they are often referred to as 'foundational technologies'.³⁹ In no particular order, these practices are:

Tree based farming, or agroforestry through farmer managed natural regeneration (FMNR).

Soil and water conservation, including the construction of "zai" micro-water catchment basins which rehabilitated degraded, abandoned land (box 2); and permeable rock bunds along the contour of the landscape, which retain rainfall and prevent erosion.

Improved, rapid compost production, which retains moisture, thereby dramatically improving soil health and fertility.

Crop rotation and intercropping with nitrogen-fixating legumes as this rebuilds soil fertility.

Use of locally improved short cycle seeds, which helps adaptation to irregular or erratic rainfall.

Finally, experience in scaling highlights synergies: the more one can foster an overlap between these drivers, the quicker and more widespread the scaling of agroecology can become.

Below, we highlight 11 of the most commonly mentioned drivers. In order to analyze the agroecology work of Groundswell's network partners in the Sahel, their field experience is then benchmarked against these drivers, teasing out the main lessons learned.

1. Crisis

Often, the adoption of agroecological practices is catalyzed by *a context of crisis*.³⁵ This clearly applies to the Sahel, where the interlinked food, climate and security crises have strongly pre-disposed small scale farmers to adopt key agroecological practices. One telling example is the spontaneous spread from "farmer-to-farmer" of "Farmer Managed Natural Regeneration" (FMNR) of trees in Niger to millions of hectares over the past decades, as a response to the situation of severely degraded land. Likewise, FMNR's spontaneous spread to more and more farmers also occurred in regions of Mali (starting in the village of ENDE) and in Senegal.

2. Start simple

Starting with the *use of relatively 'simple', low cost, high impact agroecological practices* that quickly produce benefits and appeal for farmers³⁶ is often another key driver. This initial success motivates farmers to engage in the transition to more complex agroecological practices. The added income, enthusiasm, self-confidence and sophistication gained in adopting the first innovation will be needed in tackling a second new technique, which may be more expensive, more difficult to learn, take longer to generate benefits, or more complicated to put into practice.³⁷ Through starting with simple but also 'foundational' practices (see Box 4), farmers gain self-confidence in progressively transforming their farming system.

In addition, such practices can function as 'agroecological lighthouses' from which principles of how to work with nature radiate out to other farmers and other communities.³⁸ As such, 'starting simple' has proven a valuable principle for the scaling up of agroecology, both in numbers of farmers, at a larger geographical scale and in terms of deepening the practice.

Unfortunately, as we have seen above, in many programs promoting agroecology, practitioners consider spreading a particular set of one or two beneficial techniques as the end point. A more robust, continuous process of innovation and experimentation is often necessary to overcoming the root causes degrading the agricultural system. The scaling out of agroecology, therefore, does not stop with of only two or three 'simple' practices.

3. Access to land

Another key factor supporting the scaling of agroecology are measures to enable *access to and control over land* (as well as water, seeds and other productive resources), especially for women farmers.

When small scale farm households, and communities themselves, have long term secure access to land, they will be more ready to invest in practices to improve that land and sustain the natural resource base. For this reason, a condition for scaling of agroecology for resilience is securing land for the more vulnerable groups, particularly women farmers, vis-à-vis other claims on community land.⁴⁰

This may involve stopping land and resource grabbing, defending indigenous territories, and constructing equitable, long term secure access to land by communities. Only when small scale farmers, including women, have secure access to land can agroecology be taken to scale.⁴¹ This implies that in some contexts, scaling up agroecology requires a struggle of farmer movements to ensure access to and control of their traditional community lands.⁴²

4. Equitable social organization

Many experiences indicate that *equitable social organization* is important for agroecology to spread. This is vital for processes of farmer- to- farmer, and community- to- community learning. It also is critical to foster linkages from the rural to the urban and from the technical to the political levels.⁴³ Indeed, "social organization and social fabric are the growth media on which agroecology advances".⁴⁴

In this respect, strengthening the agency of smallholder farmer organizations is a crucial factor for the upscaling of agroecology.⁴⁵ Social organization also enables farmers to build alliances with other actors. For example, the Alliance for Food Sovereignty in Africa (AFSA), comprised of producer organizations, policy researchers and NGOs, has been crucial for advancing agroecology across Africa.⁴⁶ Another example is the Alliance for Agroecology in West Africa (3AO) platform, which is composed of farmer organizations, research institutes, international NGOs and social movements promoting agroecological transition in West Africa to ensure resilient livelihoods.⁴⁷ Internationally, the Nyéléni Food Sovereignty network⁴⁸, with a convening centre in Mali, has been key in putting agroecology on the regional and global policy agendas.

One of the greatest challenges to strengthening the resilience of the current farming and food systems, including in the Sahel, is the power imbalance related to gender, age, class, religion, health and race. Thus, in processes of social organizing, addressing inequity is important to ensure that the voices of the most vulnerable people are heard.⁴⁹ Specifically, it requires a strong level of local, decentralized decision making, tailoring strategies and additional resources to the most marginalized groups, strengthening local leadership and organizational capacity, ensuring the accountability and transparency of governments, and stronger governance at all levels.⁵⁰

5. Horizontal knowledge building

Social networks such as those described above are often fertile ground for processes of *horizontal knowledge building* which is central to scaling of agroecology. Through horizontal learning, locally relevant knowledge about agroecology is created, shared and built.⁵¹ This implies actively including and combining traditional, local, farmer, academic and contemporary sets of knowledge about farming. In the words of FAO: *scaling of agroecology requires fostering experience and knowledge sharing, collaborative research and developing new ways of working between farmers and researchers*.⁵²

A key horizontal method is farmer-to-farmer learning. This emphasizes on-farm experimentation, and participatory action research based on farmers' needs, aspirations and circumstances. In the majority of documented cases, horizontal, farmer-to-farmer learning was supported by complementary tools such as booklets, TV and radio programs, and social media. Notably, this horizontal approach requires a deep understanding of the ways farmers adapt biodiversity and the ecological underpinnings of their complex farming systems.⁵³

6. Favorable markets

Markets for agroecology are considered a 'strategic socio-political arena for scaling agroecology'.⁵⁴ The promotion of special markets for agroecological products is key for upscaling processes because of the underlying benefits of health, nutrition and sustainability.⁵⁵ Indeed, the effects of agroecology on dietary diversity and health are becoming more apparent.⁵⁶ This has generated increased concern about food and nutrition security, and has driven up the demand for agroecologically produced foods.

These markets can be international. However, agroecological production tends to be focused on local, regional and territorial scales and by short supply chains. Such markets for agroecology seek to avoid 'middlemen' in favor of direct linkages between consumers and farmers/locally based processors.

It has been shown that agroecology is best supported through markets that are 'nested', i.e., those that are embedded in social relations.⁵⁷ Contrary to global markets, local, nested markets can be more easily structured to value the ecological, social and political functions and the products of agroecology. Examples include community supported agriculture, farm shops, participatory guarantee systems, public purchasing arrangements and barter.

