Ministry of Foreign Affairs

SOIL VALUES
MAINSTREAMING SUSTAINABLE SOIL MANAGEMENT IN THE SAHEL

Soil Values
Inception Phase Report



July 2024

IFDC 50 ANNIVERSARY

SNV Impact that matters

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AGRA Sustainably Growing Africa's Food Systems

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Acronyms

2SCALE	Toward Sustainable Clusters in Agribusiness through Learning in Entrepreneurship
ACReSAL	Agro-Climatic Resilience in Semi-Arid Landscapes
AGRODIA	Agro-Input Wholesalers and Retailers Association
APNI	African Plant Nutrition Institute
AFAP	African Fertilizer and Agribusiness Partnership
AGRHYMET	Regional Center for Training and Information on Agro-Ecology
AMEDD	Malian Association for Awakening Sustainable Development
ASPROFER	Professional Association of Rural Women
CES/DRS	Water and soil conservation/soil protection and restoration
CIMA-BF	Administrative Council of Agricultural Input and Equipment Traders of Burkina Faso
DGAHDI	Directorate General of Hydrology and Irrigation Development (MARAH)
DNA	National Directorate of Agriculture
DNGR	National Directorate of Rural Engineering
DGIS	Dutch General Directorate for International Cooperation
ECOWAS	Economic Community of West African States
EKN	Embassy of the Kingdom of the Netherlands
FAO	Food and Agriculture Organization of the United Nations
FSRP	Food Systems Resilience Program
GCA	Global Center for Adaptation
GESI	Gender Equality and Social Inclusion
GISF	Global Interagency Security Forum
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit
IAEA	International Atomic Energy Agency
IATI	International Aid Transparency Initiative
ICARDA	International Center for Agricultural Research in the Dry Areas
ICRAF	International Center for International Forestry Research
ICRISAT	International Crops Research Institute for the Semi-Arid Tropics
IITA	International Institute of Tropical Agriculture
IFAD	International Fund for Agricultural Development (IFAD)
IFDC	International Fertilizer Development Center
INSO	International NGO Safety Organization
IP	Implementing Partner
ISFM	Integrated Soil Fertility Management
ISRIC	ISRIC – World Soil Information

ISSD	Integrated Seed Sector Development
IWMI	International Water Management Institute
LGA	Local Government Area
L-PRES	Livestock Productivity and Resilience Support Project
M&E	Monitoring and Evaluation
MARAH	Ministry of Agriculture, Animal Resources, and Fisheries
MEL	Monitoring, Evaluation, and Learning
MOU	Memorandum of Understanding
NEWMAP	Nigeria Erosion and Watershed Management Project
NGO	Non-Governmental Organization
NIRSAL	Nigeria Incentive-Based Risk Sharing System for Agricultural Lending
ONF-BF	Observatoire National du Foncier au Burkina Faso/National Land Observatory in Burkina Faso
OCHA	United Nations Office for the Coordination of Humanitarian Affairs
PACES	Projet d'Amélioration de la Productivité Agricole par la Conservation des Eaux et des Sols/Project for the Improvement of Agricultural Productivity through Water and Soil Conservation
PGIP	Projet de gestion intégrée du paysage/Integrated Landscape Management Project
PISA	Small-Scale Irrigation and Food Security Program
PISEN	Programme Plateforme Intégrée pour la Sécurité de l'Eau au Niger/Integrated Platform Program for Water Security in Niger
PRAPS	Projet Régional d'Appui au Pastoralisme au Sahel/Regional Support Project for Pastoralism in the Sahel
PRCFS	Regional Soil Fertility Mapping Project
PReCA	Projet de Résilience et de Compétitivité Agricole/Agricultural Resilience and Competitiveness Project
PRECIS	Projet de Renforcement de la Résilience des Communautés rurales à l'insécurité Alimentaire et Nutritionnelle au Niger/Project to Strengthen the Resilience of Rural Communities to Food and Nutritional Insecurity in Niger
Pro-ARIDES	Programme Agroalimentaire pour la Résilience Intégrée et le Développement Economique du Sahel/Agrifood Program for Integrated Resilience and Economic Development in the Sahel
ProSol	Protection et réhabilitation des sols pour la sécurité alimentaire
PRSA	Programme Régional pour la Sécurité Alimentaire/Regional Program for Food Security
PSSA	Programme Spécial de la Sécurité Alimentaire
SMEs	Small and Medium Enterprises

SWC	Soil and Water Conservation
SWR	Stichting Wageningen Research
UM6P	Mohammed VI Polytechnic University
USAID	United States Agency for International Development
VSLA	Village Savings and Loan Association
WAFA	West African Fertilizer Association
WENR	Wageningen Environmental Research
WoSIS	World Soil Information Service
WUR	Wageningen University and Research

Executive Summary

Soil Values is a program to mainstream soil fertility management in West African countries, primarily in the Sahelian region, that pursues a novel approach in development to arrive at lasting impact at scale. It does not operate as an isolated stand-alone program but leverages its resources with large institutional investments and national programs by assisting in strengthening local capacity to more effectively utilize the investments made in the agriculture sector. Ultimately, Soil Values aims to enable ***small-scale food producers in the Sahel*** *(women, men, and youths)* **to *sustainably manage soil fertility to improve ecologically sustainable food production and increase resilience to climate change and shocks***.

Soil Values will operate through three pathways, each representing a different area of action: (1) **Agroecological Pathway** (watershed and landscapes), (2) **Inclusive Market Development Pathway** (markets and finance), and (3) **Enabling Environment Pathway** (institutions and policies). The above are implemented through five areas of intervention, including ***Bundling, Integrating, Brokering, Convening, and Scoping and Learning***. The program implementation approach involves a consortium composed of the International Fertilizer Development Center (IFDC), Wageningen University and Research (WUR) and SNV, complemented by five partner knowledge institutions, AGRA, World Agroforestry (ICRAF), International Institute of Tropical Agriculture (IITA), ISRIC – World Soil Information, and the International Water Management Institute (IWMI). First and foremost, however is the partnering with local institutions for the implementation of Soil Values' strategic activities.

Fundamental to the Soil Values program management is a "one-team approach," which is incorporated as a guiding principle into program design, management, and operations. To further strengthen the approach, all program staff are hosted by IFDC (consortium lead). Partnership agreements were developed and signed by all parties, including governance agreement with the consortium partners (SNV and WUR) and specific agreements with knowledge partners (AGRA, ICRAF, IITA, ISRIC, and IWMI). Soil Values is to simultaneously operate with national projects and programs that target the same beneficiaries.

To increase the visibility of the program and the Netherlands Directorate-General for International Cooperation (DGIS), the communication team worked on the logo, branding, identity, and communication strategy of Soil Values targeting different audiences. The security unit and program team conducted a thorough risk assessment to be able to proactively and rapidly mitigate insecurity, safeguard staff, and protect properties. Key high-risk factors that were identified include insecurity, political instability, and corruption, which might influence the program's performance.

The coup d'état perpetrated in Niger in July 2023 and its subsequent request to exit the Economic Community of West African States (ECOWAS) necessitated Soil Values management to obtain prior approval from DGIS and the World Bank, based on their official position. While slightly delayed, Soil Values was able to successfully organize launches and workshops in all four implementation countries. Thus,

throughout the past six months, stakeholder engagement meetings were organized in both virtual and physical formats with the program's governance consortium, knowledge partners, Word Bank's Food Systems Resilience Program (FSRP) and Agro-Climatic Resilience in Semi-Arid Landscapes (ACReSAL) program, and national projects and programs that are Soil Values "entry points" into implementation. The Soil Values program regional launch that took place on April 16, 2024, in Abuja, Nigeria, brought together 160 participants from internal and external technical partners, Nigerian Ministries of Agriculture and Food Security, Water and Environment, and donor and investment partners, including DGIS, Embassy of the Kingdom of the Netherlands (EKN), World Bank, ECOWAS, African Fertilizer and Agribusiness Partnership (AFAP). The main objective of the launch was to bring together strategic and bilateral donor communities; local, regional, and international development agencies; and agricultural development programs for a collective, coherent, and effective implementation of the Soil Values program.

To create more awareness and increase the visibility of Soil Values, technical workshops were implemented across the four priority countries. Key outcomes from the national launch and technical workshop were the identification of (i) potential national partner programs and rural communities for participatory and inclusive co-creation and co-implementation, (ii) national and international partner financial institutions for inclusive access to finance and market development, and (iii) partner education centers and universities for academic training in climate-smart agriculture and soil health for dryland agriculture. Integrated action plans and a collaboration matrix between Soil Values and the above strategic partners were developed. A detailed inventory of climate-resilient and productivity-increasing agricultural technologies for dryland and irrigated production systems and related financing mechanisms, policy, and inclusive market development strategies was made. Furthermore, two watersheds were selected per country for the effective implementation of the activities in 2024. Diagnostic activities at community level are currently underway in the four countries at watershed and sub-watershed levels in order to better anchor activities in the various contexts.

Operationalizing the Soil Values Theory of Change requires activities tailored to each country's context. The operational monitoring strategy for Soil Values is anchored in the Monitoring, Evaluation, and Learning (MEL) framework established for the program. The MEL framework aims to methodically define and track indicators at both program and partnership levels. The learning component of the Soil Values MEL system aims to foster a continuous cycle of improvement and adaptation in soil management practices, and it is expected to yield several key outcomes that will enhance the effectiveness and sustainability of soil management practices. Through the scoping and learning activities, we will continuously test the assumptions and the Theory of Change of the program.

The result of collective intervention and mutual influence among coexisting programs and projects required delineating the program-specific attribution of outcomes and changes. Therefore, Soil Values seeks to innovatively employ a contribution-mapping strategy as the most suitable approach for distinctly assessing the contributions of national stakeholders and partner programs as well as Soil Values.

This involves mapping complementary activities that Soil Values will undertake to integrate sustainable soil management into existing programs, ensuring proper attribution of results. Assessing contributions is straightforward for the short term, tangible, and quantifiable. Soil Values plans to employ innovative strategies over its decade-long initiative, including qualitative comparative analysis, most significant change, outcome harvesting, and baseline and endline studies. These methodologies will intermittently assess Soil Values' contributions to enduring changes and impacts, which will be visible on the International Aid Transparency Initiative (IATI) and METIS platforms established for the program. The detailed MEL plan under development will provide comprehensive details on the various frameworks.

As part of the effort to mainstream gender equality and social inclusion (GESI) in the Soil Values program, a GESI analysis must be conducted to understand the peculiarities specific to gender and social norms for each participating country and identify existing gaps. This analysis aims to extrapolate how identified gaps relate to Soil Values communities in terms of soil health, access of marginalized groups to natural resources, and sustainable and inclusive land and integrated watershed management. Findings from the GESI analysis will guide the inclusive program implementation strategy to ensure equitable access to resources and opportunities for all groups, especially marginalized ones, such as women, youth, ethnic and religious minorities, people with disabilities, pastoralists, migrants and refugees, and elderly, in the respective priority countries.

Soil Values, in collaboration with FSRPs programs, is conducting initial rapid participatory diagnostics with farming communities in the watersheds of the priority countries. The objective is to identify constraints to crop production and water management and examine the relevance and climate resilience of production technologies, governance structures and natural resource management. Capacity building needs were identified to address and mitigate the identified constraints.

Key field and capacity building activities planned from July to December 2024 will focus on joint consultation at community level with the national partner programs to:

- Identify need-based interventions related to integrated soil fertility management (ISFM) bundled services that are tailored to each country's context.
- Map soil, water, and land use, assess climate risk and ecosystem capacities, and conduct GESI analysis and diagnostic of territorial governance and conflict management at the watershed level.
- Broker finance and convene through policy dialogue with donor communities and regional bodies, such as ECOWAS, World Bank, GIZ, U.S. Agency for International Development (USAID), to stimulate long-term investments in soil fertility management while creating a conducive policy environment for leveraging at international, regional, national, and community levels.
- Utilize existing multi-stakeholder platforms for scoping innovations and capacity building. This intervention area will put particular emphasis on developing expertise through applied and feedback research for program expansion, aimed at taking proven productivity-increasing and climate-resilient production technologies to scale while increasing adoption.

1 Introduction

Soil Values is a 10-year program funded by the Netherlands Directorate-General for International Cooperation (DGIS). The goal of the project is to address soil fertility constraints and achieve sustainable management of soil fertility in a way that contributes to ecologically sustainable improvements in food productivity and to increased resilience of small-scale food producers in the Sahel.

According to the contractual agreement signed between IFDC and DGIS, prior to the effective implementation of the program, a six-month inception phase should be executed. This inception phase will be jointly carried out by all the coalition partners, including the consortium partners (IFDC, SNV, and WUR) and the knowledge partners (AGRA, IITA, ICRAF, IWMI, and ISRIC), with the active participation of donor communities (DGIS, national Dutch Embassies, World Bank), related national partner, mainly the Food Systems Resilience Program (FSRP), and other national institutions and stakeholders. The inception phase will be chiefly devoted to various kick-off activities and communication events aimed at learning and better harmonizing the understanding of Soil Values' ground principles and the real agroecological and socio-economic context for its effective implementation. The inception period will be devoted to collective learning and co-designing to adapt it to local needs and specificities. The above is expected to improve coherence and convergence in the program implementation strategy for greater results, impact and sustainability.

And finally, the inception phase will facilitate the development of a strong "team spirit" among the coalition partners and national programs right away from the beginning. This team-building exercise will offer the opportunity for involved Soil Values' and local program staff to develop professional relationships and discuss about their needs and experiences. This will contribute to strengthening local learning-driven participatory planning while ensuring alignment with national partner programs and stakeholders' expectations and program success.

This inception report presents the activities carried out during the six-month inception phase as per the deliverables stipulated in the contract agreement, placing a particular emphasis on the following:

- Description of an operational Theory of Change/intervention strategy, adapted to the specificities of the respective countries and intervention zones (watersheds and landscapes) and the associated concrete partnerships, including an elaboration of how the envisioned outputs will lead to the outcome targets and additional contextual analyses.
- Development of an operationalized Planning, Monitoring, Evaluation and Learning (PMEL) strategy that includes targets, preliminary baselines, methods for attribution and contribution of observed changes and further specification of the methods of measurement.
- Anticipated prospects of collaboration domains (including roles) between Soil Values and DGIS/Inclusive Green Growth Department (IGG), embassies and

other (in-country) partner programs.

- A summary report of the kickoff consultation meetings, workshops, and field activities with relevant partner programs and stakeholders.
- An overview of production constraining factors and existing water management and productivity-increasing technologies being implemented by the watersheds' farming communities in the four priority countries, and their capacity building needs.
- Preliminary work plans with roles and responsibilities of the coalition partners from July to December 2024.

This inception report also contains a detailed work plan, outlines collaboration modalities with the national partner programs, and provides an overview of ongoing participatory diagnosis with farming communities at the watershed level.

2 Background

2.1 Overview of Soil Values

In the vast and arid landscapes of the Sahel, communities endure drought and conflict, the advancement of desertification, uncertainties of a changing climate, and the daily struggle to feed themselves. It is the bedrock for cultivating crops, raising livestock, sustaining ecosystems, and safeguarding livelihoods. Sustainably unlocking the potential of this invaluable resource holds the promise of transforming the region's future, one in which (food) scarcity gives way to increased agricultural productivity and improved household resilience.

Climate change and improper soil management cause soil health and fertility to decline. Policymakers, private sector actors, and other stakeholders responsible for creating viable conditions for sustainable soil management appear unable to develop mechanisms that result in the appropriate soil valuation. The lack of sustainable investments to maintain soil fertility and soil health is rooted in economic and soil factors, unclear responsibilities among actors, and the resulting improper valuation of soil functions.

The Dutch government is committed to promoting sustainable soil management in international development, aligning its policy with the Sustainable Development Goals, most especially the goal of combating hunger and ensuring sustainable land use. The DGIS has developed a policy framework that explicitly integrates soil fertility improvement into a stratified approach that considers both agroecological and socio-economic aspects. Within this framework, the consortium of IFDC, SNV, and WUR has obtained funding from DGIS for the 10-year Soil Values program, which will be implemented from 2024 to 2033. The program will contribute to sustainably maintaining soil fertility and enhancing systems productivity and farm income in the Sahelian crop production systems while catalyzing viable business cases and providing incentives for adoption of soil health-improving production

technologies by all actors, including smallholder farmers, markets actors, and policymakers.

