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2. Refined problem statement

An estimated 12 million small scale farmers and their families¹ in the risk prone, dry land² areas of the western Sahel³ have become chronically vulnerable to food and nutrition insecurity. Children under five and pregnant and lactating women are those most affected. An interactive and collaborative process generated this analysis:

Every year since 2012, more than 20 million people in the Sahel,⁴ out of a total of 86.8 million,⁵ faced serious to extreme hunger and under-nutrition. The majority are small scale farmers who depend on agriculture by growing dryland crops such as millet, sorghum, and cowpeas⁶. A growing percentage of farm households, estimated now to be over 20% in the Sahel, have become ultra poor, living on less than 0.50 USD a day⁷. These households suffer from hunger and malnutrition not only in bad rainfall years, but also in good years. They are forced to adopt negative coping mechanisms, including taking exploitative loans, eating seeds that should be saved for farming, and reducing the number of daily meals. They are caught in a corrosive cycle of poverty, debt, declining or erratic productivity and loss of assets, resulting in a “resilience deficit” and increasingly depend on humanitarian assistance. To address this on-going crisis in the Sahel, the UN appealed for 1.96 billion USD in 2015, up from 1.6 billion in 2012, which is a staggering ten-fold increase from the levels of emergency aid before 2005⁸.

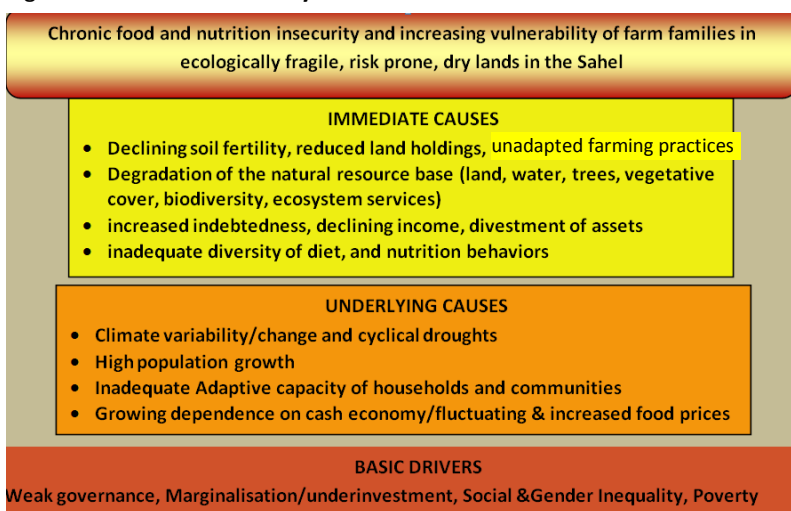
Problem analysis: Humanitarian aid has not prevented small scale farm families from a growing “resilience deficit” caused by multiple stresses, and recurrent climate shocks. Figure 1 summarizes the inter-linked causal relationships in a simplified manner. These changes have exposed millions of men, women and children in rural households to increased risk. Many households are losing their struggle to recover and improve their livelihoods. They live at the very edge of survival. Below is an analysis of the inter-related factors contributing to this negative cycle of chronic crisis affecting over 12 million small holder farmers.

Declining soil fertility: Poor soils lead to poor rural households. Regenerating soil health is an essential foundation for family farmers to reverse the negative cycle and progress in their battle against hunger and poverty. The Food and Agriculture

Organization (FAO) estimates that 80% of the Sahel’s land is now depleted of vital nutrients⁹. For centuries, farmers maintained soil fertility by fallowing for over 10 years, while clearing new land. Natural re-growth of trees and shrubs through fallowing slowly restored soils by drawing nutrients from lower soil layers, providing shade, and increasing organic matter through leaf mulch. Today, natural tree fallows have all but disappeared because increasing population has made family land holdings smaller. As most farmers no longer have enough land for fallowing, they remove more soil nutrients than they return, resulting in exhausted, infertile soils. As one woman farmer in the Kaffrine area of Senegal remarked during an assessment, “our soils are dead”. Current agricultural practices are not adapted to the current context and increase vulnerability.

Degradation of the natural resource base/conflict: As crop yields declined, farmers compensated by expanding the land under cultivation each year. Increased land clearing for farming, continuous cropping, soil tillage with ploughs, rampant cutting of trees to provide fodder, timber and fuel, and over-grazing of pastureland, led to a massive reduction of forests and vegetative cover. This has left more of the Sahel’s fragile soils and ecosystems exposed to the effects of erosion by wind and water. Conditions are exacerbated by

Figure 1: Problem Tree analysis of the “resilience deficit” of Sahel farmers



erratic rainfall, periodic droughts, and extreme rainfall events. During the short rainy season, the battering of raindrops of increasingly torrential storms erodes the topsoil. This leaves an impermeable hardpan crust that inhibits infiltration, and lowers the water table. **Conflict and growing work burden of women:** The growing scarcity of natural resources has also created tensions between livelihood groups (crop farmers and pastoralists), and added to the burden on women (to collect water, firewood, and get access to land).

Indebtedness, decline of income, selling of assets: As agricultural production and incomes decline, and food and nutrition insecurity increases, small holder farmers sell off their animals and other assets. They access food through loans or in-kind at high interest rates. They lack the means to invest in alternative income generation activities. The poorest 20% of farm families are often locked into a debt-hunger trap, from which they cannot escape with existing resources and strategies.

Lack of access to a diverse diet and poor nutrition practices: The crisis causes malnutrition, which undermines people's ability to escape the debt-hunger trap. Good nutrition is crucial to strengthened resilience.¹⁰ In the Sahel, 5.8 million children are estimated to suffer from global acute malnutrition in 2015¹¹. Of these 1.4 million require treatment for severe acute malnutrition¹². Children who survive are likely to develop chronic malnutrition, called stunting, which permanently erodes people's resilience and increases their vulnerability¹³. In Mali and Burkina, over 38.3% and 33%¹⁴ of children under 5, respectively, are stunted. For farmers, the inability to either produce or buy enough food for a nutritious, diverse diet contributes to under-nutrition. For a child born into a very poor farm family, the risk of becoming severely malnourished is 80%.¹⁵ In addition to inadequate food access, poor application of nutrition practices, and gender inequity affecting women's income and control of food, also are causes of malnutrition.