Experience shows that effective markets for agroecology are often constructed through the activities of women's groups, food producers, urban residents and social movements.⁵⁸ It is critical to scaling for resilience that these markets are accessible, fair, profitable and fulfilling for agroecological food producers.⁵⁹



7. Women self-empowerment

For agroecology to reach its full potential to contribute to resilience, specific complementary actions must be taken to allow *women to strengthen their agency and power.*

Agroecology on its own does not necessarily do so.

Rural women in the Sahel lack access to productive resources, opportunities and power to make decisions. The specific agricultural knowledge of women is however essential for nutrition, sustainable management of genetic and natural resources and adaptation of agriculture to climate change.⁶⁰ In addition, women are often responsible for the land when men migrate seasonally, which is common in the Sahel.

For scaling agroecology, therefore, it is critical that women are recognized as key actors and knowledgeholders. While agroecology is far more conducive to empowering women than conventional, high external input agriculture, the evidence shows that this does not happen by itself. Explicit strategies must be adopted to ensure that women have secure access to productive resources (land, seeds, animals, tools, credit, and technical advisory services); have a voice in household and community level decision-making, and develop the leadership and organizational capacity to negotiate their interests.

One concrete strategy is to enable women to organize into groups to act collectively.⁶¹ This also often involves enabling women to restructure the sharing of responsibilities with men to reduce their work load. It also requires targeted actions specifically designed for tackling key gender issues, including abuse.

8. Supportive discourse

The way that language is used to stimulate debates, policy and practice, also known as narratives or discourse, is another critical domain for the upscaling of agroecology.⁶² This is so important because agroecology is based on a completely different set of values about food, nature and people than the industrial, monoculture, high external input farming system that characterizes the Green Revolution.⁶³ A *clear, supportive discourse* that is understood and reproduced by society can create legitimacy and thereby act as a powerful mobilizing tool.⁶⁴

- This often requires unlocking ideological barriers to political recognition and support of agroecology as
 a sustainable and resilient way of farming. It requires modifying sector and crop specific approaches to
 research and rural technical advisory services. Most significantly, it entails dismantling persistent beliefs
 about what constitutes 'modern agriculture'. Several examples of such beliefs are that:⁶⁵
- monocultures, hybrid seeds and chemical fertilizers are more productive
- agroecology is 'backwards' because it entails a return to the past
- agroecology rejects modern science and prevents rural people to advance in life
- agroecology is not capable of 'feeding the world' in light of population growth projected to 10 billion by 2050.

On the other hand, supportive discourse for agroecology articulates for example that it:66

- is an integrated farm systems approach and therefore offers a response to multiple crises
- relies on cultural resonance and holistic worldviews
- values family farmers and indigenous peoples' autonomy, knowledge and participation in developing context-specific agroecological innovations
- embraces food sovereignty, and localized democratic control over land and food production
- contributes to a rights-based approach to food and agriculture

9. Coherent policies

Complementary and coherent policies are needed to create an enabling policy environment for the upscaling of agroecology. A new generation of public policies must recognize and strengthen the role of local institutions, including organizations of family farmers, in developing and regulating agri-food systems particularly for localized economies and markets.

Overall, this requires a review of institutional, policy, legal and financial frameworks through the lens of upscaling agroecology.

The decentralized application of such policies, within local government plans and budgets is important in this regard. While some policy change has occurred in recent years, overall, the dominant pattern of agricultural spending remains focused on the industrial agrifood system – thus, coherence among policies is fundamental.⁶⁷

In Africa, this need for coherence is particularly important. All members of the African Union have agreed to increase public expenditure on agriculture in light of their Maputo/ Malabo commitment of using 10% of the national budget to increase agricultural productivity. This could potentially catalyze a breakthrough for agroecology. However, many countries have not yet reached their goal of 10% spending on agriculture, nor allocated a part of it specifically to agroecology.

For scaling agroecology, there is an urgent need to re-orient public expenditure to support incentives that enable farmers to sustainably intensify their agriculture using agroecological practices. It is well established that complementary investments in soil and water conservation, and in increasing soil organic matter, are crucial for efficient and optimal nutrient uptake, especially on degraded soils.

Without these subsidies, studies indicate, the use of chemical fertilizer is often not profitable, does not lead to longer term or sustainable yield increases, and degrades soils ⁶⁸ while undermining National Plans for Climate Adaptation, and for the restoration of forested and degraded land.⁶⁹

Concretely, as has been pointed out by many actors, policies conducive to agroecology must among others:

- enable small scale farmers, men and women, to develop networks that strengthen farming systems based on agroecological principles⁷⁰
- be centered around supportive trade and environment policies
- secure small holder farmers' access to natural and other productive resources
- provide public goods such as rural infrastructure, roads, markets, food processing and storage facilities and credit
- strengthen community-based organizations to ensure they are able to access these services
- redirect financial support away from chemical inputs towards incentives for agroecological practices
- promote public procurement of agroecologically produced food
- give agroecology a central role in national climate adaptation plans and strategies
- increase public finance, including subsidies, or payments for eco-system services, for agroecology (e.g. in Official Development Assistance)
- prioritize agroecology in agricultural research and development and extension services⁷¹

10. Responsible governance

Responsible governance at all levels is a critical determinant affecting the extent to which upscaling of agroecology occurs across sectors, regions and countries.⁷² Because agroecology is highly context specific, and policy making in West Africa is increasingly decentralized, **local governance** is particularly important for agroecology.

Local governance can be considered a mix between governance processes driven locally by community leaders and civil society (e.g. farmer organizations or women's groups), and elected rural municipal councils who make their own development plans and budgets.

An example of responsible local governance for agroecology is the enforcement of local by-laws by village chiefs and elders (in Burkina Faso, or Mali), to control bush burning and tree cutting. Another is the establishment of community based structures and farmer volunteers who test, adapt and spread agroecological practices suited to their context and conditions.

In addition to these existing examples, elected municipal councils and decentralized technical officials must promote agroecological solutions adapted to local conditions, set priorities, and coordinate the work of multiple actors in support of agroecology and resilience.

