Groundswell International
Agroecology + 6 for Resilience

**Final Evaluation**

Farmer managed natural regeneration of trees (Training) Mali, Sahel Eco

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<tr>
<th>Date Report Submitted</th>
<th>29/05/2018</th>
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<tbody>
<tr>
<td>Prepared by</td>
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<tr>
<td>Reporting period</td>
<td>05/2016 – 09/2018</td>
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Part A: Assessing progress in meeting planned activities/outputs

A.1 Progress against work plan activities

In terms of equity and women’s empowerment in agriculture, women’s group formation for credit and savings and integration of nutrition into agriculture, the AE+6 country teams fully achieved the planned outputs and related objectives. In terms of scaling out proven agroecological practices, through extensive training of (women) farmer trainers and by strengthening the organizational capacity of villages, the AE+6 teams enabled 9,442 households across 148 villages in Mali, Senegal and Burkina Faso to adopt agroecological innovations for resilience. AE+6 also achieved significant results in changing attitudes, understanding, organizational capacity, procedures and development plans in support of resilience in rural municipalities. We produced a large number of advocacy materials with evidence of our results. These include case studies, testimonials, policy briefs, and documentary films, mostly to influence local governance for strengthened resilience. Finally, the program was very successful in generating a high level of awareness on strategies to increase resilience among tens of thousands of farm families, generating strong motivation, interest and engagement in program activities. Annex I provides a detailed summary of the outputs achieved by AE+6, as well as the four in-depth case studies and related policy notes in Annex VII.

A.2 Opportunities and difficulties experienced

<table>
<thead>
<tr>
<th>What activities were the most successful and which were least successful? Explain why</th>
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<tr>
<td>The AE+6 initiative activities that were most successful included: the widespread scaling out of agroecology, the development and adaptation of ways to integrate equity, women’s empowerment and nutrition into agroecology, warrantage (an inventory -credit system to enable farmers to sell at higher prices) and women’s savings and credit groups. The latter two activities greatly surpassed expectations. Why were these successful? Because they were low-cost, relevant to immediate needs and easy to learn in a context where people are eager to climb out of a situation of increasing vulnerability and deprivation. Less successful activities concerned the revolving animal loans, strengthening of local governance, and advocacy at the national level. While significant progress was made, work remains to be done to “institutionalize” new policies and procedures for resilience by rural municipal councils and national governments, and to foster greater multi-actor collaboration. While the compressed time frame for AE+6 was a factor, these activities were, in retrospect, too ambitious within the scope of the program.</td>
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<tr>
<th>How did you benefit from any exciting opportunities that occurred during the program period?</th>
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<tr>
<td>Each of the AE+6 country partners identified key opportunities to contribute their new knowledge and skills in promoting resilience, integrating nutrition, equity and women’s empowerment, as well as field level results to various workshops and conferences and to the design of new program initiatives. Examples are presentations at USAID supported RISE learning events, and also at the FAO Agroecology symposium in April 2018 in Rome. Beyond this, each country partner is now including resilience strategies in the design of new funding proposals and in conversations with donors.</td>
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<tr>
<th>What were the main difficulties and delays experienced by the program?</th>
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<tr>
<td>The main challenge of the AE+6 initiative was that each country partner needed to learn, apply and adapt “new ways of working” into their existing approaches, in particular to integrate equity,</td>
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women’s empowerment, nutrition and scaling out into the promotion of agroecology. This required significant shifts in attitudes and organizational capacities. Groundswell as the lead agency had planned for this, but had underestimated the coordination, support and follow up required for this ambitious change agenda. This challenge became a major difficulty when funds did not come through until 6 months after the planned start date of October 2016. Coupled with the delay in approving the NCE request to operate past July 2017, multiple interactions were needed to revise work plans and budgets. Further delays were caused by elections in Senegal, political instability in Burkina and security issues in Mali.

### Part B: Results reporting

#### B.1 Data collection strategy and methods

Outline the data collection process and methods used to analyze the results

In all program countries and with all partners, we introduced new assessment and diagnostic tools, including: Household Dietary Diversity, Household Food Insecurity Access Score (HFIAS), Women’s Empowerment in Agriculture (WEA), Self-evaluation and Holistic Assessment of climate Resilience of farmers and Pastoralists (SHARP), surveys of existing households in the communities for ranking their food security. In the evaluation, we used a combination of participatory evaluation processes and external evaluators who collected data to assess relevance, effectiveness, level of satisfaction, perspectives and impacts. Self-evaluations took place through key informants, focus groups, interviews, quantitative data collection. We used the indicators described in the program’s M&E plan.

#### B.2 Data on GRP and USAID indicators (See Annex II for criteria on each)

<table>
<thead>
<tr>
<th>CODE</th>
<th>PERFORMANCE INDICATOR</th>
<th>Target</th>
<th>End of Project Results September 2017</th>
<th>Sahel Eco</th>
<th>Agrecol</th>
<th>ANSD</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>GRP1</td>
<td>Total number of people supported (direct and indirect beneficiaries)</td>
<td>58,000</td>
<td>27,762 878 31,381</td>
<td>60,021</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>GRP4</td>
<td>Total number of “end users” satisfied</td>
<td>NA</td>
<td>4,410 539 8,446</td>
<td>13,395</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EG.11-5</td>
<td>People supported to adapt to Climate change</td>
<td>15,056</td>
<td>4,663 921 8,446</td>
<td>14,030</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EG.11-6</td>
<td>People using risk reducing actions to improve Climate resilience</td>
<td>13,550</td>
<td>4,242 878 8,024</td>
<td>13,144</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EG.3-1</td>
<td>Households directly benefiting</td>
<td>8,500</td>
<td>4,410 549 4,483</td>
<td>9,442</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EG.3.2.1</td>
<td>People receiving short-term agricultural / food security training</td>
<td>11,796</td>
<td>891 921 8,446</td>
<td>10,258</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EG.3.2-4</td>
<td>Organizations receiving agricultural or food security related org. development assistance</td>
<td>450</td>
<td>82 26 123</td>
<td>231</td>
<td></td>
<td></td>
<td></td>
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</table>
### B.3 Impact pathway narratives

<table>
<thead>
<tr>
<th><strong>B.3.IP1  Impact Pathway 1 Policy.</strong> What action has the program taken to influence policy?</th>
</tr>
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<tbody>
<tr>
<td>During the 18 month implementation period, the focus was primarily on changing local government policies, plans and budgets. Initial activities related to raising awareness about resilience and the approach of the program, fostering good working relationships and effective channels of communication. Throughout the program, we kept local government and technical agencies fully informed, and at specific moments we engaged them in closer consultation and joint action. Specific activities included inviting key government officials to inter-village planning and training workshops, and supporting multi-stakeholder sessions under the auspices of local councils to modify 5 year development plans and budgets in support of resilience. Particularly effective were the multi-day “caravans” in which key local and government officials visited communities with successful resilience activities, enabling village leaders and farmers to engage directly with policy makers and generating widespread media coverage. Groundswell has prepared four specific policy briefs for national and local government civil society, donor agencies, and the AGIR resilience platform (see Annex VII for access to the website).</td>
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<tr>
<th><strong>B.3.IP2  Impact Pathway 2 Self Finance.</strong> Has the program mobilized any new sources of investment?</th>
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<tbody>
<tr>
<td>Assuming the millions of small scale farmers in the drylands constitute part of the private sector, the AE+6 program demonstrated that major resources can be mobilized when they “invest” their land, labor, capital, seeds, tools, time and local know-how in developing and promoting low cost innovations to transform the social-ecological (farming) system. These smallholders 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</td>
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<table>
<thead>
<tr>
<th>EG3.2.17</th>
<th>No. farmers that applied technology or practices</th>
<th>11,000</th>
<th>1,200</th>
<th>878</th>
<th>8,024</th>
<th>10,102</th>
</tr>
</thead>
<tbody>
<tr>
<td>EG3.2.18</td>
<td>Land under improved technology or management in hectares</td>
<td>5,750</td>
<td>1,268</td>
<td>136</td>
<td>4,775</td>
<td>6,178</td>
</tr>
<tr>
<td>EG3.2.20</td>
<td>Organizations applying technology or practices</td>
<td>440</td>
<td>63</td>
<td>20</td>
<td>122</td>
<td>205</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>EG3.2.7</th>
<th>No of techniques and soil/water management practices transferred</th>
<th>FMNR (tree based farming), rapid compost, contour rock bunds, Zai microwatcatchment, improved land clearing, gully erosion barriers, inter-cropping, rotation with legumes, market gardening, home gardens (with baobab and moringa tree shrubs), improved stoves, improved poultry and animal husbandry, improved short cycle seeds</th>
</tr>
</thead>
<tbody>
<tr>
<td>EG3.2.11</td>
<td>Quantity of nutrient-rich produce used for home consumption</td>
<td>NA</td>
</tr>
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</table>
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. We advocate a relatively small shift of public resources away from fertilizer input subsidies and related extension packages towards agroecology, which could be sufficient to achieve a huge contribution to resilience of millions of farmers in the drylands. In addition, program partners are leveraging the key findings and results of this program to attract new donor and government support, particularly through targeting funding streams already earmarked for climate change adaptation (Nationally Determined Contributions), the Regional Resilience initiative AGIR, the Great Green Wall initiative, and growing international interest in soil carbon sequestration. For this effort our documentation of the process, methods, findings and results of the program through the case studies provides key insights on how to strengthen the resilience of the socio-ecological systems of millions of farmers in the Sahel.