Soil Values plans to work through three pathways to change, each representing a different area of action: (i) the **agroecological pathway**, (ii) the **inclusive market development pathway** (markets and finance), and (iii) the **enabling environment pathway** (institutions and policies). The agroecological pathway targets small-scale food producers and farming systems, as well as the landscapes and watersheds that surround them. The inclusive market development path focuses on the private sector (markets, investments, business models) to overcome market barriers and strengthen relevant markets and on financing institutions to invest in soil fertility. Finally, the enabling environment pathway focuses on the ability of public sector institutions, policies, and governance structures to support soil health in the long term.

The implementation approach of the Soil Values program involves a consortium composed of IFDC, WUR, and SNV that will operate through five partner knowledge institutions: AGRA, ICRAF, IITA, ISRIC, and IWMI who are all recognized leaders in their respective fields and will support the areas of intervention of the Soil Values program. These areas of intervention are:

- ***Bundling*** technical and socio-economic interventions into combined packages to address soil fertility management at farm level in the broadest possible sense.
- ***Integrating*** our interventions at landscape and watershed level to optimize water management and nutrient use efficiency, introduce nature-based solutions for landscape greening, and create participatory, co-designed plans at community level for sustainable natural resource management.
- ***Brokering*** for long-term investment in soil fertility management and identifying payment mechanisms for small-scale food producers, including livestock farmers and breeders.
- ***Convening*** to stimulate a favorable policy environment at regional, national, and sub-national levels.
- ***Scoping and learning*** to integrate lessons learned from the program and other initiatives and build the capacity of key stakeholders.

2.2 Overall Goal and Specific Program Objectives

Soil Values aims to ***enable small-scale food producers in the Sahel (women, men, and youths)*** **to** ***sustainably manage soil fertility to improve ecologically sustainable food production and increase resilience to climate change and shocks***. After 10 years of implementation, Soil Values will ensure that sustainable soil fertility management is a mainstay of farming systems in the Sahel, ***improving the soil fertility and production capacity of 2 million hectares (ha) of farmland in the Sahel, as well as the resilience and well-being of 1.5 million small-scale food producers, particularly women, in Burkina Faso, Mali, Niger and northern Nigeria.***

More specifically, Soil Values intends to:

- Sustainably reduce yield gaps and maintain yield stability for small-scale food producers, particularly women, in the Sahel.
- Convert fragile farmland into ecologically sustainable farming systems.
- Increase the resilience of small-scale food producers and their agroecological systems to climate change and other shocks.
- Strategize soil fertility management and strengthen the implementation capacity of national, sub-national, and civil society organizations while setting policy and marketing conditions to stimulate soil fertility interventions by farmers and value chain actors.
- Stimulate GESI-responsive soil fertility interventions by farmers and value chain actors.

3 Inception Phase

3.1 Staffing and Setting Up Offices

3.1.1 Staff Recruitment and Orientation

Roles in the Soil Values program were advertised on the IFDC and other consortium members' career portals as well as on the LinkedIn platform and kept open for two to four weeks, depending on the type and importance of the position. For each position, shortlisted candidates were interviewed by the selection committee, composed of subject matter specialists. All 33 positions to be filled for the program have been successfully recruited, with the last staff joining on September 1, 2024. Figure 1 shows the Soil Values organigram and staff reporting lines. Similarly, all positions in SNV were advertised and went through a competitive recruitment process; all candidates took a written test and were interviewed by SNV's technical team at the global level and in Nigeria. A total of 11 staff were recruited and are based in the four target countries. Of the 11 staff recruited, three are in the Project Management Unit (Multi-Country Project Manager, Multi-Country Finance Officer, and Multi-Country Gender Equality and Social Inclusion Advisor) and based in Abuja. The others (Field Lead, GESI experts) are hosted by IFDC. The team members were recruited between April and May 2024.



Figure 1. Soil Values Organigram and Reporting Lines

3.1.2 Office Premises Acquisition and Procurement Activities

General coordination of the Soil Values program is based at the IFDC office in Bamako, Mali. A team composed of Administrative Officers, National Finance Officers, Country Directors, Operations Coordinator, Deputy Program Director for Operations for Soil Values, and Regional Operations Facilities Manager for North and West Africa has been coordinating procurement activities to lay the groundwork for the successful commencement of the Soil Values program. While most countries have completed their procurement processes (Table 1), others are in the advanced stages, and this process will be fully completed latest by July 31, 2024. Additionally, SNV's operations team is based in each of the four target countries, coordinating procurement activities and providing logistics support to the technical team.

Table 1. Progress Report on Operations and Procurement

Description	Progress
Office space	The acquisition, renovations, reorganization, and equipment of the Soil Values offices in Mali, Burkina Faso, and Nigeria are fully completed. The acquisition of the Soil Values office in Niger is underway, and the plan is to fully integrate the office July 1, 2024.
Procurement of office furniture	Office furniture, including office desks, workstations, chairs, filing cabinets, and shelves, has been acquired.
Procurement of IT equipment	IT equipment, including laptop computers, printers, and scanners, has been acquired and provided to Soil Values staff. Laptops have been purchased for all SNV staff. There are plans to purchase a printer for the Nigeria team, which should be completed by the fourth quarter.
Procurement of vehicles	A total of four vehicles have been acquired to increase the efficiency of Soil Values implementation in Burkina Faso, Mali, and Nigeria. The procurement of a program vehicle in Niger is underway and should be completed by the end of the third quarter of 2024.
Other office equipment: generator, air conditioners, etc.	The Burkina Faso office is in the advanced stage of purchasing a generator, and five air conditioners have been purchased and installed in the various Soil Values offices. For Mali, an assessment is currently underway to determine the need for a generator or solar panels to deal with the unstable electricity situation, which will inform purchasing decisions. For Niger, the purchase of additional office equipment, including a generator and air conditioners, will begin after the move to the new office. Finally, for Nigeria, the acquisition of additional office equipment is planned as follows: • A generator for Abuja. • Additional solar panels and batteries to augment the existing solar system in Kano. • Three air conditioners for the Kano office.

3.1.3 Security Plan for the Priority Countries

From the inception of Soil Values to date, core security documents have been updated, including the respective country-specific security plans and their annexes, and the security risk assessment. Basic training has been provided to staff and a meeting was held with SNV security, both at country and global levels.

The aim of updating the core security documents is to align IFDC approaches with the prevailing regional politico-security context while proactively delivering security services using the appropriate mitigating measures at the right time and in the right zones. Furthermore, collaborative meetings were organized with SNV security team toward mutualizing effort and ensuring staff safety and security for both parties.

The country security plan, evacuation plan, and medical evacuation plan have been updated for the four countries, and a security briefing has been done. Additionally,

the respective country security risk assessments have been conducted to identify risk, threats, and more practical mitigating measures. The main objective of this is to comply with the global security standard and build a resilient team that can deliver despite the prevailing security context. To upgrade the physical security of the offices in Burkina Faso, Nigeria, and Niger, building assessments were conducted. Practical measures, such as installation of CCTV cameras, fire extinguishers, and an additional lighting system; reinforcement of control access; and improvement of the security guard system, have been implemented.

Complementary networking has been developed with various international security partners, including the United Nations Department for Safety and Security (UNDSS), United Nations Office for the Coordination of Humanitarian Affairs (OCHA), International NGO Safety Organization (INSO), USAID's Partner Liaison Security Operations (PLSO), and Global Interagency Security Forum (GISF). This enables IFDC to receive additional information in real time and to anticipate other security threats.

3.1.4 Communication Strategy and Achievements

A logo and a communication strategy were developed to enhance the visibility of DGIS, the Soil Values program and its coalition, and external partners while encouraging strategic and positive change in the implementing countries through awareness-raising and advocacy support. The communication strategy integrates media coverage, multimedia content, and digital communication as well as physical meetings and events to effectively reach diverse relevant audiences for increased visibility and leveraging opportunities. Early communication efforts engaged the governments of the involved countries (Ministries of Agriculture, Livestock, and Rural Development), farmer organizations, agricultural development projects and programs, and soil health research institutes. The strategy includes a global communication plan, a 2024 communication plan, a social media strategy, and crisis and event communication guides. A detailed list of communication tools, supports, and activities undertaken are found in Table 2

Table 2. List of Soil Values Communication Tools and Achievements Metrics

Tools/Supports	Number
Rollout	+30
Communication documents (fact sheets, booklets, flyers, event summaries, etc.)	1,700
Flag	+10
Banner	5
Backdrop	5
Photobooth	5
Event videos (recap/summary)	4
Official videos	2
Event photos	+400
Swag (T-shirts/polos, notebook, USB key, mug, pen, cup, etc.)	+3,000
Document template	3
Communication Actions/Content	**Audience Reached**
Web content (IFDC website) and social media – X (formerly Twitter), Facebook, LinkedIn, WhatsApp, and Instagram	**10,000+ persons**
Media coverage (4 countries)	**Average of 1,038,000 persons**
Audiences reached by participating in agricultural events: • IFDC Open Door Days in Mali, Burkina Faso, Côte d'Ivoire, and Niger • Africa Fertilizer and Soil Health Summit in Kenya • Sustain Africa Burkina Faso Fertilizer Fair • Launch of Soil Health and Fertilizer Hub • National Tree Day in Burkina Faso	**Average of 100,000 persons**
Participants in Soil Values events: • Official Launch • National Launch	**Average of 600 persons**
Livestreaming on the IFDC YouTube channel	**+1,900 persons**

Web content and livestreaming audience calculated based on the number of people reached across different platforms; media coverage audience calculated from information obtained from Kantar RTN 2015-16 (Mali), Kantar 2021 (Burkina Faso), Conseil supérieur de la communication (Niger), and BBG-Gallup research (Nigeria); agricultural events audience calculated from information from Kantar 2021, Omega Radio, and attendance lists and recordings; event participants calculated from attendance lists and digital recordings.

3.1.5 One-Team Approach

IFDC, as the coalition lead, initiated the "One Team" approach jointly with all partners. The approach is fundamental to the success of Soil Values, as it emphasizes collaboration, joint operation, proximity, inclusivity, and shared responsibility among all stakeholders involved in the program's implementation. This approach will foster the spirit of the staff working together as "One Program, One Team," focusing on common program objectives and goal achievement.

To strengthen the approach, the consortium agreed that all program staff be hosted by IFDC. The One Team approach is fostering open communication and cooperation to ensure that diverse expertise and perspectives are integrated, leading to more innovative and effective solutions. The One Team spirit builds on this by promoting a culture of mutual respect, trust, and motivation. It encourages team members to support one another, celebrate collective achievements, and remain committed to the common goal of enhancing soil health and adoption of sustainable agricultural practices. Together, these principles create a cohesive and dynamic team environment, driving the Soil Values initiative toward its objectives with unity and dedication.

3.2 Soil Values Kickoff and Strategic Partnership Building

3.2.1 Coalition Partners

Led by IFDC, the first meeting between coalition partners was held on December 15, 2023, to make the program's official start date known, introduce the initial staff of the program, and share feedback from DGIS. The meeting also served as the first opportunity after the program award to further strengthen the partnership and harmonize the understanding of Soil Values basic principles and expected deliverables to renew the commitment for collective implementation of the program. Several meetings between IFDC and consortium partners followed, with discussions on a wide range of topics, including staff hosting arrangements and collaboration and coordination with consortium partners and Dutch-funded programs at national and regional levels (DGIS- and EKN-funded programs, such as Agrifood Program for Integrated Resilience and Economic Development in the Sahel [Pro-ARIDES], Toward Sustainable Clusters in Agribusiness through Learning in Entrepreneurship [2SCALE], Integrated Seed Sector Development [ISSD] in the Sahel, and ISSD Mali/Niger) for more coherence and maximizing synergy and impact.

3.2.2 Knowledge Partners

The consortium, led by IFDC has remained engaged with the knowledge partners to discuss better coordination of these thought/knowledge leaders in their respective areas of expertise and how to support implementation of activities in the five Soil Values program intervention areas. For example, on February 15, 2024, a first meeting was held with knowledge partners with the objective to discuss further their roles and responsibilities during the inception phase, their staffing plan toward the deployment of human resources for the inception phase and subsequent full

implementation of the program, and the program's regional launch and subsequent national technical workshops implementation. Since then, all knowledge partners have been actively involved in the meetings and field activities.

3.2.3 Implementation Partners

During the past six months, a series of meetings has been organized in both virtual and physical formats. These sessions have been tailored to engage stakeholders comprising the program's governance consortium, knowledge partners, the Word Bank FSRP and ACReSAL programs, and national projects/programs that are Soil Values entry points to field implementation.

During the Soil Values regional launch, coalition partners further discussed and agreed on their roles and responsibilities. At the national level, Soil Values worked with national programs to identify collaborative activities and complementary interventions geared toward creating synergies and ensuring strong collaboration and coordination for a wide reach and better impact on soil health and soil fertility.

Synergetic and complementary interventions will be fully rolled out for implementation in the second half of 2024, with Dutch-funded programs including Pro-ARIDES (SNV) and ISSD/Sahel, ISSD Africa, and 2SCALE in Burkina Faso, Mali and Niger, PReCA, FSRP-Niger, Regional Support Project for Pastoralism in the Sahel (PRAPS), Project for the Improvement of Agricultural Productivity through Water and Soil Conservation (PACES) II, Protection et réhabilitation des sols pour la sécurité alimentaire (ProSol; Deutsche Gesellschaft für Internationale Zusammenarbeit [GIZ]), Directorate General of Hydrology and Irrigation Development (DGAHDI) of the Ministry of Agriculture, Animal Resources and Fisheries (MARAH) in Burkina Faso; with FSRP-Niger, PRAPS, Integrated Landscape Management Project (PGIP), Integrated Platform Program for Water Security in Niger (PISEN; World Bank), the Small-Scale Irrigation and Food Security Program (PISA; Kreditanstalt für Wiederaufbau [KfW] Germany), Project to Strengthen the Resilience of Rural Communities to Food and Nutritional Insecurity in Niger (PRECIS; International Fund for Agricultural Development [IFAD]), Regional Soil Fertility Mapping Project (PRCFS; IsDB) in Niger; with ACReSAL and Livestock Productivity and Resilience Support (L-PRES) of the World Bank in Nigeria, and with FSRP-Mali, and Ministries of Agriculture in the respective Soil Values intervention countries.

3.2.4 Regional and International Partnerships

With the core approach of Soil Values being partnership, collaboration at the operational level with national, regional, and international public and private programs is key to its success. During this inception phase, a series of technical meetings were jointly organized with the potential partner programs to identify areas of collaboration and develop a win-win partnership strategy at national, regional, and international levels. Particular attention was given to various World Bank-funded national programs and other international development programs well-aligned with

principles, implementation strategy, and objectives of the Soil Values program. Table 3 shows the main partnerships for the Soil Values program. Most of these were met with during the startup phase, while the rest were identified as opportunities.