The importance of governance for agroecology has been widely recognized. For example, FAO proposes to take agroecology to scale through support for an integrated and participatory territorial governance process. This involves support for territorial planning, multi-actor conflict resolution, and promoting youth employment.⁷³

Unfortunately, the capacity of local governance to support agroecology for resilience is very weak in the Sahel. Key challenges include a lack of awareness of agroecology and the role it can play in reversing land degradation and adapting to climate change, and a failure to include the most vulnerable and poorest groups, including women.⁷⁴

Effectively scaling agroecology requires assessing the various power dynamics at play in governance processes and, as in equity, addressing prevailing views on the roles of women, youth and different ethnic or social groups. For example, often the same discriminatory social and cultural practices that work against women are manifest or latent within governance structures.⁷⁵



Women self. empowerment

11. Removing barriers

For the upscaling of agroecology to have a significant impact, it is important to *remove structural barriers*. This involves addressing the systemic 'lock-ins' that prevent a transition to agroecology.⁷⁶ Many of these lock-ins have already been identified above. In the context of the Sahel the most important are:⁷⁷

Favorable markets Access to land

- marginalization of women, including their access to land, decision making and credit
- monopoly seed laws
- lack of research on agroecology
- influence of agribusiness

As noted above, a specific barrier for agroecology in Africa is the Farm Input Subsidy Programs (FISP), which are used to subsidize chemical fertilizers and hybrid seeds. A 2016 study found that these subsidies have been largely ineffective. Their direct contributions to higher yields and reduced food prices are disputed and short term at best. FISP have failed to directly benefit the poor and most vulnerable, who are mostly women. Instead of promoting ecological production methods, they increase the dependence of farmers on expensive external inputs that are only profitable when subsidized.⁷⁸

3. A case study from Burkina Faso, Senegal and Mali

The context of agroecology in Mali, Burkina Faso and Senegal

In the drylands of Burkina Faso, Mali and Senegal, agriculture of sorghum, pearl millet, cowpeas, peanuts, and animal husbandry are the foundation of rural livelihoods. For centuries, under conditions of low population and abundant land, farm families largely ensured their own food security, based on their local knowledge and sustainable practices. This included the use of extensive fallowing to restore soil fertility, collaborative relationships with animal herders that provided dung, and use of a diverse array of crops and varieties adapted to local conditions.

For many reasons, the traditional farming system became increasingly inadequate to meet the needs of rural livelihoods. A participatory diagnostic assessment undertaken by Groundswell and its partners in 2014 indicated a significant decline in soil fertility and productivity of these crops in recent years. As noted above, this has been caused by: increased population and investment pressure on the land, the reduction or elimination of the fallowing practices traditionally used to maintain and recover soil fertility, and climate change. Food and nutrition insecurity have increased as a result, increasing the number of chronically vulnerable rural households.

In response, farmers across the Sahel sought out, tested and spread new agroecological practices to adapt to their changing conditions. Most notable has been the development of soil and water conservation techniques, including the zaï planting pits, rock bunds along the contour, and farmer managed natural regeneration of trees on crop land. These indigenous responses have started a process of regreening the Sahel

The scaling out of these localized initiatives however has been challenging. Beyond the environmental and climatic factors, there are strongly linked socio-cultural factors in the Sahel that affect successful scaling of agroecology for resilience.

One is the growing inequality within communities. Over 20% of farm households in the drylands have become ultra-poor. In order to survive, many of these households had to borrow money or grain, and later sell much of their harvests to pay back loans. They had to eat their seed stocks, and sell most of their small livestock and other physical assets. In the dry land Sahelian context, such ultra-poor farm households cannot extricate themselves from the 'hunger-poverty trap" without specialized external assistance. In most development or agroecological initiatives, this type of specialized consideration and support is lacking, marginalizing these households further.

A second issue is that deep-rooted social and cultural norms restrict women's access to productive resources (land, water seeds, animals, credit), decision making and basic services. In addition, early or forced marriage for girls is common. At the crux of the issue is that women have multiple responsibilities in agricultural production and for ensuring food security and good nutrition within their households.

In such a context, initiatives to scale out agroecology in Mali, Burkina Faso and Senegal without providing specialized support tailored to the specific social and livelihood needs of women have not been effective.

Finally, governmental support for agroecology is largely lacking. After years of civil society pressure, governmental awareness in the region of the benefits of agroecology is growing,⁷⁹ although concrete programs and policies have not yet fully materialized.

The Agroecology Plus Six initiative: An integrated approach to agroecology

Groundswell International and its partner organizations in West Africa (ANSD in Burkina Faso; Sahel Eco in Mali; and Agrecol Afrique in Senegal) implemented the 'Agroecology Plus Six' program over 18 months

between 2016 and 2017. This initiative was intended to provide a 'proof of concept' for agroecology as the foundation for resilience. It was designed to learn lessons on how to spread an integrated approach to agroecology across the Sahelian region, in order to reverse land degradation, enable small scale farmers in the drylands to adapt to climate change, strengthen the resilience of the social and ecological farming system, and escape from the hunger and debt trap.

The underlying premise of the initiative was that progressive, agroecological intensification is essential to resilience in the drylands, while conventional agriculture worsens negative trends.

As we have seen above, it has become clear that agroecology requires complementary strategies to build resilience. Therefore, after decades of experience in the region, an innovative approach was piloted. Rather than focusing only on agroecological production practices, Groundswell International and its partners in Mali, Burkina Faso and Senegal (hereafter: Groundswell) integrated elements of equity, women's empowerment and nutrition into the promotion and scaling of agroecology.

This required significant shifts in attitudes, organizational capacities and ways of working for the communities, governance structures and NGOs involved.

In the Tominian Cercle of Ségou, Mali and inthe Eastern Region of Burkina Faso, Groundswell engaged communities they already worked with in agroecology scaling strategies. In Senegal, new activities to promote agroecology were started in the Kaffrine region where no previous relationships with communities existed. Activities were carried out in a total of 28 'study villages' as well as in 160 'scaling out villages'.

This initiative took place amidst a context of elections in Senegal, political instability in Burkina Faso and major security issues in Mali. This influenced the activities as it had an impact on the ability of key actors to travel, on the effectiveness and relevance of advocacy activities and on the uptake of agroecology-related messages by the media.



Scaling agroecology through six interlinked strategies

The innovative, integrated approach to scale up agroecology for resilience in this initiative consisted of six mutually reinforcing strategies: 1) Progressive **intensification and spreading of agroecological practice;** 2) **Women's self-empowerment in agriculture** and rural livelihoods; 3) **Equity**: ensuring that initiatives are tailored to the specific needs of the most vulnerable households and groups ; 4) **Integrating nutrition** into the promotion of agroecology 5) **Communication and advocacy**; 6) **Strengthening local governance**. Below, we present each of these strategies in more detail.

Strategy 1: Progressive intensification and spreading of agroecological practice

Over two rainy seasons, the communities in Mali and Burkina Faso with whom Groundswell's partners worked were highly successful in territorially scaling out some combination of the agroecology practices considered 'foundational' for the transformation of local farming systems (see Box 4). A gradual transition to a more resilient, sustainable and productive farming system could only be achieved through a *progressive* application of agroecological principles.

Central to this step-by-step process was intensive "farmer-to-farmer" learning and the creation of a network of volunteer farmer agroecology promoters in each village to learn and apply agroecology practices on their land. Communities self-identified "champion farmers" from their midst. These champions were willing to lead the way forward. They trained at least 4 to 5 other interested farmers in their village on selected agroecology innovations.

A **territorial approac**h was adopted by clustering villages together, based on a mixture of market, marriage and geographic criteria. The most dynamic and motivated village within each cluster initiated a process of agroecological innovation, and subsequently served as a learning and training site for neighboring villages in the cluster. In inter-village workshops, farmer delegates shared the results of their agroecological innovations, assessing what went well and what had to be improved.