**B.3.IP3 Impact Pathway 3 Sustainability.** What opportunities can your program explore to ensure the sustainability of results? What steps have been taken to ensure program scale up or exit?

AE+6 was designed to create a “proof of concept” of an effective approach to strengthen the resilience of millions of dryland farmers in the Sahel. This approach seeks to enhance synergies that can enable those households caught in the hunger/debt trap to eventually develop and sustain self-supporting, resilient livelihoods. Our series of 4 case studies documenting results and lessons (annexed) and evaluations show that the AE+6 concept and approach is effective. AE+6 initiated long-term socio-cultural changes related to knowledge, attitude and practices both at the community, rural municipality and at partner level in support of resilience related aspects of equity, women’s empowerment, improved nutrition, agroecology and organizational capacities. Through its participatory approach, the program fostered a sense of community ownership and responsibility for the activities. This is a lasting achievement. More specifically, the evaluations indicated that agroecological innovations will be sustained by farming families after funding ceases.

Steps taken to ensure sustainability include: building organizational knowledge and capacities among program partners and local institutions, setting up self-managed women’s groups for savings and credit, training of trainers, sharing program lessons in other networks and conferences, and documenting insights about strengthening resilience in case studies and policy notes for wider communication. We are influencing other actors to initiate similar resilience sensitive agroecology programs and advocacy to foster supportive practices, policies and programs. However, assuming that building resilience is a long term, gradual process, there was 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 required to embed this resilience approach into the local social and institutional fabric as the new “norm”.

**B.3.IP4 Impact Pathway 4 Communication, Knowledge Events.** What knowledge events and partnership building activities has AE+6 engaged in?

Major communication and knowledge events in which program staff actively participated include: Prolinnova international conference (Dakar, March 2017), USAID RISE learning clinics (Dakar, Ouagadougou), national conference in Mopti, Mali on policies for FMNR (June 2017), a major FMNR symposium (Ouagadougou), “Caravans” in all three countries, multi-stakeholder workshops, community radio, prizes and competitions, knowledge exchange visits and inter-village knowledge sharing workshops, workshops to capitalize experiences, collaborations with international journalist, FAO Agroecology Symposium (Rome, 2018).
B.4. Shocks and stresses. Describe shocks or stresses that took place during the program period.

Apart from the continuing chronic stresses caused by the effects of climate change and land degradation, there were no “severe shocks” affecting the program areas during the 18 months of implementation. There were shocks related to the socio-political context however, including security problems in Mali, elections in Senegal and political unrest in Burkina. These shocks slowed down the implementation of the program as well as the evaluation.

Reflect on how the shocks and stresses affected program results. What evidence is there that the program has built resilience and reduced the effect of shocks and stresses on well-being?

The underlying problem in the Sahel is chronic vulnerability. It is caused by the ongoing stresses of climate change and land degradation. We attribute our 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 the program areas indicates a deeply felt need among rural people to adapt to climate change and land degradation, and improve their food security, which is at the heart of AE+6 program strategies.

In 18 months, AE+6 just began to strengthen the resilience of the socio-ecological systems in the villages reached. Our results do add to a growing evidence base, in places where most of the AE+6 innovations have been applied over the longer term, that the effects of major drought can be significantly reduced through AE+6 strategies. These strategies however 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 in such cases.

Part C: Learning

C1. Unpacking pathways to change in the AE+6 approach

Explain the context and problem you are seeking to address.

An estimated 12 million small scale farmers and their families in the risk prone, dry land areas 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. Even in good rainfall years, they adopt negative coping mechanisms, such as taking exploitative loans, eating their seeds, reducing the number of daily meals and selling of assets. This has resulted in a growing “resilience deficit” and increasing dependence on humanitarian assistance.

Write your pathway to change statement: ‘If we do..... then women and men will become more resilient because.....’

If we combine tree based farming, soil and water conservation, women’s saving and credit groups, agroecological vegetable gardening and warrantage (stocking a part of the harvest in return for a loan, in order to sell it for higher prices later in the season) among the most vulnerable groups, women and men will be more resilient because they will be able to make their fields more productive in a context marked by climate shocks and the long-term stresses caused by land degradation.
How is this different from business as usual? What actions are needed by whom?

The business as usual approach to agricultural development in the Sahel strongly favors “Green Revolution” thinking about agriculture: chemical fertilizers, use of herbicides and pesticides, irrigation, high mechanization, 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. The AE+6 program, on the contrary, promotes a multi-functional approach to agricultural development, whereby not just productivity, but also resilience, adaptation to climate change, sustainability, women’s empowerment, nutrition, regeneration of the natural resource base, and equity issues are considered, especially in the most vulnerable dryland areas. This approach does not focus on transferring 2 or 3 specific technologies (as in Green Revolution extension), but on promoting a progressive, sequential process of optimizing the use of, and synergy between ecological processes for food production. It reduces both risk and dependence on expensive external inputs. This approach is participatory, knowledge (not capital) intensive, and involves a high level of social mobilization for farmer to farmer and village to village 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.

What are the main lessons learned about effective strategies to foster resilience?

Because of the complex and multidimensional nature of resilience, the AE+6 approach for resilience focuses on the process of transforming a given socio-ecological (farming) system, rather than on introducing one specific technique. This systems approach strengthens synergies and iterations that can enable households that are caught in the hunger/debt trap to eventually develop self-supporting and more resilient livelihoods.

Key lessons include the importance of a progressive, sequential process of intensification. First, start with a participatory diagnosis to collectively define problems and appropriate solutions. Second: let the community identify and experiment with a limited number of relatively easy, low-cost and relevant “foundational” agroecological innovations, using a training of trainers methodology based on farmer-to-farmer learning in the field. Third: integrate strategies to promote nutrition, equity and women’s empowerment to ensure the inclusion of the most vulnerable populations. Four: Sustain these strategies through strengthening governance and supportive policies at community, municipal and national levels. Details in Annex IV and Annex VII (the case studies).

What were the main constraints for the AE+6 intervention for resilience?

There are three broad categories of constraints. One category relates to the appropriate application of the process outlined above. Often, just one or two technologies are selected and spread in a linear top-down “transfer of technologies” approach, without considering (local ownership of) broader strategies for transformation. The second category relates to the fact 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, and as a result often do not address equity or inclusiveness. As a result, other actors working in the same area may be promoting practices that provide short term economic benefits, but that do not target the more fundamental dimensions of family farmers’ resilience, and may even work against it. The third category of constraints to our approach relates to the local socio-ecological context, including land insecurity (especially for women), prolonged droughts, the negative societal image of small scale farming and the rural exodus of youth, diminishing the rural workforce.

What are the main recommendations for scaling out the AE+6 approach?

Based on the lessons learned, Groundswell recommends the following (also outlined in more detail in a set of 4 case studies and policy briefs annexed to this report): 1) Apply the above processes for AE+6...
C.2 GRP’s Areas of Transformation

### C.2.AoT1 Equity and inclusive decision making
What does equity and inclusive decision-making mean / look like in your context?

Inclusive decision making is important for resilience because it is key for addressing crucial inequity issues in the socio-ecological dryland systems of the Sahel which keep people locked in vulnerability. Equity is considered by Groundswell as a much needed wider, overarching approach towards resilience in the Sahel. Needs and opportunities of the poorer, most vulnerable farm households (which in our context comprises more than 20%) are often significantly different than those of the better-off households. A specific, differentiated strategy to target this population is therefore required to strengthen their resilience, and must go beyond their inclusion in decision making, instead facilitating their adequate and full participation in all activities, as well as providing tailored material assistance and training. Details in Annex VII for access to the (Integrating Equity case study).

### How did AE+6 work with and benefit the most vulnerable? What worked and what did not work?

In a participatory process, the AE+6 teams first identified the most vulnerable families in the community, using methods such as household wealth ranking and the Household Food Insecurity Access Score (HFIAS). These revealed the exploitative mechanisms causing the hunger-debt trap as a key constraint. In order to enable the families to escape from this trap, AE+6 provided them with tailored support and material assistance within a broader resilience approach. Particularly successful activities for inclusive decision making and equity were training in “foundational” agroecological innovations, provision of local improved seeds, warrantage (a stocking system to enable farmers to sell at higher prices), and savings and credit.