Climate change: The Sahel's climate has become more unpredictable. There is either not enough or too much rain. It often falls at the wrong time, delaying or shortening the growing season.¹⁶ Both more droughts and flash floods are more frequent. Most alarming are projections of a temperature rise of 3°C to 5°C above today's already high temperatures by 2050. Crop output can plummet if temperatures rise above a tipping point. With maize, for example, there is a 0.7% decline in crop production for each 24 hours exposure to a temperature above 29°C. One day of 39°C also causes a 7% decline in maize production.¹⁷ Yields of sorghum, millet, and cassava are all also adversely affected by rising temperatures, although the tipping point varies.¹⁸ By 2050, scientists predict a decrease in agricultural production of 13% in Burkina Faso, 25.9% in Mali and 44.7% in Senegal.¹⁹ Climate scientists are less certain about changes in the amount of rainfall.²⁰ Even if rainfall increases, soil moisture will decrease because of increased evaporation with higher temperatures in the dry lands, reducing crop yields.

High population growth: Sahelian countries have some of the highest rates of population increase and birth rates in the world. Since 1970, the population in the Sahel has already more than doubled. The collision of rapid population growth, declining soil fertility and some of the harshest impacts of climate change constitute an impending catastrophe for small holder farmers in the dry lands over the coming decades.

Growing dependence on the cash economy and volatility of food prices: Household Economy Studies²¹ indicate that poor and very poor farm families (often between 30-40% of all households) purchase up to 70% of their food using income earned primarily with local or migratory labor. Price spikes in food commodities, particularly in remote rural areas during the lean season before harvest, make many rural households highly vulnerable to food insecurity. At the same time, price decreases of cash crops such as peanuts or cotton produced by a household can severely limit its purchasing power for food.

Gender inequality: The most vulnerable people within farming communities in the Sahel are women and girls because of deep-rooted inequalities within the patriarchal culture that keep them in low social positions.

Pervasive gender inequality is perpetuated through reduced access to productive assets and basic services (i.e., health, education, credit, and extension) early or forced marriage for girls, and a lack of participation in decision-making. Mali, for example ranks 141 out of 148 countries in the UNDP Gender Inequality Index.²² Stresses and shocks add to the work burdens of women and girls, preventing them from using their specific skills and knowledge, and decreasing their capacity to adapt. This reinforces their vulnerability and gender inequality. Men and women experience the same risks differently, and have different coping strategies to food and nutrition insecurity. It is not possible to build resilience in households and communities in the Sahel without addressing systemic gender inequality. Addressing this will be a particular focus of this initiative.

Economic and social inequality: Even in rural areas with high poverty levels, household economy assessment studies across the Sahel indicate a huge gap in food security between relatively poorer households and better-off. This leads to erosion of traditional solidarity systems, and fosters exploitive relations. For example, better-off households often make up less than 20% of the rural population, (compared to about 30% for the very poor), but possess 50% of the cultivated land, 65% of the sheep and goats, and often more than 75% of the cattle²³. National level data show that poverty rates are slowly declining in the Sahel, but these gains are concentrated in certain sectors of the population. In Mali, poverty decreased from 55.6% to 43.6% from 2000-2010²⁴ but because of population growth the number of people living in poverty rose. The concentration of poverty is highly correlated with food insecurity, undernutrition, and the marginalization of rural areas. Most agricultural and resilience initiatives fail to address the differential livelihood needs of poorer rural families.

Inadequate adaptive capacity: The accelerating pace of change has overwhelmed the ability of traditional knowledge, local coping mechanisms and inherent adaptive capacity to overcome the major forces causing the major disequilibrium in dry land agro-ecosystems. While rural households and communities have developed innovations, the informal and unorganized local system for identifying, adapting, communicating and spreading new technologies is not adequate for achieving resilience. Low levels of community organizational and leadership capacity inhibit rapid social learning as well as advocacy for appropriate policies, programmes, and support to strengthen resilience.

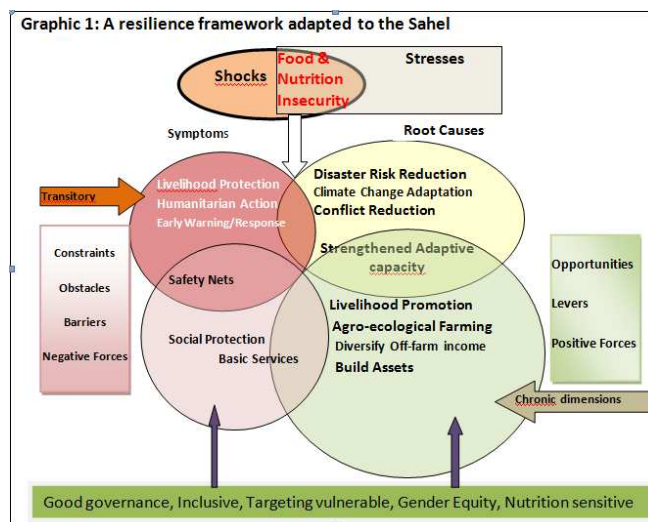
Weak governance²⁵, underinvestment and inappropriate research and advisory services for small scale dry land farmers: At the deepest level, driving or exacerbating other causes of declining resilience of small holders in the dry lands is **weak governance**. This is visible at multiple levels, for example by the low capacity of decentralised government to plan and lead multi-sectoral, collaborative processes to strengthen resilience of rural communities. At the national level, the resilience deficit reflects deep flaws in the agricultural development model focused on export crops such as cotton and peanuts, or on rice. This supports primarily commercially oriented farmers in more productive regions²⁶ and reflects the dominant narrative in the Sahel that stresses modern agricultural growth based on a narrow range of technologies associated with the Green Revolution, (improved seeds, herbicides, pesticides, chemical fertilizer and irrigation). This model has contributed to consistent macro-economic growth in Sahelian countries. Since 2005, real GDP growth rates for Burkina Faso, Mali, and Senegal averaged 6.4, 4.5, and 3.9 respectively²⁷. However, the African Development Bank (AfDB) notes that this growth has not been inclusive; benefits have not reached the rural poor²⁸.