The final result was that 4,031 households in 184 villages in the three country regions started to practice at least 2 innovations over only two farming seasons. As hardly any agroecological principles were known or practiced in these households before, this result greatly surpassed plans and expectations. Moreover, these families are now convinced and ready to further intensify their farming practices, enhancing both yields and resilience.

On a much more reduced scale, more complicated social and technical innovations were tested and adapted in a number of pilot villages. In 18 months, it was not possible to scale out the latter. But initial success indicates that a successful agroecological transition process can be characterized as successive 'waves' of innovation, combined and sequenced to enhance synergies and adapted to each context.

Notably, the process was most successful where trust existed between Groundswell and the communities and less so in the Kaffrine region of Senegal, where there had been no pre-existing relations between the communities and Groundswell's partner Agrecol Afrique.

DRIVERS ADDRESSED

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Start simple
 Equitable social organization

- 5. Horizontal knowledge building
- . Holizolital kilowledge bullding

2 Strategy 2: Women's self-empowerment in agriculture and rural livelihoods

Through the initiative, women in the communities strengthened both their technical capacities and their leadership, confidence, knowledge and organization. These changes in turn improved their role in household and community decision making.

Various strategies proved particularly effective for women's self-empowerment in agroecology:

- Undertaking the Women's Empowerment in Agriculture index (WEIA) to better identify which of the domains of women's empowerment were most in need of strengthening.
- Ensuring that women leaders participated in learning visits and in technical training on agroecological innovations
- Enabling women to gain access to productive assets, particularly secure access to land, water, credit and animals
- Organizing a contest on best agroecological practices with a special prize for women for each category
- Decentralizing the training workshops so that women did not need to travel long distances or for extended periods to attend
- Engaging the whole community, particularly the village chiefs, religious leaders, and elders, in a constructive dialogue about gender issues and the implications for resilience

The most important basis of these activities was **organization**: encouraging women to form (savings and credit) groups, and so broadening the base of women leadership. It also allowed them to have a strong collective voice in community-wide discussions.

This was closely tied to the agroecological training activities described above, through which women became farmer trainers, gaining in status and respect in their communities. It also started to change the way men talked about women. "She is now my teacher", one man said, indicating a reversal of traditional roles.

Some of the key lessons learned in women self-empowerment evolved around the effectiveness of combining entertainment with learning, planning trainings in the evenings (which allowed women to participate), and imposing a quota for women participation for events.



DRIVERS ADDRESSED

- 2. Start simple
- 4. Equitable social organization
- 5. Horizontal knowledge building
- 7. Women's self-empowerment
- 8. Supportive discourse
- 11. Removing barriers

Strategy 3 Equity: Ensuring that initiatives are tailored to the specific needs of the most vulnerable households

As noted above, the needs of poorer, more vulnerable households are often significantly different from those of the better-off households. Not all farmers have equal access to information and ability to apply technical advice. Some farm households are much more vulnerable to risk, and to food insecurity, than others.

Groundswell therefore developed specific, differentiated strategies in order to engage the more vulnerable population within the communities in agroecology and strengthen their resilience. This included facilitating the full participation of these in the selection and planning of tailored activities, designed for their specific needs.

These families were identified by using the Household Wealth Ranking and the Household Food Insecurity Access Score (HFIAS). These methods revealed the exploitative mechanisms that caused the hunger-debt trap, particularly for the poorer households. Subsequent activities included training the identified families in 'foundational' agroecological innovations, the provision of locally improved seeds, *warrantage* (a stocking system to enable farmers to sell at higher prices), and participation in a savings and credit system.

All of this was done in close collaboration with village leaders. Indeed, a major factor that helped the engagement of these families in agroecology, was skilful facilitation of dialogue and awareness raising within the village. Both representatives of the more vulnerable families and the village chiefs and elders identified their existing values as well as social and cultural solidarity mechanisms in their village. They discussed how these could be strengthened, in support of more families adopting and spreading agroecological practices. This dialogue led to more acceptance and understanding within the community about sensitive issues related to providing specialized training and (in some cases) material support for the most vulnerable households.

The combination of various equity-focused activities, including those focused on marginalized women, succeeded in generating significant economic benefits. They also helped more vulnerable households to **"avoid losses"**. The evidence indicated that the most vulnerable households:

- avoided exploitative interest rates and saved income from having to sell agricultural produce cheaply just after harvest thanks to savings and credit groups and the *warrantage* system
- avoided having to sell animals and other assets at low prices to meet food needs
- increased their overall food production and did not have to purchase as much food during the lean season, at very high prices
- shortened the 'lean season' because the first harvest came sooner, thanks to improved short cycle seeds

Finally, work to integrate equity in the design and implementation of agroecology **helped strengthen community mechanisms in support of solidarity.** There was greater community awareness of the issues of social and gender equity, and an acceptance to take steps to address these issues.

DRIVERS ADDRESSED

Equitable social organization
 Horizontal knowledge building
 Supportive discourse

10.Responsible governance

11. Removing barriers

Strategy 4: Integrating nutrition into the promotion of agroecology

In spreading its approach to agroecology for resilience, Groundswell incorporated relatively low-cost and simple nutrition-related activities and tools. These included raising awareness in communities on the causes of malnutrition and on improved nutrition practices; diversifying production and promoting vegetable gardening; promoting the self-consumption of crops; processing and marketing of non-timber forest products and fostering culinary knowledge. These activities led to more motivation in rural communities for agroecological diversification practices.

For example, women started to grow baobab and moringa and used their leaves to prepare nutritious porridge and other dishes. As a result of the promotion of vegetable gardening, people in the villages started to eat more healthy, traditional local foods. Women who became skilled in preparing these foods are now recognized as the 'chefs' of the villages - a prestigious title. Various men have become highly interested in gardening and want to have more fresh vegetables. They stated they now 'even' eat lettuce and take on gardening tasks when the women are absent.

It was critical to implement these activities in close consultation with local government structures, especially at the decentralized level, in order to ensure a multi-actor and multi-sectoral approach that is so crucial in nutrition.

Not all of the activities were easy to undertake. For example, vegetable gardening was not feasible in villages where women did not have access to land or water. In some cases, women have to walk very far to find water, which made dry season gardening impractical, particularly for women who were not very strong.

In light of these constraints, Groundswell's partners made efforts to secure access to land, especially for women, so they could grow vegetables there. While this turned out to be difficult, some success was achieved. In Mali for example, several women groups managed to sign **land use agreements** for a minimum of 5 years with the village chief and the land owner (and sometimes the mayor). In Senegal, women persuaded the village chief to give them land after which they signed an agreement with the mayor. The participation of both the village chief and the mayor of the municipal council turned out to be crucial. But these two highlights were difficult and hard-won. It remains a major, long term challenge in the Sahel for women to gain land for farming or dry season vegetable gardening.

Another insight was related to the importance of building markets. For example, the planned strategy to promote processing and selling of non-timber forest products in Mali was not very successful, as the demand was too low.