Table 3. Summary of Key Regional and International Partners

Partners	Country	Objectives and Target	Link with Soil Values Intervention Areas
National Programs			
Projet de gestion intégrée du paysage au Niger (PGIP ; 2022-2025)	Niger	Objective: Increase the adoption of climate-smart landscape restoration practices and increase access to income-generating activities in the communes targeted by the project. Target: 800,000 households, or around 5.7 million people, 50% of whom are women.	Bundling Integrate
Projet Régional d'Appui au Pastoralisme au Sahel (PRAPS 2 ; 2022-2027)	Burkina Faso Mali Niger	Objective: Improve access to essential production resources and services and to markets for pastoralists and agro-pastoralists in cross-border areas and along transhumance routes in six Sahelian countries, and to improve the ability of the governments of these countries to respond in a timely and effective manner in the event of a pastoral crisis or emergency. Target: Up to 13 million people, including young people, at least 30% of whom are women, and at least 2,200,000 pastoralists and agro-pastoralists.	Bundling Integrate
Projet d'Amélioration de la Productivité Agricole par la Conservation des Eaux et des Sols (PACES ; 2020-2024)	Burkina Faso	Objective: Strengthen household food security in the intervention zone (Center North and Central Plateau regions), increase productivity and production in rainfed agriculture on land rehabilitated by water and soil conservation/ soil protection and restoration (CES/DRS) measures in the intervention zone, and	Bundling Integrate Convening Brokering Scoping & Learning

Partners	Country	Objectives and Target	Link with Soil Values Intervention Areas
		strengthen the resilience of beneficiary producers to the effects of climate change.	
Projet de Résilience et de Compétitivité Agricole (PReCA; 2019-2025)	Burkina Faso	Objective: Increase agricultural productivity and market access for 105,000 (33% women) small producers and small- and medium-sized agricultural entrepreneurs in selected value chains (maize, rice, tomato, onion, mango, cashew, and shea) in the Boucle du Mouhoun, Cascades, Hauts Bassins, and Nord regions.	Bundling Integrate Convening Scoping & Learning
Projet de renforcement de la résilience des communautés rurales a l'insécurité alimentaire et nutritionnelle au Niger (PRECIS)	Niger	Objective: Sustainably improve the food and nutritional security of rural households and strengthen their resilience to climate shocks and natural resource degradation.	Bundling Integrate Convening Scoping & Learning
Programme plateforme intégrée pour la sécurité de l'eau au Niger (PISEN ; 2022-2028)	Niger	Objective: Strengthen water resource management, increase access to water services, and improve resilience to climate-induced water variability in selected areas of Niger. Target: Around 12,500 people (including 52% women and 109 internally displaced persons [IDPs]) living in the three districts of Niamey's Commune II.	Bundling Integrate Convening Brokering Scoping & Learning
Dutch-funded Programs			
Programme Agroalimentaire pour la Résilience Intégrée et le Développement Economique du Sahel (Pro-ARIDES ; 2021-2030)	Burkina Faso Mali Niger	Objective: Contribute to increased resilience, food security and household incomes for farmers and (agro-) pastoralists in the Sudano-Sahelian zone of Burkina Faso, Mali, and Niger through effective decentralized institutions and organizations for improved service delivery,	Integrate Convening Brokering Scoping & Learning

Partners	Country	Objectives and Target	Link with Soil Values Intervention Areas
		natural resource and land management, and local economic development. Target: 2.9 million beneficiaries	
World Bank-Funded Programs			
Food Systems Resilience Program (FSRP; 2022-2026)	Burkina Faso Mali Niger Togo	Objective: Strengthen the management of risks inherent in regional food systems, improve the sustainability of the production base in targeted areas, and develop regional agricultural markets. Some 2 million additional people will benefit from the second phase of the program. FSRP-1 and FSRP-2 are expected to directly benefit 4.35 million people (including farmers) across West Africa, with a particular focus on women and youth".	Bundling Integrate Convening Brokering Scoping & Learning
Agro-Climatic Resilience in Semi-Arid landscapes (ACReSAL; 2021-2028)	Nigeria (Northen)	Objective: Address challenges of land degradation and climate change in northern Nigeria on a multi-dimensional scale.	Bundling Integrate Convening Brokering Scoping & Learning
Regional Hub for Fertilizer and Soil Health	Economic Community of West African States (ECOWAS)	Catalyze transformative change based on a multi-faceted strategy that focuses on soil health improvement, sustainable, fertilizer use, and climate change adaptation practices	Bundling Convening
Livestock Productivity and Resilience Support Project (L-PRES; 2022-2028)	Nigeria (Northen)	Objective: Improve livestock productivity, resilience and commercialization of selected value chains and to strengthen the country's capacity to respond to an eligible crisis or emergency.	Bundling (Crop & livestock integration) Integrate
Financial Institutions			

Partners	Country	Objectives and Target	Link with Soil Values Intervention Areas
Rabobank	Nigeria	Rabobank is a Dutch financial institution offering possibilities of accessing the global carbon market through the "re-greening" activities of Soil Values and, with that, generating additional funding for farmers to enhance the carbon balance of their agricultural and natural lands. The Rabobank Acorn initiative is interested to engage because of the large reach of 2 million ha aimed for by Soil Values.	Brokering (carbon market)
Private Sector			
Barenbrug	Netherlands	Barenbrug is a Netherlands seed production company that produces grasses, forages, turf, and forage legumes. Soil Values will explore the possibility of enhancing grass and forage production to further integrate agricultural-livestock systems.	Brokering (Innovative carbon sequestrating technologies for crop & livestock integration)
Universities and International Institutions/Agencies			
Mohammed VI Polytechnic University (UM6P)	Morocco	Soil Values is exploring collaborative opportunities with UM6P, especially through work with Ph.D. students. One opportunity that may arise is a linkage with the university's program on climatic adaptation and mitigation.	Scoping & Learning (PhD candidates for studies on improving soil health and fertility, watershed mapping, and site-specific fertilizer recommendations)
Center for Dryland Agriculture, Bayero University, Kano	Nigeria	Soil Values is exploring the possibility of collaborating with this university to train master's and doctoral students through sandwich courses.	Scoping & Learning (PhD candidates for studies on climate smart agriculture, dataset and diffusion of soil and climate information)
International Atomic Energy Agency (IAEA)	Austria	IAEA is conducting a food security project in Africa for four years (improving food security in Africa with nuclear techniques) and seeks collaboration with Soil Values. Specifically, IAEA is assisting	Convening Scoping & Learning (Studies on climate smart agriculture, dataset and diffusion of soil and climate information,

Partners	Country	Objectives and Target	Link with Soil Values Intervention Areas
		nations to establish laboratories, which could become an interesting linkage in the collaboration to be further explored.	equipping national soil labs)
Global Center for Adaptation (GCA)	Netherlands	GCA assists and supports the upstream development of concepts and ideas and to broker funding, e.g., from the Climate Fund. In contrast, Soil Values is operating downstream with farmers and other actors on the ground.	Brokering (Looking for program development opportunities in Carbon Market and Climate Fund)

3.3 Contracting with Coalition Partners and Disbursement of Funds

The Soil Values inception phase was marked by a successful development and execution of coalition partners' collaboration and relationship management tools through specific agreements (seven) and a consortium governance agreement.

3.3.1 Governance Agreement

In mid-December 2023, IFDC and consortium partners SNV and Stichting Wageningen Research/Wageningen Environmental Research (SWR/WENR; branch of WUR) started developing the main contractual document that will be used to formalize partners' contractual relationships during implementation of Soil Values. This document is the governance agreement that provides a general framework of collaboration mainly for consortium partners. Several negotiation sessions and virtual meetings took place between the consortium members to fine-tune the content of the tool, which was signed by all parties on June 20, 2024. The parties agreed that the governance agreement can, when deemed necessary by the consortium members, be updated/amended to accommodate ongoing realities as part of adaptive management.

3.3.2 Specific Agreements

Parallel to the development of the governance agreement for consortium members, IFDC developed and signed specific agreements with all coalition partners: SNV, SWR/WENR (WUR), IITA, ICRAF, IWMI, ISRIC, and AGRA. These are bilateral contractual agreements between IFDC and the individual consortium/coalition partner, in which parties agree to carry out specific services and/or activities as described in the proposal and subsequent work plans. These contain specific deliverables per partner, each partner's budget, and mechanisms of disbursement of funds. All specific agreements, except for the one with AGRA, were signed before

June 30, 2024. Similarly, funds for 2024 have already been disbursed to all partners, except for AGRA and WUR.

3.4 Soil Values Launch

3.4.1 Preliminary Meetings with Key National Partners

In the early stages of implementation, Soil Values country teams identified potential partners and held a series of meetings with them. The aim of the meetings was to provide a platform for exchange between development stakeholders supporting the agriculture sector in the concerned countries to adapt interventions to local realities. In Burkina Faso, for instance, potential partner programs were met with to present Soil Values and get acquainted with their objectives, intervention strategies, and areas of interest to define future areas of collaboration. Similar activities were done in the other three countries. The list of partners met with is shown in Table 4.

Table 4. Overview of Preliminary Meetings with Partners in Each Implementing Country

Country	National Partners	Period
Burkina Faso	FSRP, PRAPS, Agriculture Resilience and Competitiveness Project (PReCA), PACES II, ProSol, DGAHDI, MARAH	February 20-March 7, 2024
Mali	FSRP, PRAPS, National Directorate of Agriculture (DNA), the National Directorate of Rural Engineering (DNGR), EIR, Malian Association for Awakening Sustainable Development (AMEDD), Sahel-Eco, AMASSA-Afrique Verte, EKN	April 11-June 13, 2024
Niger	FSRP, Pro-ARIDES, PRECIS, PGIP, PRAPS, PRCFS, PGIP, MAG/EL, EKN, World Bank	March 11-15, 2024
Nigeria	ACReSAL World Bank, EKN	February 28-March 5, 2024

Following the various strategic meetings, critical points of synergy were identified including the following: (i) access to public/private financing, (ii) natural resource management and land tenure security, (iii) recovery of degraded land, (iv) fodder production for animal feed and soil fertilization, (v) development of supply chains for sub-regional food reserves, (vi) dissemination of climate-smart technologies at farm level, (vii) development of actions to benefit from Rabobank's green/climate funds (carbon market), (viii) participation in sub-regional consultation frameworks of

Benin-Burkina Faso-Togo and Sikasso-Korogho-Bobo-Dioulasso, and (ix) biodigesters for organic manure production.

3.4.2 Regional Launch

The regional launch of Soil Values took place on April 16, 2024, in Abuja, Nigeria. It had the participation of 160 internal (IFDC, SNV, WUR, AGRA, IITA, ICRAF, IWMI, ISRIC) and external (International Crops Research Institute for the Semi-Arid Tropics [ICRISAT], International Center for Agricultural Research in the Dry Areas [ICARDA], OCP, West African Fertilizer Association [WAFA], African Plant Nutrition Institute [APNI], Africa Rice etc.) technical partners, the Nigerian Ministries of Agriculture and Food Security, Water and Environment, and financial partners (DGIS, EKN, World Bank, ECOWAS, AFAP, etc.). The main objective of the launching was to bring together strategic and bilateral donor communities, local, regional, and international development agencies, and agricultural development programs for a collective, coherent, and effective implementation of Soil Values program. The meeting aimed at accelerating the integration of Soil Values into the regional initiatives and investments in soil health and fertilizer sector development.



The event was delivered in two sessions, with the first session focusing on presentations and panel discussions. Remarks were given by several speakers, including the IFDC Country Director of Nigeria; the IFDC President and CEO; SNV Managing Director Sectors; representatives of WUR, DGIS, ECOWAS, and World Bank; the Soil Values Program Director, the Nigerian Minister of Agriculture and Minister of the Environment; and the Vice President of the Federal Republic of Nigeria. All speakers expressed their commitments to support the Soil Values program.

The second session was devoted to panel discussions to collectively reflect on possible development models and investment opportunities for mainstreaming soil health and leveraging enhanced lasting impact at scale.

Integrating sustainable soil management in the Sahel: The session aimed at deepening participants' insights in water management, soil fertility and soil health management, sub-regional policies, and social issues and GESI. From the perspective of several stakeholders, the collaborative approach is essential to ensure effective and

efficient management of water, soil health and fertility, adoption of policies at national and regional levels, and social inclusion.

A collaborative development model for harnessing and enhancing large-scale sustainable impact: This session aimed at discussing the early engagement of the national governments as well as national policies for sustainable soil health. The opinion was given that the mechanisms bringing together national governments, farmers, and the private sector, including financing and market services, could be a solution for technologies adoption at farmer level. Multi-propose interventions (market, finance, climate geographical, good targeting) could be prioritized for increasing food productivity, access to market, finance, and inputs while bringing all the solutions together and at scale.

Building soil fertility is a long-term endeavor that calls for collective investments: During the discussion, the soil situation was noted to be evolving and further research in soil science is required. A national soil information system is needed in each country to provide information on the soil status and involving the private sector could increase the impact. Financial mechanisms should be developed for both small and big producers to facilitate investment, e.g., group savings, community-based soil conservation approaches (women's groups), warranty funds (Rabobank input subsidies for small producers), carbon credits (an example of the AFAP project that has been successful in getting carbon credits), etc. A mechanism of compensating farmers' practices could be created instead of subsidizing products that end up on the market because farmers are businessmen.

3.4.3 Regional Technical Workshop with Coalition and External Partners

A technical workshop was organized alongside the launch activities on April 15 and 17, 2024. The coalition partners presented detailed working packages of their respective intervention areas and invited non-coalition partners to present their potential contribution to the different intervention areas of Soil Values. These non-coalition partners included ICRISAT, Rabobank, ICARDA, Kansas State University (USAID program), WAFA, ACReSAL, WASCAL, Permanent Interstate Committee for Drought Control in the Sahel (CILSS), Regional Center for Training and Information on Agro-Ecology (AGRHYMET), and Geodata for Agriculture and Water. Furthermore, a committee composed of all coalition partners was set up to collectively reflect on the theory of change and its adaptation to the specificities of the respective intervention zones.

The main objective of the working group sessions was to define a collaborative matrix among coalition and external partners. Thematic areas on policy dialogue and commitment (regional and national levels), stakeholder networking and community engagement, GESI, capacity building, and scoping and learning were discussed in four groups across the five intervention areas of the program. The key takeaways messages are presented in Table 5.

Table 5. Key Takeaways from the Thematic Discussion

Mainstreaming GESI in the Work Plan	• Focus on partnering with women's organizations and develop GESI-responsive technologies as well as lobbying and advocacy to effectively encourage women's access to finance and land. Sensitize men to be GESI champions and create an enabling environment for women and vulnerable groups to succeed. • Develop business plans for youths and the inclusion of vulnerable people, as the implementing countries are also facing conflict.
Participatory selection of technologies and approach	It is essential to develop strategies to facilitate the adoption of conclusive technologies. Through these discussions, the participants identified strategies to support scaling up the technologies.
Integrated and participatory management of watersheds and landscapes for crops and livestock	• Conduct watershed mapping to identify the dynamics in terms of governance, management of common resources, access to markets and services, GESI, etc. • Define at the country level the best watershed management initiatives and assess capacity building needs at watershed, community, and national levels.
Consultative processes between stakeholders for conducive land governance	Identify additional actors and approaches in each country to gain a better understanding of financing methods and strategies. In this way, collaboration opportunities for each country could be explored to support small producers in accessing funds to finance the acquisition of the technologies and agricultural inputs and equipment that will be promoted.
Brokering at the institutional and national levels	• Co-develop proposals: this is to avoid duplications and build on existing efforts. • Provide evidence and extract knowledge on benefits, such as carbon for climate change mitigation and adaptation to incentivize farmers. • Review the outlook of Soil Values program countries to identify their potential and needs to create impact. • Be opportunistic – to identify synergies and coherence with the upcoming programs and initiatives to collaborate with Soil Values for impact.
Policy dialogue and commitment (regional and national levels)	• Foster collaboration with various stakeholders to achieve common goals pertaining to soil conservation and sustainability. • Through effective networking, establish partnerships with government agencies, non-governmental organizations (NGOs), farmers, researchers, and local communities. • Engage with stakeholders through workshops, forums, and outreach activities.

Capacity building (Scoping and Learning)	• Identify the capacity needs of our target population (smallholder farmers) and their groups (e.g. farmer-based organizations) and our local partners (e.g., civil society organizations and national research and development actors). • Develop curricula, training, professional short courses, and participatory approaches in strengthening the capacities of the different actors involved in and targeted by the Soil Values program. • Evaluate (both the effectiveness of the capacity building activities themselves ands the assumptions underlying the Soil Values Theory of Change) to improve activities.

3.4.4 National Launches: Burkina Faso, Mali, Niger, and Nigeria

The consortium held national launches of the Soil Values program in Niamey, Niger, on May 13; Ouagadougou, Burkina Faso, on May 16; Kano, Nigeria, on May 20; and Bamako, Mali, on May 23, 2024. These events provided an opportunity to mobilize and provide information to national stakeholders in each country and to establish a framework for collaborative action at the national level, in line with national partner program objectives. A total of 400 participants from the technical departments of Ministries of Agriculture, Ministry of Women Affairs and Social Development, Environment and Livestock, the private sector, financial and agricultural insurance organizations, producers, youth and women's organizations, national projects/programs, scientific research and training structures, technical and financial partners, and members of the Soil Values Consortium attended to the workshops. In each country, the national launch was endorsed and supported by the Ministries of Agriculture and pledged to support the Soil Values program.