A political economy analysis of agriculture in the Sahel describes **a triple neglect**: of agriculture as a sector; of the needs of small-holders in marginal areas ill-served by green revolution technologies; and of an alternative, multi-functional approach to agriculture better adapted to millions of dryland farmers. This neglect persists because of the lack of political will, the lack of capacity of small holder farmers and their organizations to influence to exert a strong demand for appropriate agricultural services, and ineffective strategies to address the complexities involved in scaling up agroecological innovations in each context²⁹.

3. Theory of change and Impact pathway

To bring about change, the first question is “**Resilience of what, to what, and for whom?**” For this initiative, **the responses are:** “of what” is the resilience of the dry land agro-ecosystem in each context (including the natural resources, the people, and their livelihood strategies, often cited as a “socio-ecological system” or SES); “to what” is chronic food and nutrition insecurity; “for who” are the estimated 12 million small scale farmers and their families living in the risk prone, ecologically fragile, dry land areas in the Sahel.

Based on this, Graphic 1 outlines the Groundswell’s GRC team’s resilience framework for the Sahel. Adapted from several sources, including USAID, and the four pillars of the regional Global Alliance for Resilience Initiative (AGIR), it clearly shows that food and nutrition insecurity has both a “transitory” (related to shocks) and a “chronic” dimension (mostly related to stresses). Strengthening resilience requires coordinated, long term, multi-actor interventions, addressing both the symptoms and root causes of chronic vulnerability to reverse the negative cycle. This requires better integration of **humanitarian action** (early response, livelihood protection, safety nets and basic public services), and **development action** focused on livelihood promotion, risk reduction and strengthening adaptive capacity of vulnerable households. All actions require addressing governance, social and gender equity, and nutrition, while seizing opportunities and overcoming constraints most amenable to outside influence, including improved market access. This framework indicates there is no “silver bullet” (i.e. a single sector technology) that can generate lasting improvement in resilience.

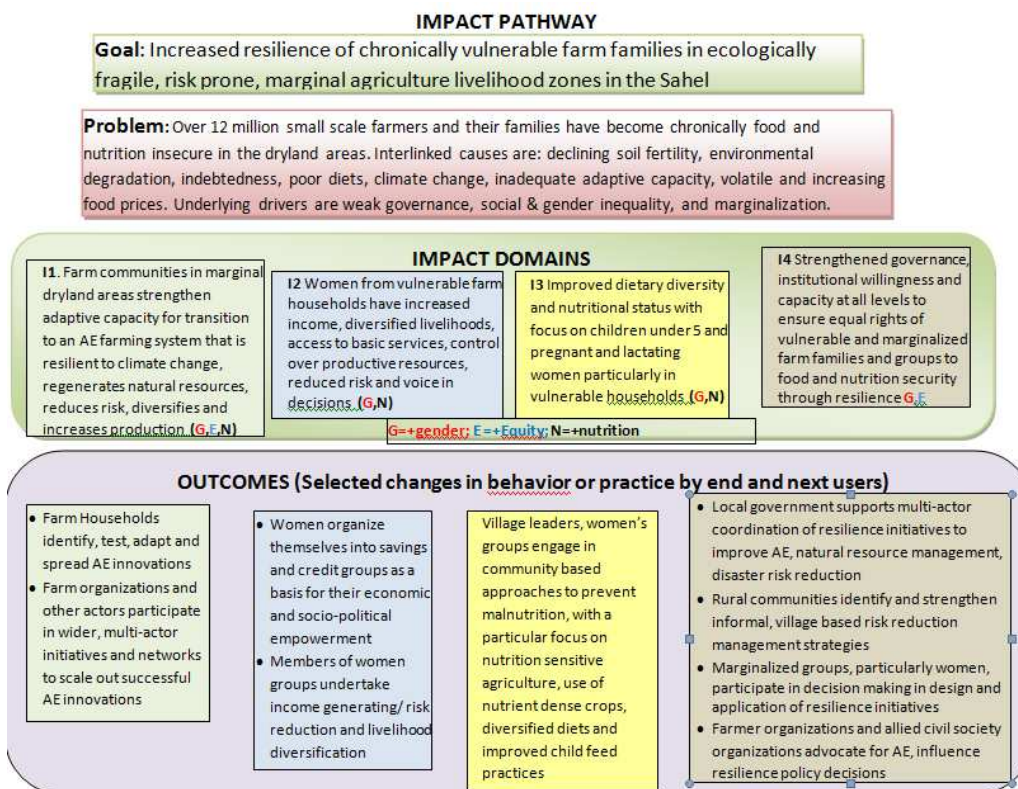


“Agroecology³⁰ Plus Six” approach: Groundswell’s GRC team will contribute to this comprehensive regional resilience framework by undertaking a progressive, layered, multi-sectoral intervention that addresses primarily the “livelihood promotion” and “risk reduction” circles, as well as the underlying drivers (governance, gender, equity, nutrition). This initiative will address most (but not all) of the inter-connected causes described in the problem analysis. While not a solution in isolation, the weight of evidence indicates that lasting resilience for dry land farmers is not possible without agroecology (AE)³¹. AE is the foundation for increased sustainable food production, regenerating the natural resource base, adapting farming to climate change, and strengthening social capital³². AE’s potential contribution to resilience can be greatly enhanced if integrated with 6 synergistic strategies: 1) a comprehensive scaling strategy involving methods that greatly differ from the conventional, top-down transfer of technology 2) explicitly differentiating support to address needs of the poorest, most vulnerable households 3) changing gender relations to enable women farmers to gain access to land, water, credit 4) harnessing AE to improve nutrition and improved diets. Beyond improving AE in these ways, Groundswell’s GRC team will also: 5) improve and diversify the **livelihoods of women** through savings and credit (strongly linked to improved nutrition), and 6) support locally adapted disaster **risk reduction** measures in coordination with communities and local government. This is the **AE+6 approach**.