**Factors of success** include the participatory identification of the most vulnerable groups, with a focus on the poorest households and on women, organizing women in groups to access land, seeds, water, knowledge and credit, and skillfully facilitating space for dialogue and awareness raising within the community, including representatives of the more vulnerable and the village chiefs and elders. Next time, we would build on best practice across the three countries as there were varying levels of effectiveness of these strategies. Second, we would give more attention to ethnic/clan differences in the categorization of households instead of only food security/livelihood issues, as the ethnic differences are a major social factor for vulnerability. Third, we would more deliberately include the voices of youth. Details in Annex V and Annex VII for access to the “Integrating Equity Case Study”

### Were there any gender constraints for inclusive decision-making? What actions were taken?

There are many socio-cultural factors in the Sahel that impede women to speak up and participate in decision making processes. AE+6 teams found that when women obtain technical competence and financial resources, they gain more autonomy and decision making power in the household, including on food production. Women who have neither, are most often ignored in decision making. So AE+6 engaged in two mutually supportive strategies of strengthening women’s technical capacities and...
strengthening their leadership, confidence, knowledge and organization, which together strengthened their role in decision making. Concrete activities included savings and credit groups, vegetable gardening, technical and organizational capacity building in growing and processing food. The most important basis of these activities was organization: encouraging women to form groups, broadening the base of women leadership. Details in Annex VI and Annex VII (the “Women’s Empowerment Case Study”).

C2.AoT2 Partnership and collaboration of AE+6

AoT 2.1 What does partnership mean to your program?

In each program area, AE+6 teams worked with a range of actors: local administration, technical services, media, community structures, farmer cooperatives and other NGOs. They also worked with actors who had complementary expertise, e.g. agencies specialized in nutrition. Because of the short time frame of the program, these relationships are more accurately characterized as “collaboration”.

AoT 2.2 How do successful partnerships work / how can successful partnerships be built?

The concept of partnership was most strongly developed with communities, particularly those engaged in integrating equity, nutrition and women’s empowerment into agroecology. These relationships worked because we engaged in truly collaborative processes of identifying and prioritizing problems, seeking solutions and planning activities, and sharing responsibility for management. In our experience, collaboration is successful when all actors are involved from the beginning, when the terms of the collaboration are set out in a protocol, actors respect each other, actors are patient, flexible and transparent. Barriers include administrative obstacles, political instability, and unrealistic expectations.

AoT 2.3 What did you learn about partnerships for increasing resilience?

Partnerships are key to resilience, because the effective transformation for resilience of the socio-ecological farming system of a large program area cannot be achieved by one small NGO alone. Sustained success at a wider scale and over the longer term requires the engagement of more actors and wider networks.

Some of the other main lessons learned: > Start slowly and as simple as possible, focusing mostly on essential information sharing. > Give primary emphasis to forging collaborative relationships with communities. > Avoid implementing major aspects of the strategy through other institutions that do not have time, resources or most importantly the same vision and understanding of resilience. > Retain as much flexibility and control within an “adaptive management and learning” approach to work out with communities what is the best next step for strengthening resilience. > Leverage successes in the communities as much as possible to influence and inspire other actors. > Let community leaders express their collective voices about the program’s resilience activities. > After developing a strong record of success with communities, engage more strongly with local government, technical services, and other actors, for example, through a “caravan” strategy of field visits. > Promote long term and sustained multi-stakeholder collaboration between key actors in a given locality.

C2.AoT3 Lessons on how to strengthen resilience and contributions to resilience thinking.

AoT 3.1 How did the AE+6 program increase resilience?

While longer term engagement is needed to be able to contribute significantly to resilience, we did test our holistic approach for improving resilience, and the results signal the path forward. A quick summary: Resilience has been integrated into development plans. Women now have access to resources, which showed to have more impact on household resilience than when men only benefit. Farmers now increasingly prefer local healthy foods, contributing to better nutrition. Women have started to multiply vegetable gardening independently, broadly increasing the supply of healthy food. Savings and Credit groups are being self-organized which allows participating women to strengthen their resilience autonomously. Overall, AE+6 strategies have been appropriated by communities who...
are now actively and independently engaging with them and building resilience.
How did we do this? AE+6 contributed to resilience in all 3 program areas through undertaking the following sequential steps: 1) Initiating the widespread uptake of a first wave of resilience innovations tailored to address some of the root causes of chronic vulnerability to food and nutrition insecurity in the Sahel. 2) Leveraging the success of this first wave to begin strengthening local leadership, organization and capacity for a longer term gender and nutrition sensitive process to transform socio-ecological systems for resilience, including creating more diversified rural livelihood opportunities. 3) Undertaking dynamic action-learning initiatives in selected villages to determine the second, third and subsequent waves of resilience activities, optimizing synergies, while also scaling out the initial innovations. 4) Leveraging initial success to further strengthen leadership at the local level, and to influence policies, plans and budgets of local governments. 5) Gradually strengthening the understanding of and commitment to a long-term multi-actor resilience process, mediated by local government and community leaders.

**AoT 3.2 How did AE+6 contribute to resilience thinking?**

In all three countries, resilience was initially not present or understood by local level actors. Our program has made local governance structures much more aware of the concept of resilience, and more accepted by communities. The program entailed three levels of capacity building on resilience thinking: 1) of partners; 2) of communities, rural women’s groups and households; and 3) of municipalities and technical service providers (extensionists). This organizational learning on resilience is a major contribution of this program.

The main ways that the AE+6 initiative changed organizational attitudes, ways of working and capacities for resilience were by integrating equity, nutrition and women’s empowerment into existing agricultural development work; applying new tools, methods and strategies for diagnosis, planning, and assessment; differentiating program support and innovations to better meet the needs of most vulnerable groups (women) and poorer households; shifting the focus from promotion of a set of techniques, to the promotion of a longer term progressive process of sustainable intensification that fosters synergies; developing strong working relationships with communities, local government and -especially- stakeholders in other sectors (e.g. nutrition).

**AoT 3.3 What has worked and what did not work? Why? What would you do differently next time?**

The strength of the AE+6 approach is that “it works” and is low cost. It clearly has the potential to transform the socio-ecological farming system for major impact on resilience in dryland areas. There is growing evidence in the literature of how tree based farming and agroecological innovations over a longer time period can arrest and then reverse the degradation of the soil and natural resources, and rehabilitate abandoned land, with significant resilience benefits to rural men and women. There is also evidence that shows how support for women’s empowerment in agriculture and the effects of women’s savings and credit groups, greatly enhances resilience, and how integrating nutrition into agriculture can significantly improve nutritional outcomes. The AE+6 initiative aimed to find synergies between all these approaches. Progress made indicates this has been effective as the communities involved are well on their way towards strengthened resilience. This shows it is feasible to quite quickly achieve synergies and impact at the community level and that significantly more resilient farming and rural livelihood systems could be achieved in 6-8 years if the process is sustained.

However, the strength of AE+6 is also its weakness. It is not a “silver bullet” innovation. It takes time and requires a strong enabling institutional environment at a decentralized level. It 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. Modified activities if AE+6 were repeated: much more time and intensive support to partner NGOs to improve their organizational capacity. More support to local governments to institutionalize resilience thinking and action. Leverage the case studies and policy notes to do effective influencing of networks in various other geographical areas.
## ANNEXES

## ANNEX I Progress against work plan outputs and activities

<table>
<thead>
<tr>
<th>Main outputs as per work plan</th>
<th>Progress in achieving related activities to date (ongoing/or complete, and achieved) Use numbers as applicable</th>
<th>Reasons for exceeding or not achieving output</th>
</tr>
</thead>
</table>
| Evidence base for strengthened resilience produced and applied for advocacy materials and events | Production of 4 out of 5 planned regional thematic case studies (English). Each provides the context, results (evidence), process, and lessons learned, comprising a comparison and synthesis of the work done in 3 countries on the following themes:  
  - scaling out of agroecology for resilience  
  - integration of nutrition into agroecology  
  - empowerment of women in agriculture  
  - ensuring equity in agricultural/rural development for improved resilience  
  - strengthening local governance (and organizational capacity) for resilience  | This output was achieved as planned except 2 aspects. First, Groundswell anticipated that the evidence used would consist of comparison of baseline data with final evaluation results across a range of indicators. This information would then be integrated into the case studies and policy notes. However, the almost 6 month delay in the arrival of the funds meant that there was not enough time to conduct baseline studies before the onset of the first rainy season. These studies were conducted later as “diagnostic studies”. Another issue was that even leaving the late arrival of funds aside, there was not sufficient time to generate the originally planned evidence. For the case studies, for evidence, Groundswell and its network partners used data in the literature (for nutrition, equity, women’s empowerment), that were similar, and based on longer term work. The second issue where progress was |
| | Production of 3 national level case studies (in French) on how to integrate nutrition into agriculture for strengthened resilience. These case studies review data on malnutrition in the program area, existing government policies, related programs of others, and the initial AE+6 results to combat malnutrition through diversification of diets connected to the promotion of agroecology. | |
| | Production of 3 national level policy briefs advocating for policy change by different stakeholders on agriculture for improved nutrition | |
| | Production and use of 12 short “testimonial” stories of the experiences of model farmers, champions and winners of competitions for best agroecological farmers | |
| | Production of 3 documentary films (one each in Senegal, Mali and Burkina Faso) about AE+6 outcomes and approach | |
| | Agrécol has elaborated 5 technical guidelines and materials on key AE+6 strategies | |
| | Events: Advocacy to change municipal plans to become more resilience focused:  
  - Sahel Eco in Mali, through its local advocacy work, persuaded and assisted the district municipalities ("communes") of Fangasso and Mandiakuy in the Tominian circle to formulate a communal resilience plan. These communal resilience plans were reviewed and approved by the municipal councils. They include adaptation and mitigation measures for climate change. They will serve as advocacy tools to initiate climate change and fundraising projects (copies of the plans are attached) | |
Agrécol: Promotion of AE+6 and messages about resilience during a national fair on agroecological and organic food products organized by FENAB (National Federation of Organic Agriculture). Agrecol developed an agreement of a collaborative partnership relationship with FENAB for undertaking joint advocacy to influence policy makers for resilience.