3.4.5 Technical workshops: Burkina Faso, Mali, Niger, and Nigeria

The technical workshops brought together participants from the various national partners to gain a better understanding of the Soil Values program and its GESI approach, share the results of work with pre-identified partners (agricultural technologies promoted, watershed zones, lowlands, irrigated perimeters, and the collaborative action plan), deepen and validate the activities identified for each country, and develop national research and extension platforms. The key activities identified from the discussions is summarized in Table 6.

Table 6. Key Activities Identified in the National Technical Workshops by Country

Niger
• Set up an effective system for capitalizing on, appropriating, and perpetuating what has been learned. • Promote the rehabilitation of degraded soils and their fertility status by promoting composting, manure production at livestock centers, animal husbandry, and other agroecological practices, such as the use of crop residues, mulching, etc. • Collaborate with current projects and analyze potential synergies. • Promote proven soil health improvement production technologies. • Raise awareness of community-led soil and water resource management toward ensuring the sustainability of investments.
Mali
• Consider the perceptions/quality indicators to understand the level of satisfaction of beneficiaries to adapt Soil Values intervention for social cohesion and hence positive impact within targeted communities. • Clearly define the strategy through which the program intends to contribute to the involvement of women and facilitate their access to finance and land. • Improve the land tenure system (representativeness, access to resources, knowledge and training). • Make good use of lessons learned from other projects/programs (PASSIP, FSRP, PRAPS) on gender and social inclusion.
Nigeria
• Develop a collaboration matrix for national projects/programs and Soil Values. • Consider the result chains of the different national partner projects/programs and common points and place in a synoptic table that will be shared with partners. • Collect data on the key indicators of the various national partner projects/programs. • Identify the different agricultural technologies promoted to beneficiaries by the various national partner projects/programs. • Make available a synoptic table of watersheds, irrigated areas, and developed lowlands around which some of the national partner projects/programs carry out activities.
Burkina Faso
• Co-create of collaborative plan of activities between soil values and other national programs • Produce a result chain of various national program aligning with soil values theory of change • Identify Agricultural technologies for the improvement of soil health • Harvest and validate watershed data such as irrigated perimeters and number of food producers • Identify partnership strategies for financing sustainable soil fertility

The key outcomes of the workshops included the following:

- The main national partners (authorities, private sector, technical services, producer organizations, technical and financial partners, research and training institutions, donors, etc.) were made aware of the Soil Values program approach.
- The collaborative action plans between Soil Values and each of the potential national partners were validated. Key activities include soil mapping, enhancement of fertilizer and water use efficiency, capacity building of national partners, training of farmers, organization of farmers, market systems development, enabling policy environment, etc.
- The results chains of Soil Values and national programs should be adapted to develop a more contextualized and operational theory of change for each country.
- Information must be collected on watersheds, landscape, and irrigation schemes. The technical workshop identified the various watersheds, lowlands and irrigated schemes, partners' intervention zones, and the collaborative work plans describing activities from 2024 to 2026.
- National research, extension, and financing platforms and partnership strategies for financing sustainable soil fertility and soil health management were also identified.

3.4.5.1 Governance by the Consortium

The Soil Values program management approach builds on best practices and lessons from other DGIS-funded programs, such as 2SCALE and Pro-ARIDES. It aligns with the Soil Fertility Grant Program (SFGP) Partnership Agreement for West Africa, signed by IFDC, SNV, and WUR in March 2023. This document will be updated as needed during implementation.

Country teams are managed by a Program Management Team (PMT), led by the Program Director and including senior staff, such as Deputy Program Directors, intervention leads, MEL Lead, and Country Managers. The PMT reports to the Steering Committee, which handles day-to-day program management and includes senior staff from each consortium partner. The Steering Committee reports to the Supervisory Board, which meets biannually to approve work plans, annual reports, budgets, and strategic direction.

As Soil Values leverages major global funding streams that address soil fertility and agricultural development in the Sahel, the Supervisory Board comprises the CEOs of IFDC and SNV and the WUR Director of Environmental Sciences. DGIS and coalition partners will be invited as observers.

The first meeting was held on April 17, 2024, in Abuja, Nigeria. The main objective was to bring all committee members together to know each other, get acquainted with the progress made so far in the program inception phase. The meeting provided a conducive platform for an inclusive dialogue to collectively reflect on current program implementation strategies and appropriate mode of operation, possible measures of mitigating security issues (security plan) in the program intervention

zones. All the consortium members, including SNV, WUR, and IFDC, were represented. Among the attendees were Dr. Fofana Bidjokazo, Soil Values Program Director; Dr. Oumou M. Camara, Vice President Global Programs, IFDC; Andre de Jager, Managing Director Sectors Agri-Food, Energy, Water, SNV; Han van Dijk, Prof. of Sociology, Development and Change, WUR; and Prem S. Bindraban, Program Director – Fertilizer Research and Responsible Implementation and Senior Technical Advisor – Soil Values. The latter sat in the committee as an observer.

The following topics were discussed:

- Adaptive and multi-country management.
- Operating in a conflict setting.
- Process and planning to finalize the governance agreement.
- Validation of the partnership agreement of the governance agreement.
- Planning for the first Supervisory Board meeting and the process to define how the Supervisory Board will function.
- Exploration of synergies with other initiatives, both within and outside the program.

The key recommendations from the meeting included the following:

- Use Soil Values launching events to review and/or diversify the partnerships beyond the FSRP as deemed necessary.
- Link up with various ongoing national programs that involve mainstreaming sustainable soil management in the Sahel.
- Strategically locate Soil Values staff to effectively implement the adaptive management strategy and minimize risks associated with the prevailing socio-economic and security issues.
- Develop a security plan for Soil Values, including a risk matrix at country and regional level. The security plan and protocol must be harmonized with other partners, including SNV and WUR.
- Resolve all governance agreement-related issues by the end of May. IFDC, SNV, and WUR are to meet to finalize the governance agreement.
- Have first meeting with Supervisory Board before the submission of the inception report.

3.4.6 Visit to Implementing Countries

The Soil Values team paid courtesy visits to the Embassies of the Kingdom of the Netherlands in Burkina Faso, Mali, Niger, and Nigeria. These meetings, held from March to June 2024, provided an opportunity for the Soil Values team to present the program and discuss national launch program agendas, gather guidelines for improvement in the implementation and partnership building with Dutch-funded programs, and share the progress made in program implementation in the respective countries. During the meeting in Burkina Faso, the team received two important documents from EKN: EKN's general strategy in Burkina Faso and the study report on agro-sylvo-pastoral value chains.




Courtesy visits to EKN Niger (left) and Mali (right)

EKN Niger and Mali suggested connecting with relevant EKN- and DGIS-funded programs, such as 2SCALE, Pro-ARIDES, ISSD/Sahel, and the Program for the Promotion of Productive Agriculture (PromAP), as well as a fluid communication channel. A similar suggestion was made during the meeting in Nigeria with regard to connecting with the HortiNigeria program. Additionally, EKN Mali encouraged the team to give consideration to the GESI strategy, which seems to be less supported by other programs and which should go beyond just male/female disaggregation, and the crop value chain priorities of the program. Key discussion points and takeaways are summarized in the Table 7.

Table 7. Key Discussion Points and Takeaways from Visits to EKN in Each Country

Country	Date	Key Discussion Points
Burkina Faso	May 10, 2024	Synergy of Soil Values activities with all national projects funded by the Netherlands: (i) HortiPlus, (ii) Non-Timber Forest Products Phase 3, (iii) Pro-ARIDES, (iv) 2SCALE, ICCO Cooperation, (v) AUXFIN, (vi) Agriterra, (vii) Tanager, (viii) the Land at Scale program of the National Land Observatory of Burkina Faso (ONF-BF).
Mali	June 13, 2024	Clarification of WUR's participation in the Soil Values program (which branch contributes to the implementation of the program). Taking the central areas (Mopti and Bandiagara) into account, which are priority intervention areas in the EKN's strategic plan. Flexibility of strategies (local, national, regional, formal/informal) for soil fertility adopted by long-term producers. Search for a point of collaboration with IWMI on the Water Productivity (PRODEAU) program. In addition, PASARC II's invitation to the regional workshop on the collection of secondary data from the watersheds in Segou was recorded.

Country	Date	Key Discussion Points
Niger	March 14, 2024	The country's agricultural context, influenced by climate change, land degradation and food insecurity, which justifies anchoring of the Soil Values program.
Nigeria	April 2024	Soils, seeds, private sector engagement, and the launch of Soil Values in April in Nigeria, as well as Dutch investment opportunities.

4 Key Deliverables

4.1 Integrated and Adapted Theory of Change

4.1.1 Operational Theory of Change and Result Framework

The three intervention pathways of the Soil Values program integrate diverse approaches aimed at reclaiming degraded soils and regenerating fragile and degraded land and agroecological systems, enabling farmers in the Sahelian areas to restore their livelihoods and improve their quality of life.

The operational Theory of Change for the Soil Values program builds upon the principles of its original Theory of Change, particularly its agroecology, enabling environment, and inclusive markets interventions pathways. It focuses on activities designed to enhance soil fertility and soil health and is grounded in the principle that:

IF Soil Values, within the BUNDLING area of intervention, provides small-scale food producers, including pastoralists, particularly women and youths, with proven products and services, such as skills training, advanced techniques, and modern technologies, they will be able to bridge the yield gap. This will be achieved through the adoption of sustainable soil fertility and land management practices, quality seeds and fertilizers, and resilient measures to combat land degradation and mitigate impacts of climate change manifestation and related shocks,

IF Soil Values, within the INTEGRATE area of intervention, employs a participatory approach to co-design community-based land management in the watersheds where sufficient public physical investments are made, small-scale food producers, including pastoralists, particularly women and youths, will optimize their integrated use of land, water, and biodiversity for farming. This will be achieved through leveraging both local and external agroecological knowledge along with nature-based solutions and inputs, access to market, and a GESI-sensitive strategy at the watershed level,

IF Soil Values, within the BROKERING area of intervention, offers short-term financing mechanisms for agricultural inputs for production to small-scale food producers, including pastoralists, particularly women

and youths, and negotiates institutional financing mechanisms for long-term investments, soil fertility will be sustainably managed. This will be achieved by facilitating small-scale food producers' access to institutional and village savings associations loans for immediate agricultural needs and securing funding for long-term soil health initiatives,

IF Soil Values, within the CONVENING area of intervention, institute coalitions with donor communities (DGIS, African Union, World Bank, African Development Bank, Bill and Melinda Gates Foundation, ECOWAS, WAFA, CORAF) at national, regional, and international levels, institutional support will be enhanced for mainstreaming soil fertility. This will be achieved through strong political and institutional commitments at regional and international levels and the adoption and implementation of a holistic approach to soil fertility management system,

IF Soil Values, within the SCOPING AND LEARNING area of intervention, facilitates the flow of innovations, adaptation, and adoption of technologies and approaches in local contexts, all engaged coalition partners and stakeholders will learn from proven technologies and approaches to achieve innovative agro-technical and socio-institutional measures. This will be achieved by fostering self-learning through practice, training, and research,

AND whereas the governments of the countries involved, and the national soil fertility programs are strongly committed; whereas the national partner programs are making the physical investments at the watershed level; whereas the security situation in the four implementing countries is stable and the situation in the two strategic countries remains favorable; whereas other risks that could impede the implementation of the program or affect its results are manageable.

THEN

- Female, male, and youth small-scale food producers and pastoralists will be empowered and adopt ISFM and soil and water conservation (SWC) packages and services to sustainably manage soil fertility.
- Communities and watershed authorities will combine local and external agroecological and hydrological knowledge to sustainably manage integrated watershed plans.
- The private sector and extension services will be trained to deliver proper products and services and ensure their judicious agroecological use.
- National partners will be empowered to harmonize and enact evidence-based and GESI soil fertility policies, reinforce extension services on ISFM, and develop consensus for institutional financial mechanisms for soil fertility.

THEREFORE

Farmers adopting sustainable agricultural practices will enhance soil health, increase crop yields, and boost agricultural production, contributing to food security, poverty reduction, and environmental sustainability. Soil Values will enhance soil fertility by managing partnerships and supporting soil fertility initiatives at various levels.

LEADING TO

Sustainable improvement of fertility and productive capacity of 2,000,000 hectares of farmland (400,000 ha each in Burkina Faso, Mali, and Niger and 800,000 ha in Nigeria) and the resilience and well-being of 1,500,000 small-scale food producers (300,000 each in Burkina Faso, Mali, and Niger and 600,000 in Nigeria), particularly women and youths.

To achieve the Soil Values Theory of Change, the operational framework must integrate key inputs, including clear objectives for soil health and productivity, stakeholder engagement (farmers, communities, government, NGOs, research institutions, the private sector), and capacity building through training programs. Strategic partnerships and a robust monitoring and evaluation system are also crucial. Activities will be tailored to each country's context, as outlined in Figure 2 from the national technical workshops.



Figure 2. Collaborative Working Package with National Partner Programs

Inputs also include effective data collection mechanisms and digital platforms to facilitating real-time data management, and ongoing technical assistance will support local partners in data analysis and interpretation. Adequate resource allocation and strong communication strategies will further ensure that the program's activities are well-supported and that stakeholders remain informed and engaged. Through

continuous feedback and adaptation, the program will remain responsive to emerging challenges and opportunities, driving forward the overarching goal of sustainable soil health and fertility.

4.1.2 Contextual Considerations for the Soil Values Theory of Change

The technical workshops held in the priority countries of the Soil Values program revealed various needs of end beneficiaries, national partner programs, and stakeholders, reflected in the activities suggested by participants, pertained to both specific and common contexts. The particularities align with the interventions outlined in the program proposal and specific to each of the countries. The needs reflect each country's vision for soil health and restoration efforts and related agricultural policy priorities. For example, in Burkina Faso, needs emphasized food sovereignty, in Mali food security and sovereignty, and in Niger food and nutritional security with the slogan of "Nigeriens Feed Nigeriens." The following is a detailed overview of the country-specific priorities, including agricultural intervention areas and political orientations.

4.1.2.1 Reflecting the Soil Values Theory of Change at Country Level – Burkina Faso

The Theory of Change in Burkina Faso is contextualized by the vision that currently guides public investments in agriculture with the aim of achieving ***food sovereignty*** through policies such as the Offensive Agropastoral and Fisheries 2023-2025. This priority for political authorities was reaffirmed during technical workshops and the national launch event. These workshops revealed a strong commitment to soil health from government actors and local organizations, emphasizing the need for impactful measures beyond soft actions. Political authorities reiterated that soil health is central to achieving food sovereignty. In Burkina Faso, the adoption of sustainable and good soil fertility-related agricultural practices by farmers to improve soil health heavily depends on the improvement and stabilization of the security context. Generally, creating an enabling environment where public authorities uphold regional and international commitments on soil health is critical for program implementation and goal achievement. However, budgetary constraints pose a challenge to the strong political commitment and institutional support demonstrated by government authorities during the launches and technical workshops. If the above-mentioned issues are systematically addressed, combined efforts will significantly enhance soil health, leading to improved crop yields and the realization of food sovereignty in Burkina Faso.

Key particularities unique to Burkina Faso based on the outcomes of national technical workshops per intervention area
Bundle and Integrate: Technical meetings highlighted the need for a collective understanding of soil health among landowners, farmers, and other stakeholders to encourage investment in soil health. The focus will be on integrating local agroecological knowledge with innovative solutions, community approaches to soil fertility management, water resource use, and forest and pasture restoration. A training and extension approach with farmer field schools and demonstration plots will be promoted. **Gender Equality and Social Inclusion**: Women and youth are central to the program's activities in Burkina Faso. Gender mainstreaming in agricultural practices will leverage past programs involving women in compost and biofertilizer production. Efforts will be made to secure land for women and youth in collaboration with the ONF-BF. **Convene – Land Tenure Commissions**: Empowering land tenure commissions at communal and village levels is crucial for favorable gender-balanced land management. Recommendations include educating elected representatives on soil fertility, establishing a soil fertility and health charter, and promoting World Soil and Tree Days. Prizes will be awarded to outstanding contributors. **Private Sector Engagement**: Engagement with the private sector is key for financial and trade structures. Proposed activities include improving market access, organizing producers for collective processing and marketing, identifying promising production areas, and supporting small and medium enterprises (SMEs) led by women, youth, and marginalized groups. **Technology Packages**: Technology packages tailored to different areas were proposed during the workshops. These include fertilizer technologies, soil and water conservation techniques, and good agricultural practices such as crop rotation and drip irrigation. **Investments in Soil Health**: Investment options that were identified included brokering systems, warrantage, and agricultural equipment cooperatives. Encouraging agricultural insurance and tailoring financial options to specific needs were also discussed.