Theory of change: The hypotheses of Groundswell GRC’s theory of change (ToC) are: 1) IF a “**proof of concept**” of AE+6 as an effective approach to strengthening resilience of resource-poor farmers living in risk prone dry lands in three representative SES contexts can be developed, and 2) IF the progressive sequencing and integration of elements generates high level of synergy and lasting resilience outcomes, and IF 3) evidence on how to rapidly intensify and accelerate outreach of AE+ at low cost can be created and 4) IF these experiences across 3 countries are systematized, documented and communicated to strategic actors and 5) IF existing farmers and civil society organizations, members of AGIR³³ resilience platforms, and allies strategically leverage AE+6 experiences to improve their own practice and undertake advocacy; THEN, governments and donors will

begin to shift their financial resources to support a more inclusive agricultural development approach and create a more conducive enabling environment for scaling out AE+6 to eventually reach the 12 million dry land farmers across the Sahel. This ToC combines **five approaches to change**: 1) emergence (testing and assessing complex adaptation 2) capacity building; 3) alliances/advocacy; 4) positive deviance (identifying champion farmers); 5) empowerment (power with and power to, for social equity and gender change).

Synergies will be developed between domains. To give only one example, **nutrition will be used as a practical enabling entry point for gender-sensitive resilience programming**. A nutrition lens (i.e., asking who is most at risk of malnutrition and why) leads to activities such as helping women grow vegetables, or ensuring women's availability for child care. Through this, one can address power relations and increase women's access to productive resources, and promote measures to reduce their work load without having to address these directly.



Geographic Scope: Groundswell's GRC initiative will work in 3 agro-ecological areas with similar livelihoods, rainfall, crops and conditions that characterize dry land farming in the Sahel. These include Kaffrine Region of Senegal, the Tominian Circle of Segou Region in Mali, and the Komondjari and Gourma provinces of Eastern Region of Burkina. Each has populations ranging from 150,000 to 300,000. The rationale is to foster learning and collaboration between team members and their respective organizations and networks, to identify lessons, principles and best practices that rise above different institutional and policy contexts, in order to clearly demonstrate proof of concept for widespread application across the Sahel.

Scaling Strategy: Barriers to scaling up AE are institutional and political, the 'triple neglect' discussed in the problem analysis. This is coupled with the failure by government and development agencies to recognize that small holder farmers in more 'marginal' areas require a different approach to support innovation and spread of improved farming practices. This derives from a persistent deep-rooted perspective on increasing agricultural productivity through delivering inputs such as improved hybrid seeds, irrigation, fertilizer, mechanization, and agro-chemicals – seen as magic bullets. This delivery is done through linear approaches to technology transfer. Rapid 'scaling up' assumes homogenous farming populations and conditions, overlooking patterns of diversity and distributional concerns. Complex and diverse needs are ignored in favour of supplying pre-defined technical packages³⁴. Even many initiatives to scale out AE are influenced by this "technology transfer" bias, and do not adequately take farmers' norms, culture, attitudes, objectives and differing resource levels into account.³⁵ The challenges for scaling are, therefore, to develop and institutionalize a more tailored "adaptive capacity" approach³⁶ to agricultural development based on farmer led experimentation, and farmer-to-farmer learning and spread. This approach goes beyond technology transfer to facilitation of interactive processes of

innovation and adaptation with farmers; beyond training, to farmer to farmer learning and exchange that values indigenous knowledge. It also requires finding ways to explicitly include groups that are often socially excluded such as women and the poorer farm households. For resilience, this focus on ‘adaptive capacity’ emphasizes process and systems thinking to reverse the negative cycle of factors degrading agro-ecosystems.

The components of the scaling strategy can now be summarized: 1) horizontal scaling (adoption across households and communities) of well-tested AE innovations, using methods such as strategic selection of “pilot villages,” clustering of villages, and farmer-to-farmer approaches 2) deepening AE by on-farm testing and adaptation of a “second wave” of innovations in selected villages, including processing and market access 3) promoting specific strategies to integrate nutrition, improve equity by reaching poorer households and address gender 4) systematizing/documenting the processes, principles and lessons learned; 5) leveraging this to influence (and learn from) the practice of “like minded” agencies, including national level farmer organizations and supporting scaling through their networks 6) strengthening the capacity of national farmer organizations, networks and allies to advocate for enabling policies for AE+6 and its inclusion in national and decentralized development plans, to overcome key institutional and policy barriers working against resilience.

Stakeholder analysis and forging multi-actor relationships with “boundary partners”: The success of this scaling strategy (and AE+6 overall) is contingent on the ability of the Groundswell GRC team to engage the collaboration of a large set of “boundary partners” and allies. Among others, these include: 1) local government, local technical agencies (agriculture, livestock, environment), and NGOs already working in the program areas; 2) research agencies (local and ICRAF, CCAFS); 3) provincial coordination/learning platforms (climate change adaptation); 4) national level farmers organizations (CNCR Senegal, CNOP and AOPP in Mali, FENOP in Burkina) and their allies for advocacy; 5) like minded NGOs (CARE, World Vision, OXFAM, Helen Keller International); 6) national platforms (SUN, REACH for nutrition, AGIR for resilience); and 7) regional networks (Prolinnova for farmers innovation). All of Groundswell’s team members have engaged these potential partners in their countries for developing this problem statement. To strengthen the multi-sectoral dimensions of AE+6, team members are exploring new collaborative relationships with agencies specialized in nutrition, women’s savings and credit, market access, advocacy, documentation, and with actors for influencing at the national level (WFP, FAO). One **lever for change** is the strong interest by governments and donors in AGIR.

Outcome pathways (draft logical framework): Context specific configuration of solutions are still being identified by Groundswell’s team and partners. When completed, it will be possible to decide on collaborators, and co-design with them the outputs, activities and resources for each country level resilience initiative. Illustrative outputs include: 1) poorer households and vulnerable women benefit from improved climate resilient livelihood options; 2) increased availability of affordable, diverse nutrition dense foods throughout the year; 3) improved mechanisms for diversifying and smoothing out income streams in lean season through savings and credit; 4) increased community level grain storage, seed banks 5) increased awareness and knowledge of local government of resilience priorities and opportunities.