The AE+6 approach was also presented at a national workshop in Senegal, organized and facilitated a national workshop on how to strengthen the informal farmer managed seed systems (for resilience) and the linkages with the formal seed system, with the support of Groundswell, PROFEIS (Network for Promoting Local Innovation for Agroecology) and other national level actors (universities, agricultural research, extension and farm cooperatives) in Senegal.

ANSD: Used testimonials and success stories of “Best Farmers” selected from 75 villages in 3 different communes to advocate for changes in local policies in support of agroecology at the community and rural municipal council levels.

Sahel Eco: Supported two major advocacy activities. The first was to organize an Agroecology Day in Mandiaky, in Tominian. The second was to arrange for the participation of four delegates (peasants farmers, men and women) in the official activities to support the environment in the regional capital of Mopti. The objectives of these activities were to:

- share the experience of the AE + 6 project with the other participants, in particular the presentation of technological innovations in the field of sustainable land management
- exhibit and sell processed products from non-timber forest products (honey, shea butter and soumbala)
- promote improved marketing connections for farmer and women groups engaged in processing non timber forest products
- learn from the experiences of other actors engaged in sustainable management of natural resources and processing of non-timber forest products

In addition, Sahel Eco co-organized an international 3 day FMNR (agroforestry) advocacy forum in partnership with the Sustainable Land and Water Management Project (PGDTE) from 14 to 16 June 2017. These days enabled participants, both international (Burkina, and Senegal) and from Mali’s national government agricultural and environmental services, as well as UN agencies and from NGOs across Mali to engage in dialogue, reflection and work together for the development of specific advocacy on how to promote agroforestry (FMNR) in the context of Mali. Finally, Sahel Eco co-organized a major international conference, attended by key decision makers of the Mali government, on the role of agroecology and agroforestry (FMNR) for resilience in the drylands. This resulted in recommendations “The Call of Mopti”. This was extensively covered in the media and officially communicated to national level Ministers.

Groundswell contributed AE+6 experience and lessons at the international meeting of Prolinnova (network on promoting local innovation in agriculture) which was held in Tamale, Ghana and presented a poster on AE+6 in Rome at the FAO international forum for scaling up agroecology (April 2018).

Unfortunately, the delay in the contracts and funding meant that AE+6 teams anticipated a much more robust set of advocacy events using the documentaries, case studies, policy briefs, and testimonials at the national level. However, most of the advocacy materials were not produced until after the end of field operations. By this time, there was not enough time nor resources to undertake advocacy at the national level in conjunction with allies. As a result, most of the advocacy events were directed at the local government level. The various advocacy materials produced across the 3 countries and regionally will be used in follow up activities by the AE+6 teams.

Baseline (diagnostic) data is collected; Docu-
Specific methods to assess various dimensions and themes of the AE+6 program included:
- Resilience (using the FAO methodology of SHARP),
- Categorization of households by socio-economic/resource levels using a Participatory Rural Appraisal (PRA) method
- Household Food Insecurity Access Scale to assess food security/hunger,
- Household diversity of diets Score, and
- Women’s empowerment in Agriculture (WEIA).

Each partner received a detailed methodological guide for each thematic area to be assessed, including instructions for pre-testing, translating concepts, training enumerators, and data analysis. All of these diagnostic surveys were undertaken in each of the three program areas.

**Scaling Out: Assessing change in adoption rates of innovations**

Each of the AE+6 teams undertook surveys to determine the baseline level of household adoption in 20 to 60 villages. These surveys covered over 140 villages across the 3 program areas.

**Local Governance: Assessing the organizational capacity of community based farmers/women’s groups**

Although this was not part of the original AE+6 design, Groundswell encouraged its partners to use participatory “self assessment” tools to assess level of specific capacities required for sustaining resilience initiatives after the end of the AE+6 program. ANSD facilitated such assessments in villages in their program area in Burkina Faso, particularly with Agroecological Promotion Committees, and Women’s Savings and Credit groups. They are adapting this methodology to help participating communities assess to what extent the resilience related initiatives promoted by AE+6 can be continued. This contributes to the strengthening of local governance objective of AE+6.

This output was fully achieved.

| Rural dry land farming communities have increased awareness, motivation and interest in agroecology; Champion farmers identified and mobilized; process of regular inter-village learning and exchange established | All three AE+6 country teams used a variety of methods to raise awareness, and generate motivation and interest in scaling out proven “foundational” agroecological practices y as a way to transform their farming system, and to address equity, women’s empowerment and equity for strengthened resilience. The main methods included:

- Broadcasting “debates” between farmers on key farming issues linked to adaptation to climate change, the role of agro-forestry and soil and water conservation on rural radio, to reach a mass audience about how climate change and land degradation were undermining food security and the need to change farming practices to better conserve natural resources through agro-ecological intensification
- Rural radio broadcasting testimonials of champion farmers
- Community awareness raising assembly meetings, including film projections
- Rural theatre plays and skits to stimulate debate and discussion of agroecology
- Learning exchange visits for community leaders (traditional, women and religious leaders)
- Establishment of farmer field schools
- Multi-stakeholder workshops for municipal government councilors, heads of local technical services, sub-prefects and mayors of district municipalities, and leaders of local farmer organizations.
- Annual competitions in each district to raise awareness on agroecology, with a particular focus on recognizing and rewarding both men and women innovators and champions |

The data obtained, therefore, could not be used as “baseline” data to assess changes, but only for diagnostic purposes, to illuminate key aspects of resilience.
Major increase in number of households and villages engaged in testing or applying agroecological innovations; community committees responsible for promoting AE established; Volunteer AE promoters trained and functional.

Over two rainy seasons, the AE+6 country teams were highly successful in scaling out five proven “foundational” agroecological practices needed for transforming local farming systems:

- Tree based farming (agroforestry through farmer managed natural regeneration (FMNR))
- Soil & Water Conservation: “Zai” micro-water catchment basins; rehabilitates degraded, abandoned land; and Permeable Rock Bunds along the contour: retains rainfall, prevents erosion
- Improved, fast compost production; retains moisture, dramatically improves soil health and fertility
- Crop rotation/intercropping with legumes
- Promotion of locally improved short cycle seeds - helps adaptation to irregular or erratic rainfall

Some combination of these agroecological innovations were promoted in 148 villages across three countries. The final result was that 4,031 households in 148 villages adopted at least 2 innovations over the two farming seasons, greatly surpassing plans and expectations. This significant achievement was reached first of all because of the effective awareness-raising and information campaigns to generate interest and motivation described above. In addition, the AE+6 country teams all used most of the following strategies for scaling out agroecology.

**Strategies for scaling out**

- Clustering of villages for a territorial approach and selecting the most dynamic and motivated village within the cluster to initiate agroecology, and subsequently serve as a learning and training site for neighboring villages in the cluster.

All planned outputs and related objectives fully achieved and greatly surpassed. This was partially due to the effective awareness raising and scaling out strategies used. This achievement also reflected a high level of need and interest in the villages reached.
Farmer to farmer learning Burkina Faso

ntensive training and follow up of an extensive network of volunteer farmer agroecology promoters in each village to learn and apply agroecology practices on their land

Application of farmer to farmer learning using the “cascade training” approach: each of the volunteer farmer agroecology promoters had the task of training at least 4 to 5 other interested farmers in their villages on selected innovations. Use of farmer field schools as demonstration sites

Strengthening community organization and capacity in each village by establishment of Agroecology Committees (AECs) and training of their members: These committees had overall responsibility for selecting volunteer farmer promoters and overseeing the community based agroecological extension program in their community. The composition of the AECs was highly representative of the existing main interest groups within the village, including traditional leaders, women leaders, delegates from various farmer organizations. The AEC also had responsibility for monitoring activities and results using a simple tracking sheet focused on number of farmers trained and adoption of agroecological innovations.