4.1.2.2 Reflecting the Soil Values Theory of Change at Country Level – Mali

The Theory of Change in Mali focuses on achieving food self-sufficiency, food security, and food sovereignty in line with Mali's Loi d'Orientation Agricole (Agricultural Orientation Law). The law aims to improve producers' incomes, ensure food security, and support sustainable agricultural development. Technical workshops with national partners highlighted the country's challenging climatic and soil conditions, including deforestation, erosion, soil nutrient depletion,

desertification, loss of grazing land, and insufficient drinking water. Soil Values interventions will aim at reversing these soil and landscape degradation and promote sustainable land management to achieve these goals. Additionally, the workshops emphasized the barriers women face in decision-making processes, despite their crucial role in family welfare and income generation, and the need to address cultural, societal, and religious norms that limit their access to resources and management systems. Soil fertility in Mali is a critical issue, as it has significant implications on agriculture, food security, and economic development. Following the various technical workshop of Soil Values in Mali, key areas were identified specific to the country.

Key particularities unique to Mali based on the outcomes of national technical workshops per intervention area
Integrate – Community Involvement: Soil Values will involve local communities in its activities by training national extension service providers, lead farmers, and cooperatives to disseminate best practices and ensure sustainable land and water management. Leveraging land tenure commissions and participatory initiatives, the program will integrate young women and men into conflict management committees and eco-design community approaches toward improving land use. **Bundle – Packaged Technologies**: Technological packages tailored to address nitrogen and phosphorus deficiencies and erosion will be developed. The ISFM approach will involve the promotion of soil and water conservation techniques and good agricultural practices, aligning with Mali's Agriculture Law, which has guided agricultural development since 2006. **Convene – Activating the Private Sector**: Soil Values will engage the private sector, including major firms such as Toguna and Sogerfert, to promote agricultural inputs and technologies. Organizations such as WAFA and the National Agro-Dealers Union (UNRIA) will facilitate access to agricultural inputs and promote their effective use and adoption. Various mechanisms will be developed to involve the private sector in value-adding post-harvest and marketing activities. **Convene – Desertification**: To combat land degradation and desertification, Mali aims to increase reforestation and reduce soil fertility degradation and soil and water erosion while improving vegetative cover by 2030. The program will align with national and international initiatives such as the Sustainable Development Goals and the Rio Conventions, using various financing mechanisms.

4.1.2.3 Reflecting the Soil Values Theory of Change at Country Level – Nigeria

In Nigeria, the Soil Values program aligns with the "Renewed Hope Agenda" of the federal administration, focusing on food security and poverty eradication as its

strategic priorities. Addressing soil fertility in northern Nigeria requires a holistic approach, integrating soil conservation, sustainable farming practices, improved access to fertilizers, and targeted investments. However, challenges such as banditry, farmer-herder conflicts, terrorism, and kidnappings pose risks to agricultural activities and program success. Political will is crucial for allocating resources, accessing funding, and creating a supportive policy environment. Over the next decade, the program aims to achieve healthier soil, sustainable agricultural productivity, improved food security, environmental sustainability, inclusive industrialization, biodiversity conservation, and enhanced soil health policies. This comprehensive strategy aims to boost crop yields, ensure food security, and foster sustainable livelihoods in the Sahel region.

Key particularities unique to Nigeria based on outcomes of national technical workshops per intervention area

Integrate – Special Ecosystems: Soil Values in northern Nigeria aims to enhance agricultural systems by focusing on unique ecological processes in desert oases, wetlands, and protected areas. Strategies include integrating trees and shrubs, mixed cropping, and preserving crop residues to combat heat and soil dryness. This approach spans farm and watershed levels, incorporating tree corridors, grass strips, and water management, tailored to the region's conflict-sensitive context.

Integrate – Involving Women and Youth: Stakeholder consultations emphasized the inclusion of women and youth, who constitute over half of the agricultural workforce and play a crucial role in food security. Drawing from projects like 2SCALE, HortiNigeria, and Transforming Irrigation Management in Nigeria (TRIMING), Soil Values in Nigeria will strategically involve women and youth throughout the project lifecycle.

Integrate – Livestock and Ranch Management: Workshops highlighted the need for conflict-sensitive support to farmers and pastoralists, focusing on crop residue utilization, range management, and mixed-use fodder production. Rainy season range management aims to increase forage availability during the dry season, reducing livestock movement into farming areas. Capacity building will facilitate barter trade between herders and farmers, emphasizing organic fertilizers and farm residues, with community-based dialogues for adapting decision-making for sustainable resource access.

Bundle – Value Chain Focus: Consensus was reached on creating guidelines for sustainable soil management to assess threats and impacts on ecosystems. Soil Values will develop tools to inform agricultural supply chain actors about fertilizer availability, trade routes, and markets. Focus on profitable agricultural products emphasizes long-term soil health practices like manure production and increasing organic carbon, considering social, political, and environmental factors.

Convene and Broker – Private Sector: The absence of regional soil analysis laboratories presents an opportunity for private sector investment. Soil Values plans to engage the private sector in developing site-specific fertilizers and carbon credit markets. Support for SMEs and larger firms will include carbon market business training for selected small-scale producers, aiming to enhance engagement and investment in northern Nigeria's agriculture sector.

4.1.2.4 Reflecting the Soil Values Theory of Change at Country Level – Niger

The Programme de Résilience et de Sauvegarde de la Patrie (PRSP) is a comprehensive new program recently designed in Niger to guide their endogenous development in all areas, including agriculture. Its first three expected effects for the economic growth axis focus on the agriculture sector. Specifically, the effects "agricultural value chains are developed," "animal value chains are developed," and "sustainable management of land, water, and biodiversity is improved" provide a framework for the Soil Values Theory of Change. It aims to ensure food security, increase agricultural production diversity, and enhance incomes through sustainable practices. Through technical workshops, key objectives of the initiative have been identified, including water management for irrigation, sustainable land use, environmental protection, and increased resilience to climate change and crises. Niger faces challenges such as crop failures, livestock transhumance, and degraded land due to adverse weather conditions and poor soil fertility management. Soil Values will address these by promoting innovative farming techniques, providing quality seeds and fertilizers, facilitating market access, and advocating for sustainable agricultural policies. Targeted interventions will support small-scale producers, improve input supply chains, promote fair trade, and engage with local authorities to adopt agroecological policies.

Key particularities unique to Niger based on outcomes of national technical workshops per intervention area
Bundle – Crop Diversity and Agricultural Advisory Support: In response to poor soil health and climate change impacts on crop cycles, strategies focus on funding validated agricultural solutions and promoting prominent cash and food crops, such as irrigated rice and maize. The Soil Values program in Niger will expand crop diversity by adding drought-tolerant crop varieties for tomato, millet, groundnut, sesame, moringa, and forage crops, such as luzerne and bourgou. Emphasis will be placed on technologies such as assisted natural regeneration, intercropping, and mulching, alongside advisory platforms to bridge gaps between research, extension services, and farmer needs.

Integrate – Pastoralism and Animal Feed Production: Livestock farming challenges in Niger, including access to pastoral resources and climate change effects, necessitate strategies such as cultivating forage species at grazing sites and improving agro-pastoralists' skills in forage production. The focus is on disseminating forage species suitable for Niger's conditions without additional irrigation requirements.

Convene – Youth at the Heart: Recognizing Niger's young population, Soil Values will prioritize youth and women's involvement and initiatives on forming agricultural cooperatives, providing training in mechanization and agricultural practices, and facilitating youth access to land to support youth entrepreneurship, in alignment with Niger's National Strategy for Youth Entrepreneurship Promotion.

Learning – Building on Soil Health: Building on existing initiatives, Soil Values will enhance youth capacity in soil health and fertility management. Customized training curricula will address the specific needs of young farmers, students, and extension agents, aiming to improve soil management practices and respond effectively to Niger's soil health challenges.

4.2 Critical Assumptions

For the Soil Values Theory of Change, several key critical assumptions should be considered to ensure the program's success. These assumptions are foundational beliefs about the context and conditions under which the program operates, and if these assumptions do not hold true, the program's outcomes may be compromised. The following are some key critical assumptions:

- **Stable Political Environment**: Political stability in the four implementation countries (Burkina Faso, Mali, Niger, Nigeria) and also the two strategic countries (Côte d'Ivoire and Ghana) will be maintained, with minimal disruption from political unrest or conflict.
- **Continued Funding and Resources**: Donor financial support will be uninterrupted, ensuring consistent and timely availability of resources.
- **Community Engagement and Support**: National, regional, and local partners, including community leaders and influencers, will remain committed and actively engaged.
- **Adoption of Practices by Farmers**: Small-scale farmers will be willing and able to adopt sustainable agricultural practices and have access to the necessary resources.
- **Favorable Climatic Conditions**: The current climatic conditions will not worsen significantly, with any adverse changes managed within the program's risk mitigation framework.

- **Institutional Capacity**: Partner organizations and institutions will have or will be supported to develop the capacity to implement and sustain program activities, with minimal staff turnover.
- **Effective Coordination Among Stakeholders**: There will be smooth collaboration and minimal bureaucratic inefficiencies among government agencies, private sector actors, civil society organizations, and local communities.
- **Regulatory and Policy Support**: Government policies and regulatory frameworks in implementing countries will align with and support the program's objectives, with timely approvals and permits.
- **Inclusion and Equity**: Efforts to include women, youth, and marginalized communities will be successful, promoting equity and fair access to resources and benefits.
- **Resilience to External Shocks**: The program's contingency plans will effectively mitigate impacts from unexpected disruptions, maintaining flexibility and responsiveness to evolving risks and changes.

All these assumptions will be regularly monitored through a participatory approach to ensure the program's Theory of Change remains realistic and achievable.

4.3 Updated Matrix of Risk and Critical Assumptions

To ensure smooth implementation of the Soil Values program, safeguard staff, and protect properties, the security unit and program team conducted a thorough risk assessment. This identified potential threats, vulnerabilities, and risks affecting operations, assets, and personnel, aiming to provide a clear understanding of the security landscape and highlight areas for proactive mitigation. The assessment underscores the importance of vigilance and proactive measures from all involved parties to strengthen defenses and ensure successful program implementation. It identified 24 risk areas and an additional 20 security-related areas per country, detailing risk levels and mitigation measures in a risk matrix to guide program activities.

Key high-risk factors include insecurity, political instability, and corruption, which threaten the project's feasibility. Specific threats, such as violence, banditry, kidnapping (notably in Nigeria), and terrorism, pose severe risks to both project setup and personnel well-being. Regulatory changes, bureaucratic obstacles, and arbitrary policy shifts can undermine planning, while bribery, extortion, and nepotism can distort resource allocation and compromise efficiency. These risks are particularly high in all countries except Nigeria, which, despite being more politically stable, faces challenges from high inflation and fluctuating exchange rates affecting procurement activities.

Climate change presents a dynamic risk, potentially disrupting program activities through extreme weather events, changes in precipitation patterns, or ecological

degradation. Low adoption rates among smallholder farmers can hinder the program's goals, while local coordination may be compromised by bureaucratic inefficiencies or power struggles. Exclusion of vulnerable groups risks perpetuating inequalities and limited private sector engagement can constrain innovative solutions and resource mobilization.

High staff turnover threatens program continuity and institutional memory, disrupting workflows and knowledge transfer. Additionally, exchange rate fluctuations and rising inflation can impact program budgets and procurement costs. These medium-risk areas highlight the need for robust risk management strategies, adaptive planning, and proactive monitoring.

Low-risk areas include data quality issues, weak partner capacity, weak program governance, and contextual shifts. Mitigation of these risks requires a comprehensive and proactive approach, with tailored strategies and a robust mitigation plan to address identified risks and monitor emerging ones.

Soil Values recognizes that each risk requires a unique mitigation strategy and is committed to ensuring these measures are thorough and effective. Therefore, the security team and other project members will continually review the risk matrix to remain adaptive and prevent unforeseen risks in the future. Annex 1 presents the full updated matrix risk, including mitigation actions.

4.4 Pathways from Outputs to Outcome Targets

Through interventions that focus on enhancing soil health and fertility, promoting climate-resilient farming practices, improving market access and income diversification, and fostering social equity and empowerment, Soil Values aims to achieve transformative impacts on increasing crop yields, enhancing food security, reducing vulnerability to climate change, boosting economic opportunities for farmers, alleviating poverty, and promoting inclusive growth and community resilience. The pathways from products to results according to the three paths of the Theory of Change are illustrated in Figure 3.

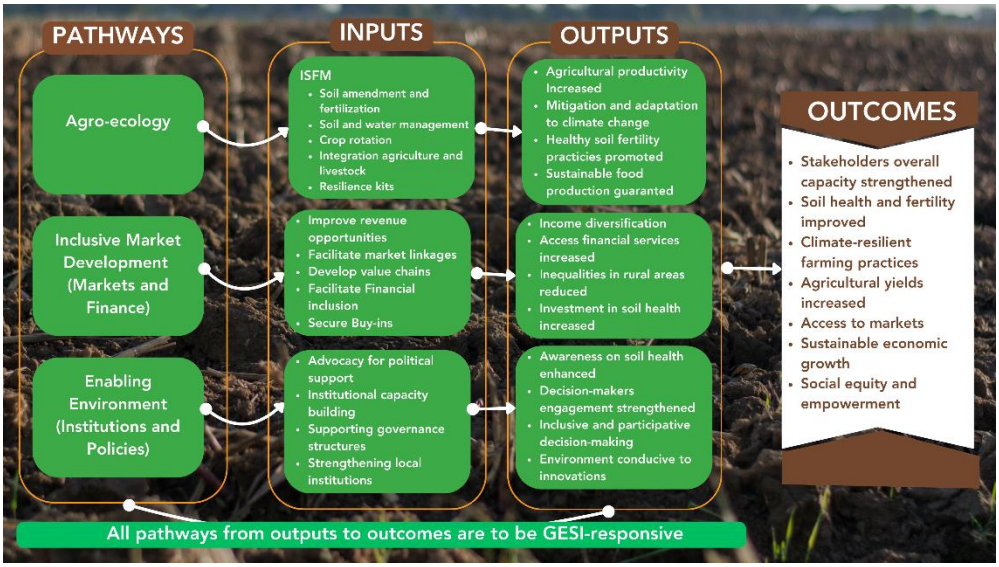


Figure 3. Schematic of Pathways from Outputs to Outcomes

4.5 Progress Toward Ex-Ante Evaluations and Thematic Studies

The Soil Values approach focuses on leveraging existing studies. Accordingly, exploration and discussions with various partners and programs were conducted to identify any ex-ante studies whose results could inform Soil Values interventions. Similarly, technical workshops held in each implementing country helped define the scope and requirements for these studies. Thus, the inception phase has primarily served as a framework for preparing ex-ante evaluations, which will address the following key themes: ISFM bundled services and sustainable delivery and brokering finance, mapping of land use, fertility at the meta level, water resources, and climate risk assessment.

Study 1: ISFM Bundled Services and Sustainable Delivery and Brokering Finance

The preparation for the ex-ante evaluation involved numerous meetings and technical discussions among the multidisciplinary team formed for this purpose, fostering collaboration and leveraging diverse expertise. A concept note was developed to guide these activities, and several studies were proposed. For the rest of 2024, the team will conduct an ex-ante study to measure the potential impact of the proposed service bundles in each targeted watershed. This study will evaluate outcomes related to food security, nutrition security, poverty, youth employment, and conflict. Additionally, the team plans to develop farmer typologies to better target the proposed bundles. Some studies will also utilize randomized control trials to identify the most suitable financial services for the target beneficiaries. The results of these

efforts will help prioritize and tailor actions for the Soil Values program starting in 2024 and beyond.