Innovation and Unique Selling Point (USP); The innovations and unique selling point of the Groundswell GRC team’ approach are 1) a more appropriate system for innovation and spread of resilient agroecological practices through farmer experimentation and farmer-to-farmer learning; 2) explicit strategies to integrate gender, equity and particularly nutrition into AE; 3) addressing resilience both as an improved “**process**” (by which actors better coordinate a progressive layered approach for synergy across sectors and as an **outcome** (transformative change in the properties of farming/socio-ecological systems) 3) a radical alternative to conventional approaches to scaling 4) a “**rights based**” approach that direct links building adaptive capacity at the local level to advocacy by engaging civil society organizations nationally to overcome institutional and political barriers that inhibit resilience.

4. Environmental and social safeguards

Environmental safeguards: All agricultural practices have potential environmental impacts. Most of these are exacerbated in the ecologically fragile drylands of the Sahel. To ensure environmental and social integrity, and the long-term sustainability and resilience of dryland farming systems, the AE+6 initiative has established safeguards designed to protect environmental resources, ecosystems and the health and livelihoods of smallholder farmers, to guide the intensive consultations with local actors. This consists of a “do-no-harm” checklist. It contains principles for sustainable project design aimed to reduce negative environmental impacts of potential interventions. This do-no-harm checklist includes preventing or avoiding: repeated monoculture; over-use of inorganic fertilizers that acidifies soil and pollutes water; deep tillage plowing; dependency on improved plant varieties that demand high levels of external inputs such as inorganic fertilizer, pesticides and herbicides; careless or negligent use of pesticides that leads to poisoning, particularly in dry-season gardens; over-abstraction of local groundwater or surface water from wetlands; land-clearing activities such as slash and burn that contribute to deforestation and biodiversity loss; increased livestock holdings (i.e. goats) without steps to prevent overgrazing, by increasing fodder availability.

Social and governance safeguards: These include preventing marginalization of women and resource-poor farm households through non-participatory, socially non-differentiated and gender-blind activities. This may entail facilitating tenure or user rights over land and water, tailoring specialized access to advisory and support services (such as credit) and ensuring that women’s workloads do not increase and their ability to ensure childcare is not weakened. AE+6 will support bylaws and local/national governance in alignment with “do-no-harm” principles.

If awarded a full grant by the GRC, the AE+6 initiative will undertake the full IEE process. It will describe the strategic vision and how principles to do no harm to local natural capital of land, water, flora/fauna, as well as to the people in the SES, will be integrated into the 2-year implementation plan, over baseline levels.

5. Risk matrix

Risk	Probability	Potential Impact on project	Management Strategy
Political instability	Medium in Burkina and Mali, low in Senegal	Transitional period in Burkina & elections could disrupt national-level policies and ability to do advocacy	Monitor national-level politics and policy processes to seek opportunities, particularly with regional AGIR ³⁷ and existing platforms
Conflict and/or Insecurity by Jihadist insurgency	High in Mali, low in Burkina, low in Senegal	Prevent access to program areas; disrupt national development priorities and resources	Develop contingency planning and security protocols; ensure operations not dependent on expatriate leadership
Food and nutrition insecurity crisis becomes acute due to drought	Low to medium in program areas	Slow or inadequate national response may deepen food insecurity, lead to negative coping mechanisms and disrupt project activities	Develop strong relationships with local and national early warning systems; advocate for early response
Local (commune) governments not open to participatory processes and/or resilience focus in planning/budgeting	Low	Lack of support for resilience initiatives, gender and inclusive processes will undermine local coordination, sustainability and scaling of promising innovations	Undertake effective awareness raising, relationship building and influencing on resilience; engage other national-level leaders in exchange visits
Willingness/capacity of local actors to engage in progressive, integrated multi-sectoral AE+6	Low to medium	Low level of “ownership” of process, other priorities, lack of resources, and not being open to new ideas may inhibit change	Engage in highly collaborative consultation at each stage of program process; budget resources for engagement
Potential “quick win”, highly scalable options for strengthening resilience not available	Low	Lack of immediate enthusiasm and credibility at both community and local government level	Do intensive research for existing success stories; support farmer-to-farmer exchange visits to generate enthusiasm
Challenge to engage poorest households and to foster gender change for equity	Low to medium	Lack of resources, assets, debt or socio-cultural barriers prevent the most vulnerable households and women from improving resilience of their livelihoods	Raise awareness of staff, partners and communities; apply best practices to differentiate between resource levels and for gender equity
Challenge to strengthen coalitions and capacity for advocacy by civil society /farmer organizations, networks, alliances at national level	Medium	Differing perspectives and priorities and limited capacity in effective advocacy may inhibit amplification of marginalized farmers’ voices to influence AGIR and national policies for AE&6	Invest strongly in strengthening existing relationships with civil society organizations/allies, recognize existing advocacy platforms, but work to influence priorities, strengthen capacity
Local and national level policies and programs and dominant thinking about agriculture not favorable to AE+6	Medium to low, depending on issues. Medium for agroforestry. Laws sometime favorable but application poor.	Bylaws preventing community management of trees on fields, Green Revolution thinking and programs inhibit shifting in finance for scaling AE in marginal dry lands	*Policy change requires time, perseverance & seizing strategic moments; *build a solid evidence base “proof of concept” to leverage AGIR process ; *strategically leverage support from champions within policy circles

6. Measuring Resilience:

The monitoring and evaluation of the AE+6 initiative will be multi-dimensional and apply multiple methods, (including community based participatory monitoring) using visual indicators, because:

- some objectives relate to scaling out (accelerating the spread and adaptation of proven AE or re-greening related innovations across many villages in each agro-ecological area)
- other objectives relate to “deepening” in fewer villages (testing and developing innovations to diversify women’s livelihoods, to improve nutrition, and to integrate gender and equity within AE)
- there is a need to go beyond monitoring outcomes of individual domains in order to assess changes in resilience of the farming system holistically.