Staff of Groundswell’s local NGO partners and that of local collaborating organizations improve their knowledge and skills to undertake AE+6 interventions for strengthened resilience

Most of the major components of AE+6 (resilience, scaling out, integration of nutrition, equity and women’s empowerment in agriculture, women’s savings and credit, and strengthening local governance for resilience) were relatively new for each of Groundswell’s NGO partners. To address this, Groundswell undertook an intensive schedule of organizational and staff capacity strengthening for all 3 of the AE+6 partners. This consisted of the following:

Organization of 4 regional learning workshops. These workshops were undertaken for orienting, training and developing detailed action plans with AE+6 partners and staff of collaborating agencies. The first was held in Bamako, Mali from 18-23 January in 2016. The second was held in Thiès, Senegal from May 18-24 in 2017. The third was organized in Fada N’Gourma, Burkina Faso in November-December of 2016. The fourth was again held in Thies, Senegal in October-Nov of 2017. These workshops enabled AE+6 NGO staff to deepen/refine their program strategies for resilience (equity, women’s empowerment, savings and credit, local governance), and learn new methods for diagnosis and to assess outcomes and impact through monitoring and evaluation.

In-country workshops: Groundswell undertook specific workshops in each country for AE+6 partners and the staff of collaborating agencies. These workshops addressed a number of themes. The most important of these, undertaken in all three countries, was the issue of how to integrate nutrition into existing agroecological programs. Participants included primarily the staff of AE+6 partners, but also other NGOs, local government, nutrition specialists and agricultural officers. As a result, agricultural extension practitioners gained a deeper understanding of

This output and related objectives were fully achieved. The only aspect that was not addressed was training in the analysis and synthesis of the diagnostic surveys. In terms of “proof of concept” this outcome indicates that it is possible for existing NGOs engaged in agroecology to quite quickly develop the organizational capacities for a progressive multi-sectoral approach to strengthening resilience in the drylands.
the key concepts and links between nutrition, agriculture and resilience and on key data on levels of chronic and micronutrient malnutrition in program area (including anaemia). Strategic and action plans were developed for better integration of nutrition into existing agricultural programs.

Program support visits: Groundswell’s Team Leader and deputy made support visits to each of the AE+6 partners in Mali, Senegal and Burkina at least twice in a year to provide trouble-shooting, and training back-up support

In-country learning visits: AE+6 country teams visited more specialized agencies to learn from relevant “best practices” on specific themes such as women’s saving and credit, integration of nutrition, and revolving animal loans.

In-country staff learning workshops: After participating in Groundswell regional workshops or after conducting a learning visit to a specialized agency, each of the AE+6 partners conducted learning/planning workshops for their own staff on specific themes. In most cases, AE+6 partners invited experienced local resource persons to share their context-specific experiences and facilitate key learning sessions. During these sessions, AE+6 staff improved and harmonized their joint understanding of key dimensions AE+6 program. The themes included: 1) “warrantage” (the concept of inventory credit); 2) adaptation of traditional solidarity mechanism of passing female animals to poorer households, who then pass on offspring to other families, modelled on “habbonayé”; 3) methods for improving diets and nutrition, and 4) enabling women to better mobilize their own resources through savings and credit systems.

Community organizational capacity strengthening: A key strategy of the AE+6 program was to support each participating village to lead and manage their own agroecology based resilience set of activities. This required strengthening of local capacity in several phases as follows:

> Conduct an assessment of the organizational capacities of community based organizations in each of the “in depth study villages to determine the degree of capacity and interest of existing local structures, particularly the Village Development Committees. The purpose of the assessment was to determine the relative strengths and weaknesses of the organizational capacities required to sustain and manage resilience oriented activities. The capacities assessed included Planning, Monitoring and evaluation, Information management /communications Mobilization of human resources, Mobilization of internal financial and material resources, Negotiation with the outside world.

> Decide to either strengthen an existing structure, or establish a new more representative community based structure (i.e., Agroecological Committees or AEC’s) and

> Address organizational learning needs of the selected structure and farmer groups to sustain their activities in promoting agroecology and related resilience strategies. The organizational capacity assessment determined that most community level organizations are relatively strong in mobilizing human resources, in consultative decision making and leadership commitment. On the other hand, they are generally weak in terms of planning, circulation of information, mobilizing their own financial and material resources, negotiation skills, monitoring and evaluation of activities.
Cross program learning visit: Two Agrecol staff from Senegal visited the program work of AE+6 in Mali in June 2017 to deepen their knowledge and technical mastery of agroforestry (FMNR) and rapid compost making. They also participated in the Mali fortnight for the Environment activities and a 3 day advocacy workshop on FMNR.

Innovative strategies for a more integrated approach for strengthening resilience in dryland farming areas through the AE+6 approach are developed, tested and locally adapted (equity, women’s empowerment, dietary diversity, women’s savings and credit).

The AE+6 initiative in all three countries developed, tested and adapted a set of four integrated activities for strengthening resilience. The context, results, initial effects, lessons learned, and policy implications for each are documented in detail in the case studies (attached in the annex). What is presented here is a short summary of the results and strategies.

Equity: Enable the poorest rural households (particularly women) to develop resilient self sustaining livelihoods and/or escape the debt/hunger trap. Key strategies:
- Categorization of Households (local criteria for vulnerability)
- Warrantage (grain inventory credit system)
- Revolving animal loan
- Material assistance (seeds and tools)
- Cash grants
- Building on traditional solidarity values
- Group formation (women) and training
- Access to land/water

Results: the number of most vulnerable households benefiting from one or more equity oriented interventions is estimated at over 4,600 households. This large number is mostly due to the number of women who became members of savings and credit groups or who obtained land and water for dry season gardening or improved seeds.

Warrantage in Mali (Sahel Eco)

Women’s Empowerment in Agriculture/Livelihoods. Key Strategies:
- Women’s Savings and credit groups
- Women’s Group formation and training
- Revolving animal loan
- Material assistance (seeds and tools)
- Training in processing non forest tree products for sale
- Enabling access to productive assets: land water, credit, seeds, animals, training
- Facilitating community dialogue on gender relations

This set of outputs and related objectives were fully achieved and surpassed. The formation of women’s savings and credit groups proved highly popular. The number of women’s groups formed greatly surpassed expectations.
Results: Number of women benefiting from one or more resilience oriented interventions is estimated at 2,761 women. The women groups of one AE+6 partner, ANSD in Burkina Faso, accumulated capital of women’s groups = $18,269 in one year

Integrating Nutrition into Agriculture. Key Strategies:
Key innovation: Planting baobab and moringa trees and managing as shrubs for all year round access to green leaves. Application of the 10 FAO principles for integrating nutrition into agricultural into operations
Nutrition education of agricultural staff on Home gardens, Crop diversification (legumes), Dry season gardening /water, Nutrition education of women through Savings and Credit groups, and gardening.

Home Garden with baobab and moringa shrubs Mali (Sahel Eco)

Results: Number of vulnerable households benefiting from one or more nutrition oriented interventions is estimated, in terms of nutrition education and awareness at least 18,000 beneficiaries. However, no systematic data was obtained on changes in nutritional practices (diversity of diet)

Other key actors in the program area districts have increased awareness and improved knowledge about resilience sensitive development, and locally adapted strategies for strengthening it

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<th>Strengthening local governance for resilience</th>
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<td>This dimension of the AE+6 strategy and outcomes is well documented in the case study and policy brief on Strengthening Local Governance for Resilience (see attached). The main “key actors” reached by AE+6 included the municipal councilors, mayor, technical and administrative staff in 6 rural municipalities, and the community leaders in 28 “study villages” as well as in 160 “scaling out” villages</td>
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Key strategies:
- Awareness raising workshops on resilience
- Review of existing municipal plans and budgets from a resilience lens
- Caravans of municipal and provincial leaders to see first hand the resilience activities in the villages and discuss with community leaders
- Strengthen multi-actor coordination for resilience
- strengthen community org & leadership

Results: Change in level of awareness and commitment to processes and innovations for strengthening resilience. Change in organizational capacities for assessing, diagnosing, planning, implementing and evaluating resilience initiatives (community and municipal government level). Changes in local government plans and budgets and planning processes for resilience. Modification of the 5 year development plans and budget in 4 communes (districts) in Mali (2) and in Burkina (2) to integrate proven resilience activities

This output and related objectives were achieved. Political instability delayed the process in some of the municipalities; new resilience plans were made, but awaiting finance for the next implementation cycle
ANNEX II. Data to assess the positive and negative effects of AE+6