Study 2: Mapping of Land Use

This study will identify various uses for the land (agricultural, pastoral, forestry, fish farming) to locate the areas undergoing potentially conflictual changes, the borders between terroirs, the territorial complementarities, and the potential of fallows. This work will be based on the analysis of already existing master plans (land tenure, territorial) and the analysis on open-source satellite imaging tools. This mapping will be carried out, with support from ICRAF, an expert in ecosystem and biodiversity management.

Study 3: Mapping of Soil Fertility at the Meta Level

This study will identify the main challenges that ISFM should address at the meta level in terms of external and internal outputs needed in each landscape unit. This work will be based on an analysis of existing resources (iSDAsoil, ISRIC SoilGrids, GeoNetwork) and on analysis of open-source satellite imaging tools (including carbon storage by forest and pasture).

Study 4: Mapping of Water Resources

Mapping water resources, including surface, shallow, and deep groundwater, in the Sahel region is crucial due to the area's arid climate and reliance on these resources to support agriculture and stable food production. Irrigation and soil and water conservation measures increase crop productivity and are the most important component of the enabling environment for farmer investments in agricultural inputs, including adoption of ISFM practices. The goal of this study will be to provide a concise geospatial database of available water resources that can sustainably support the development of water resources for agricultural production, whether for large and small irrigation schemes, farmer-led irrigation approaches, or soil and water conservation measures. The study will use open access remote sensing and public database resources of land and water resources as well as climate change scenarios for the region to map available water resources and future climate change challenges.

Study 5: Climate Risk Assessment

The climate risk assessment revolves around using climate information to cope with climate impacts on (i) food production systems and nutrition, (ii) business, service and employment opportunities, and (iii) natural resource management and governance. To solicit information and analyze findings on climate risk and its impact on the actors along the selected landscapes, the climate risk assessment combines a focus on assessing information with the use of climate projections for better coping with current climate threats and identification of how these vulnerabilities may change in future and the capacities needed of local actors to absorb, adapt, or transform their business case to cope with climate shocks or stresses. The climate risk assessment should inform future program activities and be reinforced with climate change interventions that contribute to building resilience. A baseline vulnerability

assessment tool will be developed to inform the development of activities that can address climate vulnerabilities.

Study 6: Analysis of Gender Equality and Social Inclusion (GESI)

The GESI analysis will examine the social and cultural norms, beliefs, and practices in each landscape and how they relate to communities in terms of access and control over soil health, land, water, sustainable natural resource management, and integrated landscape/watershed management. It will analyze current laws, policies, regulations, institutional practices, gender roles, responsibilities and time use, and issues of safety, dignity, and well-being in resource management processes.

4.6 Strategy in Operationalizing the Monitoring, Evaluation and Learning Plan

4.6.1 Operational Monitoring Strategy

The operationalization of monitoring activities and outputs/outcomes will be anchored in the MEL framework established for the program, leveraging digital platforms for efficient data capture, storage, processing, analysis, and visualization (Figure 4). The MEL framework aims to methodically define and track indicators at both program and partnership levels.

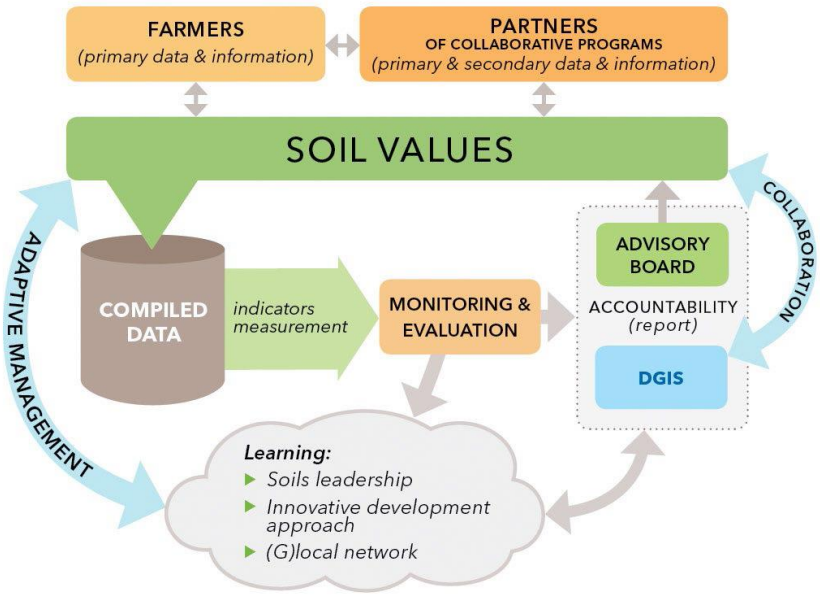


Figure 4. MEL Framework

The monitoring system for Soil Values will utilize digital forms tailored to specific program activities, ensuring accurate and consistent data collection. Partners will input data directly into a centralized platform, allowing for real-time updates and

continuous monitoring. This approach enhances transparency, accessibility, and accountability among partners, supported by standardized tools and protocols for methodological consistency. Digital forms aligned with activity categories will track immediate results from partners. This will be achieved through training for partners on the digital form completion to ensure consistent and reliable data entry. The digital form will contain information such as country, partner name, activity title, objective, topics covered, and number of participants (disaggregated by sex, age, form of disability). Refer to Annex 4 for sample form.

Partners should upload activity data using the digital forms immediately after each activity. A quarterly review of the uploaded data will be done through quarterly meetings with country MEL coordinators and Soil Values country coordinators to ensure all data is up to date per planned activities and implementation timelines. Whenever possible, the coordinators will either participate in these activities directly or follow up through the focal points of the implementing partners.

The operational monitoring system will include a real-time dashboard and reporting system. The platform will systematically store and automatically analyze and display data. Once the data is sent by partners, the platform will automatically synchronize the data in real time. This ensures that the data is immediately available for analysis and reporting, allowing timely and informed decisions for adaptive management purposes.

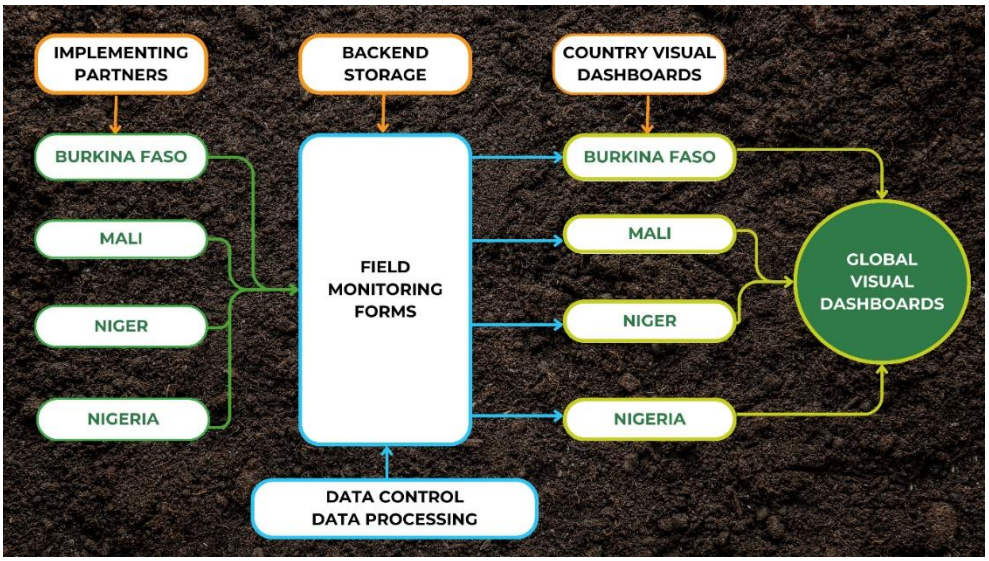


Figure 5. Activities and Outputs Tracking Dashboard

Power BI will be integrated into the platform, enabling advanced data visualization and interactive reporting capabilities to enhance data-driven decision-making and strategic planning. Power BI is a data analysis solution from Microsoft that enables

the creation of customized, interactive data visualizations. Its user-friendly interface allows end users to create their own reports and dashboards.

4.6.2 Evaluation and Learning Framework

4.6.2.1 Annual Evaluations: Unified Survey

To track and measure changes from and impacts of Soil Values interventions, a unified annual survey using repeated cross-sectional methods is proposed. This approach aims to address the issue of the same producers being surveyed multiple times by different partners. A single survey approach ensures the quality and integrity of the collected data by avoiding redundant surveys and duplicates. This approach offers the following advantages:

- **Consistent and Comparable Results**: Standardizing data collection and analysis enables consistent and comparable results across different intervention areas and time periods. This consistency is crucial for creating a cohesive dataset that can be relied upon for informed decision-making and policy development.
- **Resource Efficiency**: A coordinated survey effort maximizes the optimal and efficient use of available resources by avoiding redundant data collection and avoiding duplication of efforts.
- **Leveraging Partner Strengths**: By bringing together the strengths of each partner, the collaborative approach enhances the quality and scope of the survey. Partners can share expertise, methodologies, and insights, resulting in a more robust and comprehensive evaluation.
- **Shared Ownership and Engagement**: A unified survey fosters shared ownership and engagement among partners. This collaborative effort strengthens commitment and increases the likelihood of successful implementation and sustainability of the program.

The process to implement the unified survey for Soil Values is as follows:

- **Gathering Information Requirements**: The first step is to gather information requirements from all partners. This ensures that the survey addresses the diverse needs and objectives of the various stakeholders involved in the Soil Values initiative. The process will ensure that data collection methods at all levels are culturally appropriate and respect local and gender norms while being sensitive to power dynamics, e.g., female enumerators interview female beneficiaries. Also, the monitoring and evaluation process should protect the privacy and safety of participants, especially when discussing sensitive issues related to gender and social inclusion.
- **Designing the Unified Questionnaire**: The needs from each organization are translated into specific questions, which are then integrated into a single questionnaire. This comprehensive questionnaire is designed to capture all relevant data needed to evaluate the program's impact on soil health and management practices.

- **Training of enumerators and pre-testing of tools:** Building the capacity of enumerators throughout the process ensures data quality. It also helps improve and contextualize data collection tools.
- **Administrating the Survey**: The questionnaire is administered to selected growers, ensuring that the sample is representative of the broader population. This helps in obtaining reliable and generalizable data.
- **Monitoring and Evaluation Team Leading the Process**: The Soil Values monitoring and evaluation team leads the survey process in close collaboration with all partners. This ensures that the survey comprehensively addresses the shared interests and objectives of the initiative.

4.6.2.2 Learning Agenda

The learning component will be linked to Intervention Area 5 – Scoping and Learning to harmonize interventions and data and avoid duplication. The learning component of the MEL system aims to continuously improve soil management practices through systematic data collection, analysis, capacity building, and knowledge sharing (Figure 6). It involves stakeholders at all levels, with a feedback mechanism that fosters a culture of evidence-based decision-making and collaborative problem-solving. Training sessions, field demonstrations, online repositories, and peer learning networks facilitate sharing of research, best practices, and innovations. Iterative planning and adaptive management utilize evaluation insights to refine strategies, ensuring relevance and effectiveness. Case studies and periodic reporting further enhance learning, providing actionable recommendations for future initiatives.

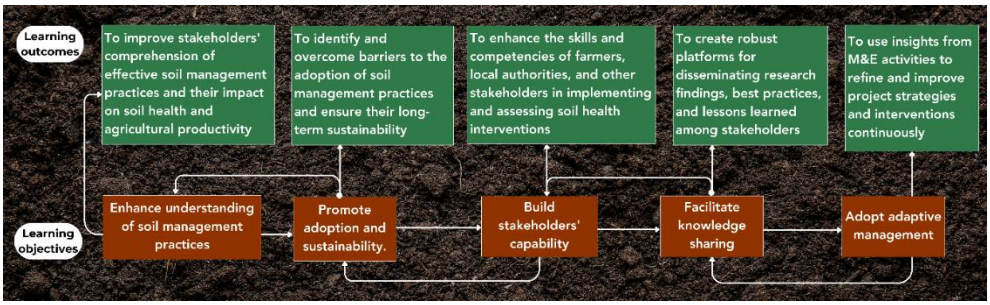


Figure 6. Learning Objectives and Expected Outcomes

The learning component of the Soil Values program is expected to yield several key outcomes that will enhance the effectiveness and sustainability of soil management practices. Stakeholders will gain a deeper understanding of effective soil management techniques, leading to observable improvements in soil health indicators such as increased nutrient levels and organic matter content (Table 8). This, in turn, will lead to increased agricultural productivity, improved economic well-being for farming communities, and positive environmental impacts, such as reduced soil erosion and increased biodiversity. Ultimately, the continuous integration of lessons learned into the adaptive management processes will ensure that the Soil Values program remains

responsive and effective, promoting a culture of evidence-based decision-making and collaborative problem-solving.

Table 8. ***Key Learning Questions***

Learning Area	Questions
Effectiveness of Soil Values Interventions	How have specific soil management practices implemented through the Soil Values program improved soil health indicators, such as nutrient levels and organic matter content?
	What changes in crop yields have been observed since the introduction of new soil management techniques?
Adoption and Sustainability	To what extent have farmers adopted the recommended soil management practices?
	What are the main barriers to adoption of these practices for the different groups/ genders, and how can they be addressed?
	How sustainable are the practices promoted by the Soil Values program in the long term?
Capacity Building	How effective have the training programs and workshops been in enhancing stakeholders' knowledge and skills in soil management practices?
	What additional resources or support do stakeholders (men, women, youth, people with disabilities) need to fully implement and benefit from soil management practices?
Impact on Livelihoods	How have improved soil management practices affected the economic well-being of farmers and their communities?
	To what extent has the resilience of small-scale food producers and pastoralists been improved as a result of Soil Values interventions?
Environmental Impact	What are the environmental benefits, such as reduced soil erosion and increased biodiversity, resulting from the implementation of Soil Values practices?
	To what extent have the practices promoted by Soil Values contributed to carbon sequestration?

Learning Area	Questions
Stakeholder Engagement	How effective have the participatory approaches been in involving farmers and other stakeholders in the evaluation and learning processes?
	What feedback have stakeholders provided, and how has it been incorporated into program adjustments?
Knowledge Sharing and Learning	How effectively are lessons learned and best practices being shared among stakeholders (especially marginalized and vulnerable groups) through knowledge-sharing platforms and peer networks?
	What methods have been most successful in disseminating information and promoting collaborative learning?
Adaptive Management	How have insights from monitoring and evaluation activities been used to adapt and improve project strategies and interventions?
	What specific changes have been made to the program based on evaluation findings, and what has been the impact of these changes?

Addressing these learning questions will help refine the implementation strategies to ensure the relevance and effectiveness of interventions and achieve the goals of enhancing soil health and agricultural productivity.

4.6.3 Impact Indicators and Targets

The two main impact indicators for measuring the Soil Values program are: (1) the area of agricultural land converted to sustainable use, and (2) the resilience of small-scale farmers and livestock breeders. The initial targets are 2,000,000 hectares and 1,500,000 smallholder food farmers. To evaluate the realism of these targets, we conducted a benchmarking analysis against the targets of several partner programs, primarily those funded by the World Bank.

Reports from baseline studies conducted for the FSRP in Niger and Burkina Faso, along with evaluations from Pro-ARIDES, were reviewed. Analysis of the consistency of indicator target values in these reports shows that 18 can be directly informed by the reference data from partner programs, and the findings have confirmed the realistic nature of the Soil Values indicator targets (Table 9). Despite some specificities in the benchmark studies (e.g., some using households instead of individual farmers), making it challenging to aggregate the data for a comprehensive reference situation for Soil Values, a baseline will be conducted with standard approach and content for aggregation for all relevant indicators.