DRIVERS ADDRESSED

- 2. Equitable social organization
- 5. Horizontal knowledge building
- 7. Women self-empowerment
- 8. Supportive discourse
- 10. Removing barriers

5 Strategy 5: Communication and advocacy

In order to generate increased support for scaling agroecology, Groundswell reached out to a variety of actors and groups on an ongoing basis. Different communication methods were used to generate motivation and interest among farmers, community leaders, technical services, local authorities, teachers, civil society organizations and other actors in scaling out agroecology for resilience.

A major insight from this work is the importance of building alliances and coalitions with other organizations and platforms that have large or complementary constituencies and strategies and/ or direct access to decision makers. Box 5 provides highlights of successful collaborative advocacy.

Some examples of successful activities:

- Multi-day 'caravans' in which key local and government officials visited communities with successful
 agroecology activities, enabling village leaders and farmers to engage directly with policy makers while
 generating widespread media coverage
- Broadcasting farmer debates and testimonies on rural radio on key issues, including climate change, agroforestry and soil and water conservation. This helped reach a mass audience in rural areas
- Festive awareness raising events, including film projections and rural theatre plays and skits to stimulate debate and reflection
- Competitions and contests in districts to raise awareness on agroecology. The purpose was recognizing
 and rewarding both men and women champions on either agroecology practices or dishes prepared
 with agro-ecologically produced traditional crops.
- Establishment of farmer field schools that serve as a demonstration site
- Excursions and learning visits for local teachers and students, as well as community leaders (traditional, women and religious leaders) to the fields of champion farmers

Box 5

Highlights of policy advocacy

In June of 2017, Sahel Eco (Mali) collaborated with others to arrange the participation of four agroecological farmers in official Environment Day activities in the regional capital of Mopti. At the event, which was attended by various policy makers, the farmers exhibited and sold processed non-timber forest products: honey, shea butter and soumbala (a nutrition dense condiment included in sauces). In addition, Sahel Eco co-organized a successful Agroecology Day in Tominian to raise the visibility of agroecology with local authorities and an international three day agroforestry forum "The Call of Mopti", which articulated concrete policy changes, that was signed by all the major participating organizations. All of these activities enabled local and national agricultural and environmental services, UN agencies and NGOs across Mali to engage in joint dialogue and reflection on policy for agroecology.

Agrecol Afrique (Senegal) developed an agreement for collaborative partnership with the association of organic producers (FENAB) for undertaking joint advocacy around agroecology to influence policy makers. Agrecol also organized and facilitated a national workshop in 2016 on how to strengthen informal farmer managed seed systems for resilience and the linkages with the formal seed system, in collaboration with other national level actors (universities, agricultural research, extension and farm cooperatives) in Senegal. Among other things, this has resulted in a structural collaboration between the universities, Agrecol and other NGOs in an official masters program on agroecology.

In Burkina Faso, in 2016, ANSD organized a series of multi-stakeholder workshops for municipal government councilors, heads of local technical services, sub-prefects and mayors and leaders of local farmer organizations. This raised awareness of, and support for agroecology as a way to strengthen resilience and better multi-actor coordination within the municipalities.

One key result was that local government plans, budgets and planning processes were effectively adapted to include agroecology. In two communes in Mali, 5 year development plans were changed to **include adaptation and mitigation measures for climate change based on agroecological principles. And in two communes in** Burkina Faso, similar changes were made to local development plans. In addition, there has been a wider catalyzing effect: NGOs and communities that took part in the initiative are currently influencing other actors to promote similar integrated agroecology strategies, policies and programs.

DRIVERS ADDRESSED

- 5. Horizontal knowledge building
- 4. Equitable social organization
- 8. Supportive discourse
- 9. Coherent policies
- 11. Removing barriers

6 Strategy 6: Strengthening local governance

As indicated above, central in the Agroecology Plus Six initiative was the aim to strengthen local governance for agroecology. Municipal councilors, mayors, technical and administrative staff, community leaders and heads of households were engaged in a variety of activities to raise awareness on agroecology, strengthen multi-actor coordination at the territorial level for resilience, and foster community organization & leadership.

Various activities contributed to these goals. For example, local governance officials and elected representatives made site visits to learn, first hand, how village-based leaders and organizations were applying agroecological principles and innovations to build resilience. Other moments of interaction and coordination occurred when village delegates participated in events led by those responsible for district planning at the municipal level or when key government officials were invited to attend inter-village planning and training workshops. Improved governance for resilience also involved developing strong working relationships between the communities, NGOs and local governments.

Importantly, governance at the community level was strengthened. **Each participating village was** supported to lead and manage its own agroecology based resilience activities.

In each case, communities made decisions to either strengthen an existing structure, or establish a new representative structure to promote agroecology (i.e., Agroecological Committees or AEC's). These committees had the overall responsibility for selecting volunteer farmer promoters and overseeing the community based agroecology activities in their village. The composition of the AECs consisted of representatives of the existing interest groups within the village, including traditional leaders, women leaders, and delegates from various farmer groups. The AECs also had responsibility for monitoring activities and results related to the number of farmers trained and the practice of agroecological innovations.

In combination with the various outreach and advocacy strategies, **these activities improved the capacities** of local actors for assessing, diagnosing, planning, implementing and evaluating agroecology initiatives at both the community and municipal government level.

This was significant, because participatory self assessments had indicated that most community level organizations were relatively strong in mobilizing human resources, in consultative decision making and leadership commitment but were generally weak in terms of planning, circulation of information, mobilizing their own financial and material resources, negotiation skills, monitoring and evaluation of activities.

These strategies also made local governance structures such as municipal councils, as well as communities, rural women's groups and households much more aware of the integrated approach of agroecology, and helped to get it accepted by the broader society. This helped shift their understanding of how to scale agroecology from the promotion of a set of technologies, to the promotion of a longer term process of agroecological intensification.

DRIVERS ADDRESSED

2. Start simple

3. Access to land

- 4. Equitable social organization
- 5. Horizontal knowledge building
- 10. Responsible governance
- 11. Removing barriers

Results

As a result of the Agroecology Plus Six initiative, in 18 months, over 9,000 households across 148 villages in Mali, Senegal and Burkina Faso started to practice a combination of agroecological innovations that started to make their farming systems more productive and resilient to prolonged drought, depleted soils and climate change.

In addition, the initiative changed attitudes, understanding, organizational capacity, procedures and rural development plans in support of agroecology for resilience. The position and participation of the most vulnerable households in the respective areas was strengthened. Many women took on roles as agents of change and gained access to resources. This enabled them to start improving household resilience.

While it was impossible to address all the socio-cultural barriers to equity within agroecology in this short time frame, Groundswell did see significantly more women taking (or influencing) decisions in their households and in their fields, and improving the diversity of diets.

These are all good proxy indicators of increased resilience.

In summary, long-term socio-cultural changes started to develop related to knowledge, attitude and practices both at the community, rural municipality and NGO level. Through its participatory, bottom-up approach, the Agroecology Plus Six initiative fostered community ownership, agency and responsibility. The initiative gave visibility⁸⁰ to an integrated approach to resilience with agroecology at its core which is now starting to receive recognition even at the international level.⁸¹ This was a solid achievement in a short time, upon which the longer term effort of further upscaling agroecology can continue.