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<th>What positive differences have AE+6 outputs made for the resilience of dryland farmers and other stakeholders? (please consider organizational, social, economic, environmental differences)</th>
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<td>As a result of the AE+6 program, over 9,000 households across 148 villages in Mali, Senegal and Burkina Faso adopted agroecological innovations that make their farming systems more productive and resilient to prolonged drought, depleted soils and climate change. AE+6 also achieved significant results in changing attitudes, understanding, organizational capacity, procedures and development plans in support of resilience in rural municipalities. AE+6 has also significantly enhanced the position and participation of the most vulnerable households in program areas. Finally, the program increased women’s empowerment in agriculture which strengthens their capacity to self-organize for resilience.</td>
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<th>What negative changes (unintended, directly or indirectly) were caused by AE+6 on the resilience of dryland farmers and their communities? Please consider social, economic, environmental issues</th>
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<td>The independent evaluation consultants in each country conducted interviews with a range of stakeholders within the villages and also with municipal authorities and technical staff indicated that the overwhelming perception was that the environmental and economic effects of AE+6 for resilience were highly positive. Informants did not identify any direct or indirect negative effects. However, on the social dimension of AE+6, the evaluations identified two negative effects. One of the evaluators in Senegal of the Agrecol program, reported a certain degree of “frustration” that the benefits of AE+6 seemed to be directed to only the most vulnerable families rather than benefiting all households. Reflecting on this finding, the Groundswell Team leader’s opinion is that Agrecol’s strategy for consultation and developing a sense of ownership within the community about the equity-oriented activities was not as well developed as that of ANSD (Burkina Faso) and Sahel Eco (Mali). Moreover, Agrecol’s overall approach tended to be focused mostly on its area of specialty (i.e. vegetable gardening), rather than promoting widely applicable agroecological practices for the principal crops and fields that would be of interest to most households. Finally, Agrecol initiated its program in a new program area, Kaffrine, where they had not had a strong prior presence and not yet forged strong relationships of trust with communities. The second negative social effect found by evaluators concerned the relationship between men and women due to the women’s empowerment activities. Although not at all widespread, several women reported anecdotes of initial tensions with their husbands because of their engagement with AE+6 activities. These apparently arose because of some initial changes in the roles within the household or perhaps also due to the wider discussion about gender and resilience at the community level. At the same time, these women informants indicated that once the economic benefits became apparent, these tensions subsided. These two socially oriented negative effects emphasize the need for any resilience approach to carefully consider local socio-cultural dynamics and closely consult within all actors in communities to reach a good understanding of resilience, and of the need to meet the specialized needs of the most vulnerable groups, including women and resource poor households.</td>
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ANNEX III. Cost-benefit analysis

To what extent are the results to improve resilience cost effective compared to the alternatives?

The assessment of the independent consultants was that the various agroecological practices that constituted the “foundation” of the AE+6 for resilience approach (of transforming the farming system) were cost effective, compared to the traditional or external input /conventional ways of farming. This is because almost all the agroecological innovations were “low cost or no cost”. Aside from labor, they tend to substitute external inputs with improved application of ecological processes for farming. The exception was the provision of water (for dry season gardening), and purchase of improved short cycle seeds. The key techniques, including FMNR, (agroforestry), soil and water conservation, fast composting, market or home gardening, savings and credit, rotation, intercropping and improved nutrition based on local food products (i.e., enriched porridge), helped farm families reduce risk, reduce costs of external inputs, while increasing yields and this in a relatively short time.

How can the ratio of costs be compared to benefits (cost-benefit analysis)?

Although the terms of reference for evaluators in each country included a section on conducting a cost benefit analysis of the various components of the AE+6 approach, and outlined a methodology, none of the independent consultants contracted were able to carry out this part of the evaluation. The main reasons were:

- The time frame for AE+6 to produce significant, lasting results and impact was too short
- There was not a sufficient evidence base, in terms of baseline data and final results at the end of AE+6 to conduct a rigorous assessment of benefits (i.e. diversity of diet)
- Some of the benefits, such as FMNR were longer term in nature; it was too early to assess results
- The multiple sector, integrated approach made developing a rigorous methodology for a cost benefit analysis extremely complex, and costly.

Finally, the AE+6 resilience program was designed as a “proof of concept” initiative to determine if it was feasible to interest and motivate dryland farm families to organize and engage in a progressive process of agroecological intensification to transform their farming system, while address the issues of nutrition, equity and women’s empowerment. A much longer term project design would have been required to determine the longer term economic, environmental and social benefits and assess the extent to which they could be sustained.

In light of these issues, Groundswell and its AE+6 country partners decided to address the issue of “cost benefit analysis” by reviewing existing literature, focused on one key aspect of the AE+6 approach, FMNR. While there is no one single practice that can bring about transformation of the farming system, as well as nutrition, gender and equity changes needed for resilience, FMNR can be considered the central basis of transformation, because of its multiple benefits (income, crop yields, soil health, addressing climate change, benefits for women –firewood, reversing land degradation, reducing risk. There is also some indication in the literature that FMNR often services as a key catalytic intervention for resilience. Therefore, this section presents a quick review of the multiple benefits and cost benefit analysis of just one key component of the AE+6, FMNR (based on the literature with cases in Senegal, Burkina Faso, Mali and Niger dryland conditions). The assumption is that if FMNR, by itself is cost effective and generates a high rate of return, most of the additional
AE+6 interventions (being low or no cost) would only add to the rate of return. The evidence suggests that every dollar invested in FMNR may create a 6 dollar benefit to local farmers and up to a 13 dollar benefit to global society due to advanced ecosystem services and carbon sequestration. This estimate of net present values does not include the multiple and diffuse social benefits from FMNR as described below. This cited cost benefit ratio is therefore an underestimation.

Benefits of FMNR

Note: the main references in this assessment are cited in SAREL (Sept 2016) Farmer Managed Natural Regeneration in the Sahel: A Literature Review. The Mitchell Group, Inc. (TMG) under the USAID/Senegal Sahel Resilience Learning (SAREL) Project contract (Contract #AID-625-C-14-00002) for the United States Agency for International Development (USAID)/Senegal.

Research findings about FMNR practice have shown overwhelmingly positive results. Measured benefits have included increased tree cover, increased crop yields, and contributions to household income and local economic value. Economic benefits have resulted from sales from firewood, tree leaves, and other non-timber forest products. Per hectare profits have been reported to be greater for poorer farmers compared to their wealthier counterparts (Reij & Winterbottom, 2015). Assessments indicate that in regions where FMNR has been practiced, degraded land has been restored, crop yields have increased and resilience to shocks has strengthened. Financial benefits through sales of tree products and increased grain and livestock production are estimated to be up to $250 per hectare. (Haglund E. et al 2009 p.27). A USAID report by Larwanou, Abdoulaye and Reij (2006) classifies how Nigerien farmers perceive benefits of FMNR into eight categories. They reported benefits on revenue, the environment, agriculture, livestock-raising, food security, nutrition, women and youth. More details on each of the benefits can be found in their report.
Household income and local economic value. Binam et al. (2015) add to the evidence base showing that FMNR increases income as well as food security. Their economic analysis of a sample of 1080 households in Burkina Faso, Mali, Niger and Senegal found that an average household in the Sahel practicing FMNR continuously would gain a gross income increase of $72 USD per year. This paper used a multi-valued treatment framework to assess the effects of FMNR on selected outcomes among 1080 rural household farmers in the Sahelian and Sudano-Sahelian ecozone of West Africa Sahel. The results indicate that keeping, protecting and managing trees in the farmland have significant effects on the livelihoods of the rural poor in the Sahelian countries. If 1000 households in a community decide to practice FMNR continuously, their gross income increases by US$ 72,000 per year. Other estimates that include sale of firewood and non-timber forest products estimate an average increase of $140 dollars per household. Another study indicates an observed significant increase in the value of the products harvested from tree by about 34–38 % among those households actively practicing FMNR compared with those that were not.

Crop Yields. There is a range of crop yield increases. One of the more conservative estimates is an increase of 15-30% (Weston, Peter, et al 2015) at [http://link.springer.com/article/10.1007%2Fs00267-015-0469-1](http://link.springer.com/article/10.1007%2Fs00267-015-0469-1)
Mali, Sahel Eco

Increased tree cover. Households who practice FMNR have more trees per hectare of farmland and a greater diversity of tree species than non-practitioners. FMNR adopters are reported to have about 44 trees per hectare representing 9 different species compared to about 29 trees per hectare representing seven different species for their matched (Haglund et al. 2009). A 2016 study by Stith, Giannini, Corral, Adamo and de Sherbinin provides additional evidence that FMNR increases tree cover where it is practiced. The researchers conducted a spatial analysis of Burkina Faso, Mali, Niger and Senegal to ascertain whether human influences have been effective in combatting land degradation in the Sahel. In Niger, Baggnian, Adamou Mahaman, Adam, and Mahamane (2013) measure changes in tree density in farmers’ fields over time. Baggnian et al. found that tree density in Maradi increased in the village of Dan Saga (from 146 to 151 trees per hectare) and El Guiéza (from 60 to 109 trees per hectare). In Zinder, tree density in fields increased from 32 to 79 trees per hectare where there was leadership in managing FMNR.

Benefits to Women. Women are said to benefit substantially from the adoption of FMNR, with one advantage being the reduced amount of time they spend collecting firewood once the wood supply has increased. Stickler cites Reij (2006) in saying that the time women spend collecting firewood where FMNR in not adopted averages 2.5 hours compared to 30 minutes where FMNR is practiced. Another benefit cited for women in Niger’s Zinder region is that they can make up to $210 per year selling leaves from baobab trees that they own; Reij et al. (2009) also say that farmers report that women engaged in FMNR hold better positions economically and are better able to provide a nutritious and diverse diet to their families.
Dietary Diversity. There is research that supports the household resilience hypothesis of FMNR in that it leads to a significant increase of the dietary diversity by about 12–14%. Binam, Place et al. 2015).