Table 9. Benchmarking the Realistic Nature of Soil Values Initial Targets

#	Soil Values Indicator	Soil Values Initial Target	Indicator Targets in Partner Programs	Partner Programs
1	Area of agricultural land converted to sustainable used land (DGIS)	2,000,000 ha	32,800 ha	FSRP-Niger
2	Area of landscape that is subject to ecologically sustainable use, enhancing resilience to climate change	2,000,000 ha	25,000 ha (target) 341,210.98 ha (baseline data)	FSRP-Burkina Faso
3	Number of smallholder farmers and pastoralists whose net income and/or assets have increased	1,500,000 persons	75,132	Pro-ARIDES
4	Number of small-scale food producers that are gradually reducing the yield gap (DGIS)	1,500,000 persons	75,155 (households)	Pro-ARIDES
5	Number of farmers adopting ISFM and other soil and water conservation practices	1,500,000 persons	500,000 (target) 5,702,277 agricultural workers (baseline data)	FSRP-Burkina Faso
			160,000	FSRP-Niger
8	Number of farmers trained in ISFM and other SWC practices	TBD	160,000	FSRP-Niger
9	Number of small-scale food producers directly affected by activities aimed at structural/systemic improvement of their agricultural performance (DGIS)	TBD	650,000 (target)	FSRP-Burkina Faso
			150 000	PRECIS

#	Soil Values Indicator	Soil Values Initial Target	Indicator Targets in Partner Programs	Partner Programs
11	Number of hectares of agricultural land that have become agroecologically more resistant to shocks (DGIS)	2,000,000 ha	25,000 ha (target) 341,210.98 ha (baseline data)	FSRP-Burkina Faso
			72,000	PRECIS
			62,180 ha	Pro-ARIDES
12	Number of people benefiting from operational plans for integrated basin water resources management (DGIS)	1,500,000 persons	750,000 (target) 1,873,180 (baseline data)	FSRP-Burkina Faso
16	Number of hectares of agricultural land subject to at least two (2) agroecological practices (DGIS)	TBD	25,000 ha (target) 341,210.98 ha (baseline data)	FSRP-Burkina Faso
			62,180 ha	Pro-ARIDES
17	Number of hectares of agricultural land directly affected by activities aimed at structural/systemic improvement of agroecological sustainability (DGIS)	TBD	5,100	PRECIS
18	Number of small-scale food producers whose livelihoods have become more resilient to shocks (DGIS)	1,500,000 ha	61,954 (households)	Pro-ARIDES

These targets are being used to benchmark the realistic nature of the initial Soil Values targets.

Based on the above, the original targets set for the Soil Values program to be reached by 2033 are realistic. However, the status will be checked again by the end of the first five years of implementation.

Table 10. Soil Values Impact Indicator Targets

	Area of Farmland Converted to	Smallholder Farmers and Pastoralists With Increased

	Sustainably Used Land (ha)	Net Income and/or Assets (Number)
Burkina Faso	400,000	300,000
Mali	400,000	300,000
Niger	400,000	300,000
Nigeria	800,000	600,000
Total target	2,000,000	1,500,000

To streamline data collection and enhance reporting efficiency, the team is currently meticulously reviewing all indicators to remove any that are alike to avoid duplication. This process will involve a detailed analysis to identify overlapping metrics and ensure that each indicator serves a distinct and essential purpose. By eliminating redundant indicators, we aim to reduce the reporting burden on stakeholders and improve the overall quality and relevance of the data collected. This approach will contribute to a more efficient and effective monitoring and evaluation framework for the Soil Values program.

4.6.4 Progress Toward Baselines

Despite the valuable insights gained from partner program documents, Soil Values will conduct its own baseline study due to several critical factors. First, several FSRP partner programs do not yet have baseline studies. Second, the baseline data available from other programs often exhibit considerable variability in methodologies, scopes, and metrics, making it challenging to aggregate and standardize the data for a cohesive reference point. By undertaking its own baseline study, Soil Values can ensure a consistent and precise measurement framework tailored specifically to its objectives. This approach will enable the initiative to establish a clear and robust foundation for monitoring progress, assessing impacts, and making informed decisions throughout the program's lifecycle.

Indeed, the Soil Values approach involves collaborating with existing and future partner projects in Burkina Faso, Mali, Niger, and Nigeria. This includes World Bank-funded initiatives such as FSRP in Burkina Faso and Niger, FSRP and PRAPS in Mali, ACReSAL and L-PRES in Nigeria, and Pro-ARIDES in Mali, Niger, and Burkina Faso. By leveraging these partnerships, Soil Values integrates existing baseline studies and key performance indicators, avoiding duplication of efforts. Baseline studies for PRSA in Burkina Faso and Niger were completed in May, and the monitoring and evaluation team is utilizing these reports along with the final evaluation of PRAPS 1 in Mali to identify areas for additional studies by Soil Values. In Nigeria and Mali, Soil Values is collaborating with ACReSAL and FSRP, respectively, to support and benefit from their ongoing baseline studies. This collaborative approach ensures that Soil Values builds upon existing data and partnerships to effectively assess and address soil health and agricultural challenges in each country.

Preliminary exploration of existing references enabled an evaluation of methodological approaches and identification of usable data sources beneficial to Soil Values. The assessment focused on sampling methodologies and indicator calculation approaches to ensure robustness and potential data aggregation. In Burkina Faso, the FSRP baseline employed a two-stage probability sampling method, selecting villages as primary units and households within them as secondary units. This structured approach facilitates representative sampling and reliable comparisons between treatment and control groups to assess intervention impacts.

In Niger, the FSRP baseline used Israel's formula to determine sample sizes, resulting in 750 households for the treatment group and 375 for the control group. Meanwhile, the Pro-ARIDES program in Niger, Burkina Faso, and Mali conducted a three-stage probability survey, sampling communes, villages, and households sequentially. Despite varying methodologies, these approaches are reliable, allowing data from FSRP baseline studies to be integrated for revising targets in Soil Values indicators. This integration enhances the accuracy and relevance of targets by incorporating diverse yet dependable data sources.

For Soil Values, the baseline study is crucial as an initial assessment to provide current information and context for key result areas. It establishes a benchmark against which future progress and impacts of the Soil Values interventions can be measured. The baseline data will serve as a reference point for monitoring and evaluating these interventions' effectiveness over time. Given Soil Values' collaboration with national programs such as Pro-ARIDES, FSRP and ISSD/Sahel in Burkina Faso, Mali and Niger, which have conducted baselines, comprehensive baseline studies across all program countries are needed. Programs in Nigeria (ACReSAL, L-PRES) and Mali (FSRP, PRAPS) are yet to conduct their baselines despite implementation. Tailored baseline studies are essential to understand country-specific socio-economic, cultural, and environmental contexts, enabling adaptive strategies. Conducting a fresh baseline study will ensure accurate capture of starting points relevant to Soil Values' goals and facilitates effective tracking of changes over time, offering a longitudinal view of progress. The main objectives of the baseline study are to understand the current state of key result areas across the program countries, enabling the tracking of progress and changes achieved. Specifically, the baseline seeks to achieve the following:

- **Establish a baseline dataset**: Create a foundational dataset to measure the impact of project interventions over time.
- **Understand farmer knowledge and practices**: Identify current knowledge, attitudes, and practices of farmers regarding soil fertility management.
- **Assess farmland conversion**: Evaluate the extent of farmland converted to sustainably used land across Burkina Faso, Mali, Niger, and Nigeria.
- **Measure landscape sustainability**: Gauge the baseline area of landscape under ecologically sustainable use to monitor resilience to climate change.

- **Evaluate economic indicators for farmers**: Identify the number of smallholder farmers and pastoralists experiencing increased net income and/or assets as a baseline economic indicator.
- **Evaluate initial crop yields**: Determine the initial crop yields for small-scale food producers directly supported by the program in targeted regions.
- **Assess agroecological resilience**: Evaluate the baseline number of hectares of farmland agroecologically resilient to shocks, establishing a starting point for conversion to ecologically sustainable use.
- **Evaluate approved/capitalized technology packages** to address soil fertility management at farm level
- **Evaluate interventions and solutions based on landscape agroecology** at the watershed level in order to optimize water and soil management
- **Determine financial instruments aimed at long-term investments in soil fertility** management, as well as the identification of payment mechanisms for small-scale food producers

The Terms of Reference have already been prepared, and the request for proposals will be launched in July to recruit national consultancies to support the process.

4.7 Framework for Measuring and Attributing Results and Impacts to Soil Values

This section outlines three distinct, yet complementary, frameworks for measuring the contributions and attributing outcomes and impacts to Soil Values interventions. The first two frameworks (contribution mapping and outcome harvesting) focus on measuring the contributions of Soil Values to the various outcomes generated, while the third framework (baseline and post evaluation) addresses the approach to attributing changes and impacts to Soil Values.

4.7.1 Contribution Mapping

4.7.1.1 Measurement, Attribution, and Contribution Approach

In the context of Soil Values operating alongside national projects and programs targeting the same beneficiaries, it is crucial to differentiate and attribute outcomes and changes clearly to Soil Values. Given the collective interventions and mutual influences among these initiatives, the program will use the concept of "contribution" to clarify its specific impact. This involves mapping complementary activities that Soil Values will undertake to integrate sustainable soil management into existing programs, ensuring proper attribution of the results. Assessing contribution is straightforward for short-term, tangible, and quantifiable changes. However, for longer-term impacts, such as improving soil health or changing farming practices, a nuanced approach is required. Soil Values plans to employ innovative strategies over its decade-long initiative, including qualitative comparative analysis, most significant change, outcome harvesting, and baseline and endline studies. These methodologies

will intermittently assess Soil Values' contributions to enduring changes, ensuring a comprehensive understanding of its impact alongside national stakeholders.

4.7.1.2 The Basics of Contribution Mapping

Individual contribution: This approach involves attributing results (result contributions) to implementing partners based on their individual contributions, tracked through methods such as resource allocation percentages, expected results, or predefined deliverables. Partners will be attributed results in proportion to their contribution, but all will be recognized as having contributed to achieving the objectives.

Contractual agreements: The attribution of results will be based on contractual agreements signed with implementing partners. Results/changes will be allocated according to these agreements, which will outline specific actions, activities, and expected results. This ensures that outcomes are distributed according to various agreed-upon criteria established in the contracts. In situations where partner interviews overlap, contribution mapping will be used to identify and analyze each partner's contribution.

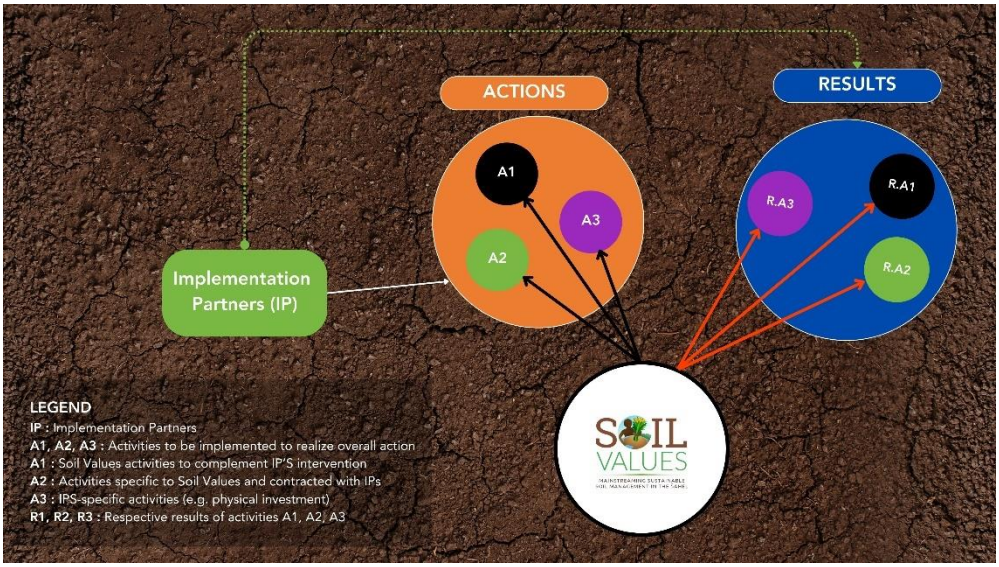


Figure 7. Illustration of Activity Mapping

The implementation of Soil Values involves collaboration with various implementing partners (IPs), primarily FSRP and national institutions, NGOs, and local stakeholders. The approach to measuring and attributing change considers complementary aspects between these stakeholders and Soil Values (Figure 7):

Actions (Orange Circle): These represent the overarching actions outlined in Soil Values partners' program documents, structured into specific activities (green, black, and purple circles).

Activities Common to Soil Values and IPs (Green Circles): These activities are agreed upon with Soil Values' IPs to improve soil fertility. Soil Values provides financial and technical support for these activities, attributing results and associated changes to its program.

Activities Exclusive to IPs (Purple Circles): These activities are specific to IPs but are not aligned with Soil Values' objectives, such as physical investments in watershed management. Soil Values does not support these activities and does not claim their achievements.

Activities Specific to Soil Values (Black Circles): These activities are critical for achieving Soil Values' objectives but are not currently part of the IPs' plans. They will be contracted out to partners by Soil Values, with full attribution of outcomes and associated changes to the Soil Values program.

Results (Big Blue Circle): The overall results of actions (represented by the orange circle) are achieved through the execution of activities, leading to sub-results associated with each activity. Results from activities supported by Soil Values (green and black circles) are fully or partially credited to the program, depending on its level of involvement and contribution.

4.7.1.3 Steps in Contribution Mapping

Contribution mapping (Figure 8) aims at capturing and attributing specific outcomes to Soil Values interventions.

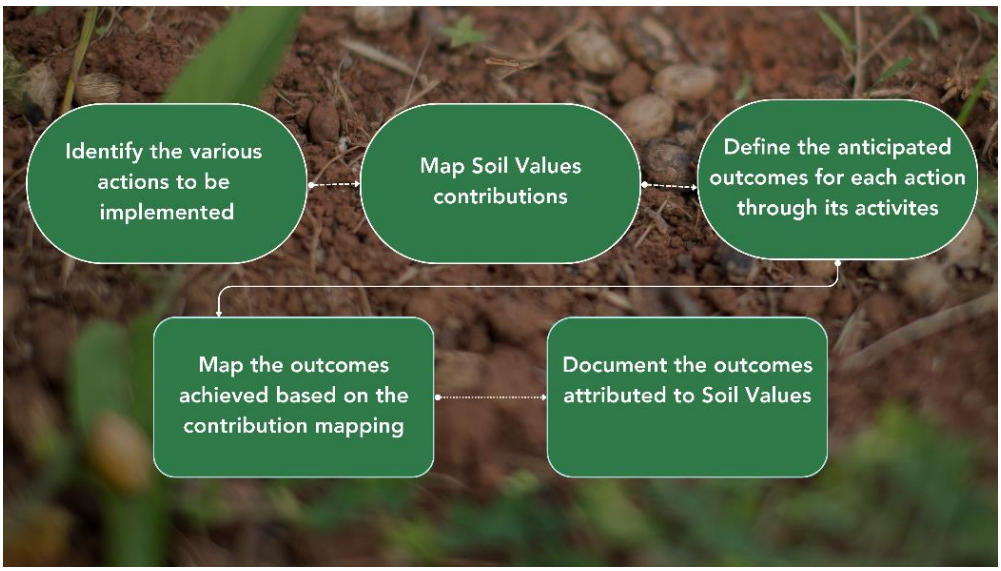


Figure 8. Contribution Mapping Process

Step 1: Identify Actions to be Implemented

- Objective: Identify actions to be executed under the Soil Values program in collaboration with stakeholders.
- These actions form the basis for developing specific activities within a collaborative matrix to guide joint efforts.

Step 2: Map Soil Values' Contributions

- Objective: Identify and categorize activities that Soil Values will contribute to through partnerships.
- Activities categorized as fully aligned, partially aligned, or outside Soil Values' scope are mapped in a collaborative matrix.

Step 3: Identify Anticipated Outcomes

- Objective: Define expected outcomes or effects resulting from the identified actions.
- Results are detailed by activity to establish benchmarks for evaluating Soil Values' contributions, measurable quantitatively and qualitatively.

Step 4: Map Soil Values Achievements

- Objective: Identify results achieved through Soil Values' contributions within the collaborative framework.
- Results and immediate changes from actions are mapped and categorized as fully or partially attributable to Soil Values in a results matrix.

Step 5: Document the Outcomes and Changes Attributed to Soil Values

- Objective: Document and analyze outcomes and changes directly attributed to Soil Values.
- Cases are selected across different categories of results, collecting factual data for analysis and presentation using visual tools.

The first step will be preceded by the design of the outcome harvest process. It mainly consists of the identification of key questions from stakeholders (harvesters and harvest users) to guide the outcome harvesting processing and the identification of how information will be analyzed and used.