Proof of concept

Designed to create a 'proof of concept', Groundswell's experience of Agroecology Plus Six presents evidence of an effective approach to strengthen the resilience of millions of dryland farmers in the Sahel.

The crux of the concept lies in enhancing synergies that can enable communities, including households caught in the hunger/debt trap **to eventually develop and sustain self-supporting, resilient livelihoods by transforming their farming system**. The experience of Groundswell across three different countries indicates that this concept works and can be an effective way to launch a longer term scaling out initiative for resilience.⁸²

Overall, these strategies have been taken on board by communities who are now actively engaging with them, sustaining the activities for scaling out agroecology in their own way. For example, women have started to enhance vegetable gardening independently, increasing the supply of healthy food. New women's Savings and Credit groups are being self-organized which allows participating women to strengthen their resilience autonomously and invest in their agroecological farming system. More generally, farmers in participating villages now increasingly prefer local healthy foods, and have diversified their diets, contributing to better nutrition. The Agroecological Committees and volunteer promoters continue to spread proven agroecological practices, while also testing additional innovations.

What this "proof of concept" case study also makes clear **is that building resilience in the dry lands of the Sahel, by transforming the social and farming system, is a long term, gradual process.** Two years is relatively little time to strengthen local institutional capacities sufficiently. Many more years, and iterative cycles in applying and deepening the process are required to reinforce the organizational and leadership capacities is required to embed this resilience approach into the local social and institutional fabric as the new 'norm' and to scale it out to reach millions of farm households.

Priority Challenges

There are several broad categories of constraints to this strategy for upscaling agroecology.

One category relates to the **integrated**, **step-by-step and bottom-up nature of the proposed process and strategies outlined here.** Many actors engaged in resilience, including practitioners of agroecology, select just one or two technologies to spread using a **linear**, **top-down 'transfer of technologies' approach**. They often do not consider local ownership of broader strategies within a systems perspective (in the context of the drylands, the social and agroecological farming system) for transformation. These strategies involve a gradual progressive process, finding the optimal sequence and combination of technical innovations to promote, while addressing the social dimensions (equity and gender issues)in a culturally sensitive way, and strengthening local organizational capacity. All these inter-linked strategies are crucial for the effectiveness of the scaling strategy.

Secondly, in many regions in the Sahel, there is **inadequate local technical expertise** and low institutional capacity for facilitating inclusive participation in assessing and addressing the interrelated root causes of vulnerability. Local governments often have limited knowledge to identify systems oriented solutions, and engage in planning from a resilience lens. This means that development plans of rural municipalities often remain largely focused on physical infrastructure (roads, markets, schools), to the detriment of livelihood promotion, risk reduction, natural resource management, agroecology and resilience.

This contributes to the third challenge: **the lack of a coordinated integrated, bottom–up, multi-sector initiatives for resilience.** This relates to the disjuncture between nutrition, resilience and agriculture in the Sahel. A contributing factor is that many actors have the narrow perception that nutrition is mostly a health issue and also that increased food production and income (or crop diversity) will automatically solve the problem of chronic malnutrition. For this reason, most agricultural programs assume, incorrectly, positive effects on nutrition. **There is a general absence of nutrition indicators and targets within agricultural development programs of all types, including for agroecology**.

A fourth challenge is that an increasing number of farmers in the Sahel region have been **deeply influenced** by technical advice and support that favors mono-cropping and use of agrochemicals. Other small holder farmers, who are usually living in marginal areas, or who are very poor, have retained their traditional "slash and burn" practices even though they lack sufficient land for fallowing to restore soil fertility. In the absence of a viable, agroecological alternative, both categories of farmers are 'locked-in' to a farming system that

has increasingly high risks (especially if dependent on expensive inputs), degrades the natural resource base, (particularly soils), and which is not adapted to climate change.

The fifth challenge to adopting agroecology for strengthening resilience, as described above relates to persistent **inequity within rural communities**. Agricultural programs tend not to differentiate between different categories of farmers in rural communities.

A sixth main category of constraints is that most governments and donors prefer **short term program cycles**, and require quite rigid implementation of predetermined activities that are not designed with a resilience lens. As a result, other actors working in the same area may be promoting practices that provide short term economic benefits, for example through improved seed and support for the value chain of specific crops. But often such initiatives fail to address the continued degradation of the natural resource base, particularly soil. Because such initiatives often are comprised of just two or three innovations, they do not aim to transform the farming system for resilience, and may even work against it.

The final category of constraints to the integrated approach of agroecology for resilience relates to the **local socio-ecological context**, including land insecurity (especially for women), the negative societal image of small scale farming, the rural exodus of youth, a diminishing rural workforce and the increasingly difficult security situation (especially in Mali and Burkina Faso). Particularly the last constraint requires conflict prevention and peace-making initiatives to be promoted by national and local governments. There is a strong potential synergy to combine conflict prevention with strong integrated programs to strengthen the resilience of rural livelihoods through agroecology.

4. Key principles for scaling agroecology in the Sahel

There is no predefined, formula for scaling agroecology for resilience. The actual combination and sequencing of agroecological and social innovations depends on what the community needs and prioritizes, and on other highly localized contextual factors.

However, Groundswell's experience across the Sahel, **several principles "that rise above context"** have emerged about the most effective process for strengthening the resilience of dryland farmers in the Sahel through agroecology.

PRINCIPLE 1: Follow a progressive process

It is not feasible to promote many different changes in practice all at once for an integrated approach. But neither is it effective to limit efforts to strengthen resilience to just a few innovations. **The challenge is find a way to calibrate and sequence the promotion of new innovations, combining short-term "wins" with "longer-term wins" for optimal effect.**

Start as simple as possible. Farmers cannot start to do everything at the same time. Awareness raising on agroecology is a vital first step. This involves identifying agroecological innovations that had already proven themselves in the respective agroecological zone, taking farmer leaders to see them, and to talk directly to other farmers with experience. These innovations must be relevant, offering a solution to a real problem or need that the communities perceive they have. One example is soil degradation: quick composting gives direct results and therefore immediately interests farmers. Initially, focus mostly on essential information sharing on these innovations and then slowly build up to the first wave of on-farm, community managed experimentation.

Overall, start with the promotion of a 'first wave' combining two or three of such foundational agroecology practices (Box 4) to lay the basis for the transition. These practices will produce short to medium term benefits, and generate credibility and enthusiasm. Farmers training farmers, including through farm visits, is the best way to spread knowledge. This also implies decentralizing trainings, so that the locations can be reached by everyone, particularly women farmers.

Then, in a well selected sequence, move to the 'second wave' - promoting a second combination of techniques. Here, perhaps some of the more socially challenging issues around equity, nutrition, women and governance can start to be integrated. The success of the first wave can be leveraged in the second wave to begin strengthening local leadership, organization and capacity for a longer term gender and nutrition sensitive process to scale agroecology. Successes in the community can motivate and inspire other communities.