For scaling, the Groundswell AE+6 resilience team will assess changes using “sentinel village sites” (a limited number of villages representative of the wider scaling out effort. Data will be disaggregated by gender and household economy level. Below are **illustrative measures** that the Groundswell AE+6 team will use for each of the domains of resilience (these cover also the six elements to integrate into AE):

1. Transition to an AE farming system

- # and % of households adopting and applying new AE technologies,
- Changes in household asset ownership
- Self perceived coping/adaptive capacity
- % of households with access to positive risk reduction strategies

2. Women’s empowerment/strengthened or diversified livelihoods

- Changes in diversity and level livelihoods
- Increase in assets or income
- Access to credit and productive resources
- Self perceived increase in confidence, participation in decision-making
- % of women with direct access to positive risk reduction strategies

3. Improved nutrition

- dietary diversity of pregnant and lactating women and children under 5 years
- % of children 6 to 23 months of age that received a minimum diversified diet
- % of mothers practicing appropriate care/feeding practices
- % of men/women with positive knowledge and attitudes about care/feeding practices

4. Strengthened governance and institutions

- Strengthened community based organizations, leadership and participation (women and men)
- Improved local government capacity to coordinate and support multi-actor, initiatives for resilience
- Improvements in local government structures, laws or programs for resilience (natural resource management, early warning/response, risk reduction)
- Strengthened capacity and initiatives of farmer organizations and allies for advocacy (national level)
- Strengthened capacity and initiatives by community based organizations for risk reduction

Holistic assessment of resilience: the Groundswell AE+6 resilience team will use the *Self-evaluation and Holistic Assessment of climate Resilience of farmers and Pastoralists (SHARP)*. Developed by the FAO, the **SHARP** methodology³⁸ emerged from a multi-step process that reviewed and analyzed twenty existing tools for resilience assessment by academics and practitioners (including Groundswell staff)³⁹. Since then, the FAO has been intensively field testing SHARP in Africa, including four countries in the Sahel, including Senegal and Mali.

SHARP is a participatory survey-based instrument designed to enable farmers to self-assess their climate resilience. SHARP is at once a project planning tool, a way to establish a baseline level of resilience, and a method to monitor changes in resilience. It fills an important void in farming system resilience assessments. It is carried out in an integrated, participatory, yet scientifically sound manner.

In the first phase, local facilitators use the SHARP survey questionnaire to help smallholder farmer groups understand what resilience is, and to assess the governance, environmental, social and economic dimensions of resilience. This is based on 13 key resilience and sustainability indicators for transition of farming systems from traditional to agroecological farming within a SES (Social-Ecological Systems) framework. These were developed through multiple consultations with specialists and practitioners of agroecology. They include: diversity, increased livelihood options, improving biological processes, improving production and nutrition levels, reversing soil and water degradation, strengthened adaptive capacity at the household and community levels, levels of self-organization, and redundancy in the SES.

The second phase consists of a gap analysis and assessment of the responses at the local level with farmers in a rapid assessment to identify areas of poor resilience in their farming system and livelihoods. After aggregating the village level data, this analysis is carried forward at the district and national levels through a more in-depth, cross sectional assessment. The third phase engages local government officials, technical agents and policy makers in assessing the effectiveness and gaps in agricultural policies. In the fourth phase this information is used in conjunction with climate and scientific data to inform and improve farmers' practices and to influence local and national policies.

Many aspects of SHARP make it a highly appropriate methodology for measuring resilience within the GRP initiative. SHARP:

- is one of the few tools specifically targeted at agro-ecosystem resilience and agriculture, (and more precisely, to farming systems, with a focus on transition to agroecology)
- is a tool and methodology to assess and monitor changes in resilience that is highly accessible, easy to understand, and can be applied by most field workers
- is not limited to analysis and measurement but is designed to be “action focused” i.e., results are used individually and collectively to engage farmers and communities themselves in developing locally relevant strategies to strengthen their resilience
- permits data to be aggregated at the community level and across communities to provide a holistic understanding of farmers' practices and conditions in a given agroecological area, and broader patterns of priority areas and opportunities for targeted interventions to strengthen resilience (or address gaps)
- allows facilitators to segregate respondents by socio-economic status or gender, to generate a comparative analysis of resilience needs by social groups within or across communities
- enables comparison within and among different farming systems, allowing farm households with low resilience to learn from farm households with higher resilience, to share best practices or to foster discussion about why resilience is high in certain areas, and not in others.
- addresses broader ecological and human components of farming systems, including economic (income and productivity), social (including gender and nutrition), environmental (sustainability/ regeneration of natural resources) and governance (policy and influencing) dimensions
- assesses resilience as both an outcome (which can be measured and monitored) and as an on-going process (inherent ability of an individual, household, community or system to self-organize and adapt to stress and shocks)
- integrates qualitative and quantitative data and facilitates analysis involving both.
- uses information technology (data from surveys can be registered on tablets, which has software for quick analysis and feedback to individual farmers or to communities)

7. Value for money

The Groundswell GRC team intensively consulting with potential collaborating actors to co-develop the design of the AE+6 interventions adapted to each country and program context. This is a key determinant of value for money, to review the evidence base of locally adapted solutions, determine which activities across sectors, if integrated, achieve optimal synergy, and to verify the assumptions of what innovations can be quickly taken to scale, with which partners. Groundswell's AE+6 team is working together closely on these tasks, to ensure the flow of outcomes, outputs, activities and inputs are realistic, feasible and effective, and provide value.

Adaptive management, innovation and continuous learning by doing: Once the logical framework for AE+6 is fully developed, the Groundswell AE+6 team will invest strongly in “adaptive management”. This will entail regular (semi-annual) interdisciplinary review of context, process and results, in each intervention area, within an action learning mode. The aim will be to assess the initial assumptions, learn lessons, and adjust the AE+6 strategy. Comparative analysis of experience across three country contexts will contribute to continuous learning, improvement, and value for money. Peter Gubbels, the team leader, will lead this process. He will regularly convene the team for review.