Livelihood Impact. In the second half of the Weston et al. literature review, the authors present their original research using a “social return on investment” (SROI) methodology to study FMNR in the Talensi community in Northern Ghana. The advantage of the SROI methodology as a research approach is that its participatory nature allows it to measure hard-to-quantify benefits in a way that is relevant and useful to the stakeholders. It relies on the perceptions and experiences of the stakeholders themselves in assessing the value of financial returns (Brouwers, Prins, & Salverda, 2010). Weston's SROI study was also the focus of a World Vision report, with more detail provided about the SROI methodology and additional results found (Weston & Hong, 2013). Weston et al. state that theirs is the first study that aims to quantify non-monetary benefits of FMNR, like health and psychosocial benefits, which they cite as a gap in existing literature based on their review. Weston et al.'s study found that what was most important to the Ghanaian farmers was not necessarily the increase in income, but rather the nonmarket benefits such as asset development, health improvements, and psychosocial well-being. Weston et al.'s findings provide insight into benefits that had not previously been quantified regarding FMNR. From the data they gathered, Weston et al. estimate that the livelihood impact per household from the FMNR project there was between $655 USD and $887 USD per year, including the social, health, environmental, and economic values. Through their interviews with farmers, they found that the most valuable outcomes from the perspective of farmers were:

(1) increased assets in the form of tree stocks and improved livestock;
(2) increased wild resources (especially wild foods and construction inputs) for household consumption and sale and associated dietary health benefits;
(3) improved psycho-social wellbeing as a result of a more aesthetically pleasing and comfortable community and work environment, enhanced leadership capacity of FMNR group members, and a more positive outlook; and
(4) improved soil fertility and crop yields (Weston et al., 2015, p. 1415).

Asset building, health outcomes and psychosocial well-being are additional areas where research has begun to show positive impacts of FMNR (Weston, Hong, Kaboré, & Kull, 2015).

Equity. In terms of wealth, Reij and Winterbottom (2015) say that in some cases it may be that poorer farmers in Niger have higher tree densities on their farms than do rich farmers (Yamba & Sambo, 2012, as cited in Reij & Winterbottom, 2015). They suggest this may be due to the strong dependence of poor farmers on their lands to maintain their livelihood. What the literature makes clear is that a certain income level is not required in order to adopt and benefit from FMNR.

Cost Benefit Analysis of FMNR in Mali
The study presents an ex-ante cost benefit analysis of large-scale agroforestry and reforestation in the Kelka forest area in Mopti, Mali (near the AE+6 program area of Sahel Eco in Mali). The analysis...
is based on high-resolution remote sensing techniques, an explicit spatially distributed hydrological model, and a crop growth model, developed to assess the impact of land use change on firewood availability, soil moisture, carbon sequestration, and nitrogen fixation. To collect relevant baseline information for the study, authors developed a field sampling design to estimate the availability and household dependency on forest resources, and conducted expert interviews to estimate the costs of agroforestry and reforestation. Authors then visited the field site, met with key stakeholders, implemented the field survey, and gathered socioeconomic data. The community had about 90 households, and a total of 85 household heads were interviewed. On the basis of this cost-benefit analysis, the net present value of Kelka to the local communities as well as to society as a whole is estimated as the sum total of the value of enhanced firewood production, carbon sequestration, nitrogen fixation, soil moisture and water infiltration, less the implementation and management costs, for three different discount rates. The study demonstrates that the benefits of large-scale landscape restoration from acacia reforestation and agroforestry in the Kelka area largely outweigh the costs both at the local and global levels for a time horizon of 25 years.

Every invested dollar may create a 6 dollar benefit to local farmers and even a 13 dollar benefit to global society due to advanced ecosystem services and carbon sequestration. The net present values estimated in this study do not include diffuse benefits from agroforestry as described above. The benefits are therefore under-estimated rather than full comprehensive benefits. Furthermore, the study was based on simulated climatic data of the past 20 years and does not consider the possible additional benefits through adaptation to increased temperatures and other changing climatic conditions.

Return on investment for FMNR. According to a study to assess the return on investment of FMNR, undertaken by the regional Permanent Inter-state Committee for Drought Control in the Sahel (CILSS) on the economic impact of the RNA, the cost of investment and maintenance is between $6.22 USD and $19.55 USD per hectare depending on the nature of the terrain. This study estimates that the revenues generated by the sale of wood, over 5 years, will be more than $177.77 USD (either for firewood or other wood products such as roofing poles). The Return on Investment Rate of Return is 31% for FMNR which is equivalent to annual interest rate of 11% for a payback period of 15 years. However, this calculation only estimates the sales of timber products and none of the other benefits described above.

Linkage of FMNR to other aspects of the AE+6 approach. The CILSS analysis determines the economic benefits generated only from FMNR. If combined with the other “foundational” AE+6 agroecological practices, including compost, soil and water conservation, rotation, intercropping and local improved seed, as well as dry season gardening, which are all low or no cost innovations (excepting labor), the benefits are vastly increased, mostly because farmers then avoid a range of negative impacts in the case of stress and shock, such as damage and losses (through adoption of improved practices), taking loans at high interest rate (through savings and credit), having to sell crops at low prices (through warrantage), selling animals or other assets at low costs to meet food needs, buying food in lean season at high prices (through increased food production). This enables the poorest households to escape the debt/hunger trap.
Sources cited above, in addition to the USAID report:


Annex IV. Detailed lessons learned on an effective approach for strengthening the resilience of dryland farmers in the Sahel

While we cannot predefine a standard response, as it depends on what the community needs and prioritizes, there are several lessons about the most effective process for strengthening the resilience of dryland farmers in the Sahel. Importantly, this work is most effective when carried out in a region where there are already existing relations, credibility and history. The local authorities, community leaders and local governance structures should be included from the start in order for them to feel ownership and play a role in scaling. We have identified 10 crucial steps in the AE+6 resilience approach:

**STEP 1:** It is of fundamental importance to first define, together with beneficiaries, the main, primary causes of chronic vulnerability through a participatory diagnosis process. This is the basis for developing and implementing innovations that are supported as a solution to a problem that is collectively defined.

**STEP 2:** Let the communities identify a limited number of relatively easy, low-cost and relevant innovations for resilience that generate relatively quick and significant benefits. The reason for this is fostering local enthusiasm, engagement, trust and credibility, creating the basis for subsequent involvement of leaders and other innovators in support of the longer term resilience process. To aid this process, we have identified a set of five so called “foundational” innovations that can help build resilience to some of the root causes of chronic vulnerability: soil degradation and climate change. These innovations include soil and water conservation, tree based farming, composting, short cycle seed, and crop diversification.

**STEP 3:** Train local trainers about how to implement these practices and facilitate a process for them to share this knowledge with other farmers in the village, using a local multiplier effect with learning visits at the basis. Crucial in this strategy is the proven assumption that farmers learn best from other farmers.

**STEP 4:** In order to ‘roll-out’ the practices and the learning process in the broader territory, organize the various villages within a territory or distinct agroecological zone in clusters, based mostly on geographic proximity, socio-cultural or economic criteria (ethnicity, language, market linkages). Within each cluster, one “motor village” that has exceptionally high interest, leadership or willingness to innovate can serve as a learning centre to influence the other villages.

**STEP 5:** Undertake a participatory process with actors in these motor villages to identify key problems and seek out innovative practices existing inside or outside the village that address those problems.

**STEP 6:** Organize learning visits to places where these practices may already be applied, and support farmers in the motor village to test and adapt them on their own land. As soon as results become visible, conduct an internal learning visit from other farmers in that village to assess the new practices, followed by similar learning visits by leaders of surrounding villages in order to create enthusiasm.

**STEP 7:** Once interest is established, train a large number of farmers from surrounding villages in the new practices, on condition that they each train 4 or 5 other interested farmers in their area.
STEP 8: When the foundational innovations are being adopted widely and a certain level of interest and motivation is awakened among the communities, work with the most dynamic of the motor villages to identify, test and adapt more complicated innovations, including social innovations to address the needs of the most vulnerable households; women’s livelihoods, and nutrition. For example, increase awareness of nutrition, including of partner staff, which leads to more motivation for agricultural diversification such as growing the nutritious leaves of baobab and moringa. And when women have access to land and water, take part in training and have money, this absolutely helps to advance and scale up this approach. Combining the strategies allows for optimizing the potential synergies in transforming the socio-ecological system for more resilience - we have now reached the heart of the AE+6 approach.

STEP 9: Strengthen the governance capacities of local leadership and community based structures so they are able to lead, manage and sustain this process for scaling independently. At the local government level, the program showed that change for resilience is possible, but only if institutional incentives, local resources, and national level policies and programs are reformed to create a positive enabling environment.