Box 6 presents a more detailed overview of possible phases in such a progressive process.

Eight phases in a process to scale agroecology

The question now is: How can these strategies be implemented? Based on decades of experience, we identified eight aspects of an effective process to scale up an integrated approach to agroecology that includes social dimensions.

For NGOs and other institutions seeking to scale agroecology, this overview provides guidance. Applying this framework requires adapting these eight phases to each specific context. The phases may not always be appropriate or follow the order described below in a linear way. Instead, there are likely to be adaptations, iterations, and combinations suited to the particularities of each situation.

PHASE 1: Define the causes of vulnerability. Use a participatory diagnosis process to define, together with communities, the primary causes of chronic vulnerability. The findings will serve as the basis for developing and implementing agroecological innovations that offer solutions to a collectively defined set of problems.

PHASE 2: Identify 'easy' practices that quickly generate results. Let communities identify and prioritize a limited number of relatively easy, low-cost, and relevant agroecology innovations. These must address their real problems and generate relatively quick, tangible, and significant benefits. This will foster local enthusiasm, engagement, trust, and credibility. These initial new practices will motivate the subsequent involvement of leaders, communities, and innovators in the longer-term agroecology transition for resilience. Examples are soil and water conservation, tree-based farming, composting, short cycle seed development, crop rotation, and crop diversification.

PHASE 3: Organize villages within a territory. To 'roll-out' the practices and the learning process within a broader area, use a participatory process to group the various villages within a territory into clusters. Criteria for clustering can include geographic proximity, socio-cultural, or economic measures (ethnicity, language, market linkages).

PHASE 4: Learning visits. Within each village cluster, identify one' motor village' where farmers have exceptionally high interest, leadership, or willingness to test new ideas. They can select fundamental problems and innovative practices that exist inside or beyond their community. The motor villages can serve as a learning center for the other villages in the cluster. In turn, Influential farmers and leaders in the motor village can visit places where other successful agroecology practices already exist. They may need support to test and adapt these practices on their land. As soon as results become visible, learning visits from other farmers within the motor village can help assess the new practices. Next, leaders of surrounding villages within the cluster can come to visit and learn, which will create further interest in agroecology.

PHASE 5: Farmers training farmers. After establishing interest in this way, the community can build a group of 'volunteer farmer trainers.' Crucial in this strategy is the assumption that farmers learn best from their peers. Farmer trainers will train for or five neighbors how to implement the new agroecology practices. Here too, the core strategy is to organize learning visits to the fields. Decentralizing this process helps everyone interested in participating and learning. To achieve this, ensure that each 'neighborhood' in a village has its own respected and credible farmer trainers. This method will generate a rapid local multiplier effect across the entire village.

PHASE 6: Integrate more complicated practices and social issues. As the initial innovations start spreading in a large geographical area, the interest and motivation among the communities will swell. The most dynamic of the motor villages should identify, test, and adapt more socially or culturally sensitive changes. Examples are more complex agroecological innovations, but also social changes to address the needs of the most vulnerable households, women's livelihoods, and nutrition issues. Combining strategies, for example, between nutrition, agroecology, and women's empowerment by promoting vegetable gardening and cooking, will optimize potential synergies between them. It will also help to catalyze more rapid and effective scaling of agroecology.

PHASE 7: Strengthen governance. Strengthened governance capacities of local community leaders and communitybased structures will enable them to lead, manage, and sustain this process for scaling independently. This requires fostering coordination between sectors, particularly between nutrition/ health staff and agricultural staff at all levels, within communities, and across NGOs and governmental institutions.

PHASE 8: Reach out and advocate. Engaging more people to amplify the reach of agroecology can be done in many ways. Some suggestions: Use the media, especially (rural) radio. Deepen the practice of an ever-growing network of farmer trainers. Organize competitions and cultural activities within the area. Engage trusted researchers in the process of scaling agroecology. Build and connect to networks of social actors in support of agroecology, particularly national farmer organizations and rural women's associations, to create a potential for even more extensive scaling. Create momentum and persuade enough actors (i.e., local governments) to shift their ways of working to support agroecology. Take political actors and journalists on learning visits to successful sites. Demonstrate the success of agroecology to local governments to encourage integrating new thinking and policy into development plans and budgets. Encourage communities and municipal councils to exert pressure on the national government (and donors) to create more favorable policies and programs for agroecology.

PRINCIPLE 2: Ensure equity in the scaling process

Because of the complex and multidimensional nature of the crises in the Sahel, the initiative focused on the process of transforming a given socio-ecological system, rather than on introducing one or two specific agroecological techniques. This systems approach, with a strong emphasis on social aspects, strengthens synergies and iterations that can enable households to eventually develop self-supporting and more resilient livelihoods by transforming their farming system.

The experience made clear that in order to scale agroecology for resilience, special attention needs to paid to the social dimension: to including the most vulnerable households, and in particular, women from the most vulnerable households. This requires addressing complex, culturally sensitive issues related to equity and gender.

Specialized support for women is necessary because they play a critical role in the family economy but are rarely recognized for it. Through organizing the women in the savings and credit, training and gardening groups, and building their financial capacities as well as their technical skills to practice agroecology, women can gain the skills and the confidence to speak up. This start first among themselves and later within their households, and eventually in mixed audiences at the community level.

The initiative showed it is possible and effective to provide the most vulnerable families with tailored support and material assistance within a broader approach to scaling agroecology. The most beneficial activities to strengthen the position of these families were training in foundational agroecological innovations, provision of improved seed, *warrantage* (a stocking system to enable farmers to sell at higher prices), and organizing women into groups to access land, seeds, water and credit.

Specific activities must however be decided on together with these families and their wider community. As a result, the configuration of activities will vary across program sites and in effects. Tailoring support and technical advice to the specific needs and resources of the most vulnerable groups can cause tensions if not handled well, because it requires entering into complex community dynamics. Carefully fostering social change through inclusive and participatory dialogue between actors in the whole community, and building on traditional values of solidarity, are ways to address this challenge.

It is of fundamental importance to give the poorest and most vulnerable families themselves a central voice in the diagnosis, planning and decision making in scaling up agroecology. This requires also engaging the wider community in the decision making processes and building on local social-cultural values in support of solidarity, and mutual help. This helps to diffuse jealousy, misunderstanding, and strengthens community commitment to agroecology.

In terms of equity, a lesson learned for the future was the need to give more attention to ethnic and clan differences in the categorization of households (instead of only food security/livelihood issues). Ethnic differences turned out to be a major social factor for vulnerability. Another insight is the importance of deliberately including the voices of youth.

PRINCIPLE 3: Transform governance and let communities lead

Key to changing governance is a multi-level approach: engaging municipal councils, local technical agencies, traditional authorities, community organizations and heads of households at the same time, in an interactive way.