Economy: The AE+6 intervention is designed not to require extensive procurement of external inputs. The AE approach substitutes agroecological knowledge and local labour for increasing farming system productivity, and resilience. The proposed women's credit and savings initiative will also depend on mobilizing local capital, rather than external credit. The input costs will be local staff (who speak the local language and know the culture), regional consultants to support the nutrition and gender dimensions, and support to strengthen the inter-disciplinary capacity of staff and other actors. Groundswell will recruit highly qualified staff to ensure good coordination, rigorous financial management, and program oversight. For other inputs such transport (motorcycles for staff) Groundswell will upgrade and apply its procurement policy.

Efficiency: The most important factor to ensure that inputs will generate the expected outputs is the quality of the technical, management and methodological support. This depends not only on good staff awareness raising and training activities, but also on the organisational development of partners and collaborating agencies to apply innovative scaling, gender, equity, nutrition dimensions of AE+6. The Groundswell team has highly experienced members who can do this well.

Effectiveness: Several factors ensure that AE+6's planned outputs will generate the intended outcomes. First, in the current design stage, team members are identifying AE innovations already proven to be successful locally for strengthening resilience. With such evidence, and the use of farmer-to-farmer methods for adapting and scaling out these innovations in new program areas, Groundswell is confident to promote quick spread at low cost. Second, the Groundswell team plans to mobilize and leverage existing networks, platforms and local organisations that already have relationships with villages, to support the implementation of AE+6. With the coordination of local government, the aim is to develop innovative processes for multi-sectoral work to strengthen resilience. The aspect of AE+6 that presents the greater challenge for effectiveness is to strengthen national level advocacy for AE+6, including a voice at the AGIR level. This aims to foster a conducive enabling environment, and improved governance, in support of AE+6. This will take time. Rigorous documentation and evidence of “proof of concept” through the SHARP methodology is the strategy.

Equity: The AE+6 intervention recognizes a trade-off between “efficiency” and equity. This is because AE+6 explicitly seeks to work in more remote, marginalized areas, and undertake a differentiated strategy to meet the needs of the more food insecure/the poorest households. A linked strategy is to address not only the practical gender needs of women, but contribute to strategic gender change to empower women farmers. This will cost more and take longer.

¹ For this report, the Sahel refers to the 8 countries of the “Western Sahel” including Senegal, The Gambia, Guinea Bissau, Mauritania, Mali, Burkina Faso, Niger and Chad. The total population in 2014 is estimated at 86.8 million. Groundswell assumes that about 50% (or 40 million) are small scale farmers living in more ecologically fragile drylands (i.e. not including farmers in more high potential agricultural zones, rice growing areas, and also excluding pastoralists, fisherfolk). Household Economy studies from across the Sahel suggest that 30% of small scale farmers are the most vulnerable to food and nutrition insecurity. So this produces this estimate of 12 million people.

² The FAO describes drylands as areas where the average rainfall is less than the potential moisture loss through evaporation and transpiration. An aridity index is used to classify drylands into hyperarid, arid, semi-arid and dry subhumid areas. This initiative will work primarily in the semi-arid and dry subhumid areas where millet, sorghum and cowpeas are the main crops and rainfall varies between 500 to 700 mm.

³ May, John F., Guengant Jean-Pierre, Brooke, Thomas R. (2015) **Demographic Challenges of the Sahel**. Population Reference Bureau p.3 First published in ETVDES 4206 (2014): 19-30. The other countries of the Sahel are Sudan and Eritrea, although the northern parts of Cameroon and Nigeria also exhibit similar conditions and are included in OCHA’s Sahel Response Plan for 2015. Thi

⁴ Eijkennar, Jan (April 2015) **END OF MISSION REPORT – RESILIENCE & AGIR** European Commission Directorate-General For Humanitarian Aid And Civil Protection – ECHO Regional Support Office For West Africa, p.7 See also, USAID September (2014) **Latest Sahel Fact Sheet** www.usaid.gov/crisis/sahel

⁵ Haub, Carl and Kaneda Toshiko (2014) **World Population Data Sheet** Washington, DC: Population Reference Bureau, 2014 cited in May et al. Demographic challenges of the Sahel p 3.

⁶ IRIN (June 2008) Sahel : **Backgrounder on the Sahel, West Africa’s poorest region** www.irinnews.org/report/78514/sahel-backgrounder-on-the-sahel; USAID Office of Food for Peace. Food Security Desk Review for Mali FY2015–FY2019. Estimates of the percentage of the population who are small scale farmers varies by country, but most indicate this group constitutes at least 50% to 60% of the total

⁷ Eijkenaar, Jan (April 2015) **END OF MISSION REPORT – RESILIENCE & AGIR** op cit. p5

⁸ Gubbels, Peter (2014) **Changing Business as Usual: Assessing development policy and practice in the Sahel from a resilience lens**, unpublished report for CARE West Africa. p.8

⁹ Steyn, Anne-Marie (April 2015) **To Solve Hunger, Start with Soil**. Inter-agency Press www.ipsnews.net/2015/04/opinion-to-solve-hunger-start-with-soil; IRIN (June 2008) Sahel : **Backgrounder on the Sahel, West Africa’s poorest region** op.cit

¹⁰ Dufour et al, op cit. Nutrition and resilience are strongly interlinked both conceptually and operationally. Nutrition is both an input to and an outcome of strengthened resilience. Well-nourished individuals are healthier, can work harder, better withstand external shocks, and have their full cognitive faculties required for adaptive capacity.

¹¹ OCHA United Nations Office for the Coordination of Humanitarian Affairs (February 2015) **Sahel: A Call For Humanitarian Aid Responding To The Needs Of People Affected By Crises in the Sahel**. It includes northern Cameroon and Nigeria.

¹² Wasting is defined as low weight for height; stunting relates to low height for age and entails irreversible cognitive and physical impairment.

¹³ Dufour, Charlotte. Kauffmann, Domitille. Marsland, Neil. (2014) *ENHANCING THE LINKS BETWEEN RESILIENCE AND NUTRITION*, Chapter 13 in **Resilience for Food and Nutrition Security**, Edited by Shenggen Fan, Rajul Pandya-Lorch, and Sivan Yosef. International Food Policy Research Institute (IFPRI) Washington, D.C.