STEP 10: Amplify the reach of the innovations through the use of local media, especially rural radio; organizing competitions/prizes to engage more people; and deepening the knowledge of a growing network of farmer trainers.
ANNEX V. Detailed lessons learned on equity and inclusive decision making

Inclusive decision making is important for resilience because it is key for addressing crucial inequity issues in the socio-ecological dryland systems of the Sahel which keep people locked in vulnerability.

Currently, up to 20 percent of the households are locked in a hunger/debt trap. They need to be included explicitly in any resilience strategy to ensure that it is not only the rest of the population that becomes more resilient, particularly in terms of reducing humanitarian assistance. Our experience is that enabling the most vulnerable households to participate in the decision making on diagnosis, problem solving and solutions is essential to ensure that the support provided is relevant and effective for building their resilience. At the same time, it is not sufficient to be in dialogue with the most vulnerable groups only. To address inequity and effectively build resilience, requires dialogue with community leaders, and with the targeted women’s husbands to ensure their commitment to and local ownership of resilience efforts.

The AE+6 program targeted the most vulnerable families with tailored support and material assistance within a broader resilience approach. The key constraint for improving the livelihoods of most vulnerable families was identified through a participatory process as the “debt/hunger trap” in which they are caught. Specific activities to address this trap were decided on together with these families, and therefore varied across program sites and in effects. The most beneficial activities overall, across all contexts, 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.

It was of fundamental importance to include the poorest and most vulnerable households and individuals (women) themselves in the diagnosis, planning and decision making on these actions. We did however also engage the wider community in the decision making processes and built on local social-cultural values in support of solidarity, and mutual help. This helped diffuse jealousy, misunderstanding, and strengthened community commitment to resilience.
Therefore, in a participatory process with the communities, we first identified the most vulnerable families in the community, using a combination of locally determined, and external criteria. As examples of locally determined criteria, communities often associate vulnerability with the number of months a family is able to produce its own food during a year, the size of land, amount of labor available, and the number of animals owned by the household. An exterior measure that worked well was the Household Food Insecurity Access Score (HFIAS).

Factors of success for improving equity and inclusive decision making

- participatory identification of the most vulnerable groups, with a focus on the poorest and on women;
- engaging the wider community, including representatives of the more vulnerable and the village chiefs, in participatory diagnosis and decision making about how to address resilience;
- organising women in groups (either for savings and credit, or for group gardening or farming) to strengthen their organisational capacity and so they learn to speak in public, first among themselves and then in the wider community;
- as a convener, raising awareness on the needs of the most vulnerable, and skillfully facilitating space for dialogue and discussion within the community for this. The opportunity for doing so was enhanced because the project was also providing support to the full community, not just to specific groups;
- strengthening women’s technical competence in agroecology, in order to strengthen their financial capacity which in turn also strengthens their role in decision making.

Constraints for improving equity and inclusive decision making:

- sociocultural factors: when people (especially women) do not farm and do not have an income, they are often not taken into account;
- access to resources: for women it is more difficult to get a loan to access land.
ANNEX VI. Detailed lessons learned on addressing gender constraints

We paid special attention to the position of women, particularly women from the most vulnerable households, who often play a critical role in the household economy but are rarely recognized for it. There are many socio-cultural factors in our region that impede women to speak up and participate in decision making processes. In our experience, women often merely repeat what men have already stated. That is why women empowerment was a central strategy in our project. The specific actions to overcome this were two mutually supportive strategies of strengthening women’s voice in decision making and strengthening their leadership, confidence, knowledge and organization. Our concrete strategies to empower women included savings and credit systems, vegetable gardening, technical and organisational capacity building in growing and processing food.

Through organizing the women in the savings & credit, training and gardening groups and building their technical and financial capacities, women gained the skills and the confidence to speak up, first among themselves and later in mixed audiences. While it was impossible to address all the socio-cultural barriers to inclusive decision making in the short time frame of the program, we did see significantly more women taking (or influencing) decisions in their houses and in their fields as a result of our work. We found that when women obtain technical competence and financial resources, they gain more autonomy and decision making power in the household, including on agricultural issues. Women who had neither, were often completely ignored in decision making.

Women’s Savings and Credit groups receiving kits, Burkina Faso (ANSD)
Factors of success for empowering women and improving gender equity

What worked very well was the following:

- 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.
- Encouraging women to form groups and broaden the base of women leadership, with savings and credit activities as the basis of organization. In Mali, it helped to mobilise money for training in processing and for buying equipment and baobab seedlings for the gardens. The success was a result of the way the women organised by affinity, were structured very systematically, and gained organisational capacity. In Senegal, the S&C groups also allowed the women to negotiate good prices for things they buy in quantity, and they would be able to get loans from banks. In Burkina, women were so motivated to join, that some decided to set up their S&C groups independently. A new insight from all countries is that we found that the money acquired through S&C is sometimes not used for productive causes but for social causes, eg health issues. Perhaps this should be taken into account in future projects, and another social security mechanism should be included to protect productive capital in times of shock.
- Supporting women groups to speak with a strong collective voice in community wide discussions and organizing and facilitating community discussions explicitly on gender issues. We saw that when people understand the necessity to let everyone speak, they themselves will protect the vulnerable’s right to speak. This awareness raising also included skillful facilitation of community dialogue, giving women the word first, creating trust and confidence, and ensuring women would not get interrupted and re-assuring men they would get a chance to speak.
- Ensuring that women leaders participated in learning visits and in technical training on agroecological innovations, which enhanced their role in decision making. When women have knowledge and money (through agroecological training and practice) they are better taken into account in decision making. And when they are involved in decision making they are also better able to carry out agroecology and increase their resilience. Similarly, we observed that when women are included in decision making about agriculture, they will generally opt for agroecology and diversity (instead of pesticides, herbicides, monocultures etc) because they are responsible for the health and nutrition in the household and “do not want to use poisonous leaves in the sauces that accompany every meal”.
- What worked well in this respect **in Mali**, where we organized video showings in villages with interactive discussions afterwards:
  1) combining entertainment with learning and
  2) planning trainings in the evenings, which allowed women to participate.

Factors of success in Burkina:
1) the decentralised nature allowed many women to come,
2) imposing a quota for women participation: one woman, one man, and
3) organizing a contest on best agroecological practices, with a special prize for women for each category which motivated many to participate.
4) Decentralizing training workshops to reduce problems of women’s ability to travel far from their homes. This strengthened the awareness, confidence and leadership of women and allowed them to be more active in decision making in their own communities.

The activities that were **less successful** included vegetable gardening where women do not have access to land or water. Where the water table is too low, water is so expensive that people cannot imagine “throwing it on the soil”. In other cases, the women have to walk too far to find water, which is impossible for those who are not very strong.
As a result, about 70% was successful and 30% not. Access to land was difficult to achieve. We did have some success, for example, in Mali we supported various women to sign agreements for a minimum of 5 years with the village chief and the land owner (and sometimes the mayor). In Senegal we supported women to form a group to identify the land they wanted to work, after which they talked to the village chief and he decided to give them land or find others to give land. Then they would go to the mayor to sign an agreement - his participation is crucial. But in all cases it remained very difficult for women to gain land for vegetable gardening. Finally, the planned strategy to promote processing of non-timber forest products was not very successful, as products did not make their way to the market; the demand was too low.

Unexpected outcomes
There were also unexpected outcomes in terms of addressing gender inequity, and we collected anecdotal evidence of how these strengthened the role of women. In the agroecology training process we have formed women trainers, who now convene others and have become a reference in their communities. Seeing them take on this role has reportedly changed the perception of women by men in the communities. Other women convinced their husbands to take up some of the new farming practices. ‘She is now my teacher’, these men say, in a reversal of traditional roles. In another example, people are now eating more healthy, traditional local foods, and women that are trained in preparing these foods are recognized as the ‘chefs’ of the villages - a prestigious title. Finally, various men have become highly interested in gardening and want to have more fresh vegetables. They will “even” take on the women’s gardening tasks when they are absent. “Our men are proud to eat lettuce!” these women say smilingly.
ANNEX VII. Case studies and Policy Briefs

PDF versions available for downloading at

https://www.groundswellinternational.org/ae6-resources/

Case Studies
Integrating equity into agroecology to improve the resilience of rural communities in the Sahel

Empowering women in agroecology: an essential component for the resilience of rural communities in the Sahel

Integrating nutrition into agro-ecology for strengthened resilience of rural communities in the Sahel

Resilience of dryland farmers in the Sahel: reliant on sound and effective local governance systems

Policy Notes

Policy note: Improving the resilience of rural communities in the Sahel through pro-equity agroecology intervention

Policy note: promoting women empowerment in agriculture to improve the resilience of rural communities in the Sahel

Policy note: nutrition-sensitive agro-ecological interventions to improve the resilience of dryland farming communities in the Sahel

Policy note: strengthening the capacity of local governance structures to improve the resilience of dryland farming communities in the Sahel