This allows for addressing three key constraints: high levels of illiteracy; a lack of awareness about what grassroots resilience entails; a hierarchical social structure that prevents consideration of the needs of the most vulnerable groups; and socio-cultural norms inhibiting efforts to address equity, women's empowerment and nutrition issues.

Good working relations and regular exchange between all actors are crucial for transforming governance. For example, throughout the initiative, local government and technical agencies were kept fully informed of advances, and at specific moments they were engaged in closer consultation and joint action.

In order to be effective, each initiative to scale up agroecology must make village-based leaders and organizations the primary actors who will implement field-based resilience activities. Indeed, a major factor for success in this initiative is that the work was not limited to communities and local administration, but also took into account traditional leaders and local structures.

Often, when a program is called 'participatory', it means that government authorities make all the decisions and lead the process in which communities can participate. Instead, in this case, through the work of Groundswell's national NGO partners, communities were enabled to lead the process. This provided sufficient flexibility for communities to adapt, undertake and manage their own program, with local government (mostly technical staff) supporting.

Key to achieving results was forging collaborative relationships with communities, including for identifying and prioritizing problems, seeking solutions and planning activities, and sharing responsibility for management. A lesson was that collaboration is much more likely to succeed when

- the major actors, from the relevant sectors are actively participating in decision making from the beginning.
- the terms of the collaboration are set out in a protocol.
- actors respect each other, and agree to coordinate their activities.
- all actors are patient, flexible and transparent

Barriers can include administrative obstacles, political instability, and unrealistic expectations.

In terms of the sequence, first a strong record of success must be established with communities, after which engagement can be enhanced with local government, technical services, and other actors, for example through field visits and caravans.

While bringing in more actors is necessary, a lesson here is to avoid implementing major aspects of the strategy through institutions that do not have time, resources or -most importantly- the same vision and understanding of agroecology or resilience.

Conclusion

The underlying problem in the Sahel is **chronic** vulnerability. It is caused by the ongoing stresses of climate change and land degradation. Groundswell attributes its rapid and significant results to the sense of crisis among dryland communities and their potential to respond effectively. As this program was developed and designed to respond to these stresses, farm families living in ecologically fragile, risk prone areas turned out to be keen, and highly motivated to participate in the program. The quick uptake of agroecology innovations in this experience indicates a deeply felt need among rural people to adapt to climate change and land degradation, and improve their food security.

Overall, activities that proved most successful for scaling up agroecology in this initiative included training of farmer-trainers, setting up self-managed women's groups, sharing lessons learned in other networks and conferences, and documenting insights for wider communication.

In the eighteen months of the initiative, the main "drivers" that most enabled significant results were:

- 1 Context of crisis
- 5 Horizontal knowledge building
- 11 Removing barriers
- 4 Equitable social organization
- 8 Supportive Discourse
- 2 Start simple

The other drivers, including women's self empowerment, favorable markets, access to land, coherent policies, and responsible government were addressed, but not enough could be done to contribute significant results in terms of scaling out of agroecology for resilience (figure 2 below).

These latter drivers will likely require more time and resources within the progressive process of transition, to have a greater impact.

This case study presents three key principles for a successful process to scale agroecology in the Sahel that have not been documented elsewhere in such detail:

PRINCIPLE 1: Follow a progressive process

PRINCIPLE 2: Ensure equity in the scaling process

PRINCIPLE 3: Transforming governance and let communities lead



Figure 2: Assessment of Groundswell's application of key drivers for scaling out Agroecology

This diagram presents the 11 drivers for scaling agroecology. The farther from the center the dots, the more significant were the results of Groundswell's work in that area.

Groundswell's experience is that successful scaling of agroecology for resilience is greatly enhanced when local authorities, community leaders and local governance structures have ownership and play a central role in the scaling process. This is because the scaling process for agroecology is most effective when it is contextually appropriate and based on the community's vision.

Another key insight arises from a quick comparative analysis of the three regions in Senegal, Mali and Burkina where the initiative took place. All of the drivers and principles highlighted above were relevant and were applied in all regions. However, the "scaling out" process in Senegal achieved far less results in terms of geographical spread, villages and households reached with its integrated approach to agroecology.

There were several reasons for this. First, Groundswell's partner in Senegal was starting in a new area, where they had limited prior knowledge, trust and contact with communities or local municipal government. Second, they had not given much prior attention to scaling agroecology and they had little experience in mobilizing massive networks of volunteer farmers as did the other partners.

This experience makes clear that a solid basis consisting of prior relations in the area and experience in working with volunteer farmers are important prerequisites for scaling agroecology.

This approach works for agroecology in the Sahel

Overall, however, the experience of Groundswell, based on three different country experiences, clearly shows it is possible to quite rapidly scale out agroecology if one applies key principles and processes, although the speed and depth of scaling depends on specific institutional and contextual factors.

The strength of the Groundswell approach described here is that **it works** is relatively low-cost, and can be implemented by most rural development actors, if provided sufficient methodological support and oversight.

When scaled up, it clearly has the potential to transform the socio-ecological farming system and have major impact on resilience in dryland areas. Smallholder farmers therefore represent a major cumulative potential for investment which can sustain itself in the long run (since this work is managed by the communities themselves), provided initial basic support is provided and an enabling policy framework is in place.

While most governments in the Sahel are close to reaching the Maputo declaration commitment of spending 10% of their national budgets in support of agriculture, very little is allocated to agroecology, let alone in connection to equity, women's empowerment or nutrition.

Caution

While these results do add to a growing evidence base that the effects of the crises in the Sahel can be significantly reduced through an integrated approach to agroecology, these strategies are not by themselves sufficient to fully withstand a major prolonged drought and complete crop failure.

Complementary effective early warning, rapid response and social protection systems need to be in place to increase resilience and prevent negative coping mechanisms and major loss of productive assets

Another word of caution is that the strength of this integrated approach to resilience is also its weakness. It is not a 'silver bullet' innovation. It takes time and a strong enabling institutional environment at a decentralized level.

Success in scaling requires a significant shift in current national government policies and practices for agricultural development, coupled with a shift of public sector and donor investment toward agroecological farming, integrating equity, nutrition and gender perspectives. By nature, it is not amenable to major investment by outside private sector interests. Finally, this case study highlights how both "contextual" and institutional factors can enable or constrain success in scaling.

Groundswell's experience is that if existing programs in agroecology exist, and good relationships have already been forged between communities and the program actors, striking initial results in scaling out agroecology as the core strategy for resilience can be achieved in a short time. Where these favorable pre-conditions do not exist, the process of scaling will be slower, and the initial results more modest. Additional resources, time and support would be required to initiate the approach "from scratch" in a new program area. This is particularly if local actors have limited experience with agroecology, and for conducting an integrated, systems oriented approach to resilience.

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- 80. For example at the Beating the Famine conference in February 2019 in Bamako where Groundswell presented this initiative in the Sahel: https://www.groundswellinternational.org/agroecology/how-women-and-youth-are-regenerating-west-african-land-and-food-production
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SCALING AGROECOLOGY CASE STUDY