¹⁴ USAID (March 2015) **FIGHTING ACUTE MALNUTRITION IN BURKINA FASO** <http://www.usaid.gov/results-data/success-stories/fighting-acute-malnutrition-in-Burkina-Faso>

¹⁵ Eijkenaar, Jan (April 2015) **END OF MISSION REPORT – RESILIENCE & AGIR** op cit. p5

¹⁶ IPCC, 2007: Climate Change 2007: **Synthesis Report. Contribution of Working Groups I, II and III to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change** [Core Writing Team, Pachauri, R.K and Reisinger, A. (eds.)]. IPCC, Geneva, Switzerland

¹⁷ Malcolm Potts et al. (2013) **Crisis in the Sahel: Possible Solutions and the Consequences of Inaction** (Berkeley: OASIS Initiative) p.22

¹⁸ Schlenker, W, & Lobell, D. (2010). Robust negative impacts of climate change on African agriculture. *Environmental Research Letters*, 5(1), 014010.

¹⁹ Malcolm Potts et al., op. cit

²⁰ According to a 2013 study by the U.S. army’s Strategic Studies Institute Mali’s average rainfall has dropped by 30 percent since 1998 with droughts becoming longer and more frequent. Chris Arsenault (April 2015) **Mali: Drought, Expanding Deserts and ‘Food for Jihad’ Drive Mali’s Conflict**. http://allafrica.com/stories/201504290162.html?aa_source=nwsltr-mali-en

²¹ One source of the Household Economy Assessments is from FEWS Net, supported by USAID (Jan 2010) Livelihood Zoning and Profiling Reports for Mali and Burkina Faso

²² USAID (Feb 2015) Office of Food For Peace. **Food Security Desk Review For Mali, FY2015–FY2019. In Mali, Only 39% of women age 15–24 years are literate, compared to 56% of men.** See also UNDP (2014) **Gender Inequality Index (GII)** <http://hdr.undp.org/en/content/gender-inequality-index-gii>.

²³ Gubbels, Peter (2014) **Changing Business as Usual: Assessing development policy and practice in the Sahel from a resilience lens**, unpublished report for CARE West Africa. p.8

²⁴ World Bank (2013) **Mali Poverty and Gender Notes**. World Bank Poverty Reduction and Economic Management 4, Country Department West Africa 3, Africa Region, Report No. 77752-ML.

²⁵ This dynamic is not limited to decisions within government institutions; it also includes interaction with traditional and religious leaders who are influential in the Sahel, civil society organizations, the private sector and informal organizations. Understood in this broad sense, governance includes the domains of operations and management, fiscal policy, planning, budgeting, rule of law, regulation, discursive debate, negotiation, mediation, conflict resolution, elections, civic engagement, and other formal and informal decision-making processes (Lebel et al., 2006; Independent Evaluation Group–World Bank, 2007).

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- ²⁶ MAFAP (2013). **Review of food and agricultural policies in Mali**. MAFAP Country Report Series, FAO, Rome, Italy. © FAO 2013
- ²⁷ OECD African Economic Outlook 2014 <http://www.africaneconomicoutlook.org/en/statistics/>
- ²⁸ Benedict S. Kanu et al. (2014) **Inclusive Growth an Imperative for African Agriculture**. African Development Bank, p.i
- ²⁹ Watt, Robert (2012) **Adopt or adapt: the political economy of 'climate-smart agriculture' and technology adoption among small-holder farmers in Africa**. Institute of Development Studies, Brighton Aug 2012
- ³⁰ Agroecology is defined in a variety of ways by researchers and practitioners, and mostly recently is promoted by the FAO. Dr. Stephen Gliessman, in his book "Agroecology; the ecology of sustainable food systems," (2015) defines agroecology as "the science of applying ecological concepts and principles to the design and management of sustainable food systems". Others elaborate on this definition, promoting agroecology as a "whole-systems approach to agriculture and food systems development based on traditional knowledge, alternative agriculture and local food systems experience." While the application of ecological principles and practices for sustainable production is a cornerstone of agroecology, many farmer-practitioners and thought leaders also emphasize the importance of agroecology as a social movement and, ultimately, a means of achieving the right to food. Cited in Scarborough, Gregory and Dr. Ernesto Mendez (March 2015) **Discussion Paper Building Resilient Food Systems Through Agroecological Principles and Practices**. Mercy Corps, p.7
- ³¹ Winterbottom et al. (October 2013) Installment 4 of **"Creating a Sustainable Food Future" Improving Land And Water Management. Working Paper** World Resources Institute Washington D.C.. See also USAID (2014) INVESTING IN SUSTAINABLE AGRICULTURE <http://www.usaid.gov/what-we-do/agriculture-and-food-security/investing-in-sustainable-agriculture>
- ³² USAID (August 2014) Agricultural Adaptation to Climate Change In The Sahel: Profiles Of Agricultural Management Practices
The results of soil and water conservation, agro-forestry, and other land and water management technologies in the Sahel have been well documented by other agencies and authors, but not always as "Agroecology". (see also Winterbottom, R below).
- ³³ The Global Alliance for Resilience Initiative is a regional effort, supported by donors, national governments and regional institutions to achieve "Zero Hunger" following four pillars and a jointly defined "roadmap" which entails systematic review multi-actor review of all policies from a resilience lens, and setting resilience priorities. See Eijkenaar, Jan (April 2015) op.cit.
- ³⁴ Watt, Robert (2012) **Adopt or adapt: the political economy of 'climate-smart agriculture' and technology adoption among small-holder farmers in Africa**. Institute of Development Studies, Brighton
- ³⁵ USAID (November 2014) Organizational Survey and Focus Groups on Adaptive Practices <http://community.eldis.org/5c1fe9f0>
- ³⁶ USAID (October 2014) **A Tailored View Of Successful Adaptation To Climate Change African And Latin American Resilience To Climate Change** (ARCC)
- ³⁷ See endnote 32 for details.
- ³⁸ Choptiany, J., et al. (April 2015) **Self Evaluation and Holistic Assessment of Climate Resilience of farmers and Pastoralists** FAO. Rome
- ³⁹ Groundswell International staff participated in this process during an international workshop in Burkina Faso (May 21-23, 2013) organized by FAO.