4.7.2 Illustration of Contribution Mapping

Green shading = Activities to complement IP's intervention; **purple shading** = Activities exclusively specific to the IPs**; no shading** = Activities specific to Soil Values and contracted with IPs (Note: Activities in Table 11 are indicative to be tailored to specific context in the countries/watersheds.)

Table 11. Illustration Activities for Mapping Contribution

Actions	Activities	Outcomes	Attribute the outcome to Soil Values?	Does Soil Values contribute to this outcome?
Implement ecosystem management and sustainable agricultural production systems.	Implement farmer field schools specifically tailored to women farmers, with special emphasis on soil fertility management.	Increased participation and engagement of women farmers in learning and applying sustainable agricultural practices.	YES	
		Improved understanding and adoption of climate-resilient farming techniques among women farmers.	YES	
	Capacity building for farmers in rapid composting techniques (bokashi, vermi-composting, etc.) in combination with mineral fertilizers.	Increased knowledge and skills among farmers regarding organic manure management in combination with mineral fertilizers.	YES	
	Soil fertility mapping	Local (soil) institutions are able to use the fertility maps to tailor soil management practices to specific farm conditions.	YES	
		Farmers' soil fertility-related agricultural practices are enhanced.	YES	
	Support for agroecology promotional days.	Hectares of degraded land have been restored through climate-smart and fertilization technologies.	YES	

Actions	Activities	Outcomes	Attribute the outcome to Soil Values?	Does Soil Values contribute to this outcome?
Promote access to soil improvement inputs and climate-resilient technologies.	Facilitate access to high-quality seeds of climate-resilient crop varieties suitable for Sahelian conditions.	Increased adoption of climate-resilient crop varieties by farmers.	YES	
	Grants to programs or projects to install innovative drip irrigation systems or rainwater harvesting techniques.	Enhanced water availability and use efficiency in agricultural practices.	NO	Yes, if Soil Values adds to enhancing water use efficiency after physical investment
	Construction of small dams in farms and at watershed level to improve groundwater recharge.	Enhanced water availability and use efficiency in agricultural practices	NO	
Improve management and decision-making frameworks for soil health and sustainable agriculture.	Enhance national dialogue and exchange on soil health and climate change, including participation in international conferences (e.g., COP, Africa Food Systems Forum).	Enhanced access to expertise and financial resources to strengthen local land management and climate resilience efforts.	YES	
		Improved understanding of local and global trends and challenges in soil health and climate change, fostering adaptive program management.	YES	
	Create and lead a regional hub on soil health, sustainable food production systems, and climate change adaptation and mitigation.	Enhanced collaboration and coordination among regional stakeholders, leading to more coherent and effective efforts in addressing soil and climate challenges.	YES	

4.7.3 Outcomes Harvesting Approach

A second approach for measuring and attributing results to Soil Values is outcome harvesting. This monitoring and evaluation methodology focuses on identifying, verifying, and analyzing outcomes. By leveraging the dynamics of Soil Values and customizing traditional evaluation methods, it captures results attributable to the program. This approach helps the Soil Values management team gain a deeper understanding of the real impact of the program's interventions, facilitating more informed decision-making to enhance effectiveness. Outcome harvesting will be conducted using a case approach, allowing for in-depth analysis. The following steps will be taken to complete the collection of results:

- **Capture both Soil Values expected and unexpected changes**: Focus on identifying changes in behavior, practices, activities, or actions among producers, civil servants, public service managers, and communities. Collect results at various levels, including both expected and unexpected changes.
- **Collect evidence from various sources, with an emphasis on verifiable evidence of change**: After identifying changes, gather evidence using methods such as individual and group interviews, surveys, and direct observations. Evidence must be specific and verifiable.
- **Evaluate how and to what extent Soil Values interventions contributed to the observed changes**: Analyze the contribution of Soil Values interventions to the outcomes based on the collected evidence. Assess how and to what extent these interventions caused the observed changes using participatory approaches involving various stakeholders.
- **Attribute changes and analyze contributions based on previous evaluation**: Report changes that are demonstrably related to Soil Values interventions, noting both contributions and direct attributions. Aggregate evidence from different contexts, considering similarities and differences in each case.
- **Solicit feedback**: Build consensus on the changes attributed to Soil Values and improve analyses by sharing results with key stakeholders and partners. Provide learning opportunities for stakeholders to inform decision-making and enhance implementation strategies.

4.7.4 Measuring and Attributing Impacts: Pre- and Post-Intervention Evaluation

4.7.4.1 Rationale

This section outlines a method for evaluating the effects and impacts of the Soil Values program, aiming to determine the extent to which observed changes are attributable to its interventions. A pre- and post-intervention approach will be prioritized, with collection of data on outcome variables before and after implementation to assess changes over time and compare results between different intervention periods.

The impact evaluation will focus on the same sample of beneficiaries before and after the intervention to ensure that observed changes are directly attributable to the intervention, enabling a clear and reliable assessment of its impact.

The evaluation will avoid speculating about beneficiaries' situations in the absence of Soil Values interventions (the counterfactual). A common criticism of the pre-/post-intervention method is that it may inaccurately estimate the counterfactual, as observed changes could be influenced by external factors. To address this, statistical techniques like regression analysis models will be used to estimate the causal effect of interventions and isolate the specific impact of Soil Values. Additionally, qualitative approaches will complement quantitative analyses to better capture the mechanisms by which Soil Values interventions lead to observed changes, focusing on habits and behavioral changes.

The repeated cross-sectional survey suits best to estimate the causal effect of interventions and isolate the specific impact of Soil Values. It enables the observation of trends and behaviors among beneficiaries over time without the need to monitor and survey the same individuals continuously. This approach involves collecting data repeatedly from different samples at each point in time, rather than tracking the same individuals in every survey. However, this method prevents Soil Values with individual longitudinal data that enables tracking changes over the long term. Additionally, differences between successive samples may introduce variations that may not be due to real changes in the population.

4.7.4.2 The Model

To capture the effects or impacts attributable to Soil Values interventions, a logistic or linear model with multiple regression will be applied. The "Soil Values interventions" variable will serve as the main independent variable, while other variables will be included as control factors. The regression model enables the isolation of Soil Values' contribution by controlling for these other factors, allowing us to observe the evolution of the variable of interest over time. The general model is as followed:

$$y_{it} = \beta_1 x_{it}^1 + \beta_2 x_{it}^2 + \beta_3 x_{it}^3 + u_{it}$$

y_{it} : Corresponds to the indicator to be modelled.

x_{it}^1 : Corresponds to the variable that materializes Soil Values interventions with individual *i* during period *t*.

x_{it}^2 : the variable representing the interventions of other programs different from Soil Values partners for individual *i* during period *t*.

x_{it}^3 : other contextual and explanatory factors (e.g., individual characteristics, environmental factors).

u_{it} : error margins.

4.8 Soil Values on IATI and METIS

The IATI aims to enhance coordination, accountability, and effectiveness, thereby maximizing the impact on the world's poorest and most vulnerable populations. IATI encourages organizations that distribute or spend resources to publish information using its data standard, ensuring the information is accessible, understandable, and usable. IATI data meets the needs of various stakeholders in international development. As required for all projects and programs funded by the Netherlands, Soil Values has been set up on the platform and is already visible on the METIS platform (https://public.tableau.com/views/METIS/Activityoverview?%3AshowVizHome=no). A limited number of indicators will be published, in this case the DGIS results framework indicators. As approved data on these indicators becomes available, it will be published on this platform in compliance with regulatory principles.

5 Soil Values Implementation Strategies

Fundamental to program management is a one-program, one-team, adaptive management, GESI-responsive, and conflict sensitivity approach. Soil Values has organized a team with expertise and the necessary technical experience across all the required intervention areas. As part of the one-team approach, each intervention area is led by a consortium partner and supported by knowledge partners, while relying on national partners for implementation (FSRP, ACReSAL, Pro-ARIDES, ISSD/Sahel etc.). IFDC, as the consortium lead, closely collaborates with all coalition and national partners. It jointly operates with partners at proximity to the same offices and premises as deemed necessary. The expected output is to foster team spirit and cohesion among program staff while stimulating more coherence in the interventions and implementation strategy.

5.1 Overall Implementation Approach

The coalition partners will work through national programs to implement the field activities in farmers' communities under the five intervention areas of Soil Values. Soil Values can also work directly through the farmers' communities and organizations in the focus countries (Figure 9).

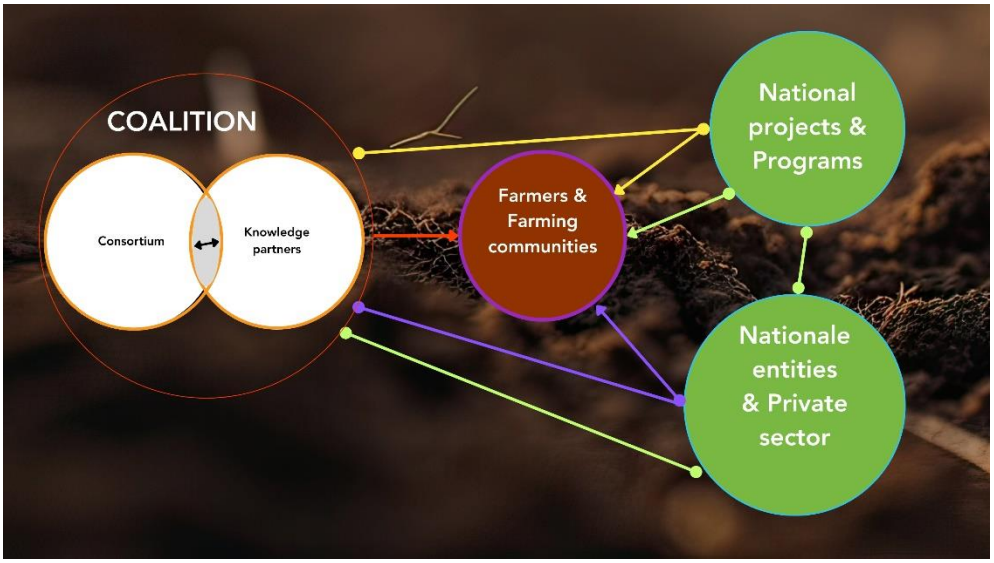


Figure 9. Soil Values Overall Implementation Approach

5.2 Implementation Approach by Intervention Area

Bundle: During the regional national technical workshops, the decision was made to disseminate existing information on technological packages through Soil Values' coalition partners and national projects and programs. Stakeholders recommended delivering packages adapted to the context of each country. The coalition partners have expertise in soil fertility and soil health management, which will be put to good use. An ex-ante study is being carried out by IITA to assess and make a projection pertaining to the efficiency of the technologies to be implemented. The next step will be to involve communities, research, the private sector, and technical and extension agencies in co-designing packages tailored to socio-economic and agro-climatic conditions.

Integrate: This intervention area aims to optimize natural resource (water, soil, biodiversity etc.) management by introducing nature-based solutions and developing participatory community plans. Several activities will be undertaken to : (i) take stock of the ongoing watershed/landscape-based programs in each country and select the watersheds/landscapes based on existing programs such as FSRP, Pro-ARIDES, and ISSD/Sahel; (ii) co-create socio-economic and agro-technical interventions to support an integrated landscape management plan by taking into account GESI and community management; and (iii) develop an integrated watershed/landscape plan and support the process of demonstration of scaling activities. SNV has undertaken secondary data collection in the four countries in order to inform the baseline and the program's needs. Figure 10 shows the process of the landscape planning units.



Figure 10. Planning Process for Landscape Units

All activities across the five intervention areas will be adapted to respond to the needs of diverse groups of people despite different types of barriers (e.g., cultural norms that discriminate against women, youths, and other groups or higher levels of illiteracy amongst women and other groups due to historical inequities). A term of Reference to conduct a GESI analysis on access to, use, and control to natural resources (land, water, and biodiversity) and ecosystem services (provisioning, regulatory, supportive) and sharing of the income resulting from better integrated watershed management for all project participants regardless of gender, age, disability, ethnic/religious minority status, etc., has been finalized. The call for proposals for a consultant/consulting firm is underway. The analysis report and GESI Strategy, with practical recommendations to ensure the project will do no harm and maximize impact to increase soil fertility, water resources, biodiversity, and resilience to climate change, will be developed and applied to all the intervention areas. Similarly, a Terms of Reference for a GESI Working Group that will promote mainstreaming gender equality and social inclusion across organizational policies, programs/initiatives, and activities has been developed. The group will also ensure that all gender identities and socially marginalized groups are represented in all program activities, respected, and have equitable access to opportunities and resources.

Broker: Soil Values will liaise with institutions at national, regional, and international levels to mobilize additional funding for soil fertility management and soil health programs. The various stages will involve: (i) organizing or participating in strategic soil fertility and health initiatives, funding and investment on green funds, and carbon sequestration; (ii) brokering at the national level with a focus on financing mechanisms adapted to the socio-economic context of producers and initiatives that can stimulate private investment in production, processing, and markets. Warrantage

and village savings and loan associations (VSLAs) were identified during the national technical workshops as systems that could be developed to facilitate access to rural credit and agricultural inputs and the adoption of innovative technologies, with a view to increasing agricultural productivity. This system could be combined with agricultural insurance to strengthen the resilience of producers and agro-pastoralists.

Convene: This intervention area aims to stimulate a conducive policy environment at the global, regional, national, and sub-national levels. Some activities will be undertaken to target national, regional, and international initiatives and events, such as participation in multi-stakeholder platforms, Africa Food Systems Forum, and COP, engagement with the National Coalition of Soil Health, and alignment with the Soil Initiative for Africa's 10-year strategy, Lomé and Nairobi declarations on fertilizers and soil health and the associated World Bank-funded Africa Regional Hub for Fertilizer, and Coalition of Action for Soil Health, leveraging projects such as FSRP and ACReSAL. This will allow Soil Values to inform policy development, provide empirical evidence on fertilizer efficacy to influence policies on utilization, subsidies, and taxation, and enhance national capabilities to manage global fertilizer price fluctuations.

Scope and learn: The objective of this intervention area is to better understand the conditions that are necessary for small-scale food producers in the Sahel (women, men, youths) to gain sustainable access to soil fertility. This includes adapting agricultural practices based on local conditions, the results of analyses of ecosystem improvement parameters, and the experiences of farmers themselves in soil conservation and restoration in their watersheds. As part of the Soil Values program, learning will also take place at the level of scientific research, agricultural training programs, and visits to exchange good practices in soil fertility between farmers. Scoping and learning are a continuous process and must be updated continuously.

5.3 Progress in Establishing the Soil Values Implementation Strategy

5.3.1 Selection of National Partners

National partners are key to the Soil Values approach, as they are the entry point of the program into the four focus countries. The program has leveraged multiple actors by including government institutions (Ministries of Agriculture, Environment, Livestock, Fisheries), national research institutes, and the private sector (agro-dealers and financial services). This inclusive approach will ensure a holistic and interconnected system that addresses the multifaceted aspects of soil fertility and health management. The Soil Values consortium specifically targeted DGIS- and World Bank-funded projects, such as Pro-ARIDES, FSRP, PRAPS, ISSD/Sahel, and 2SCALE in Burkina Faso, Mali, and Niger and ACReSAL and L-PRES in Nigeria. The selection of communities for pilot activities at the watershed level was based on the presence of significant physical investments that can support small-scale food producers, especially women and young people, in the project's five intervention

areas. These investments cover approximately 608,335 ha across the eight targeted watersheds in the four target countries. Soil Values will begin implementing its activities in these areas in the second half of 2024, working closely with identified partners to ensure effective and impactful interventions. (Table 12).

Table 12. Agricultural Land Management in the Focus Countries by World Bank-Funded Programs

Agricultural Land Management	Area (ha)
Burkina Faso	162,411
Mali	246,186
Niger	162,367
Nigeria	37,371
Total	**608,335**

Sources: FSRP-Burkina, 2024; FSRP-Mali, 2023; General Directorate of Rural Engineering (DGGR)-Niger, 2024; ACReSAL 2023.

Many technical meetings were organized between Soil Values and these programs to define synergies and actions, and participatory diagnosis is ongoing with the communities around the watershed to ensure needs are accurately identified and satisfied.

5.3.2 Partnership Agreements with National Programs

To operationalize the partnerships with the national programs, Soil Values held meetings with the partners in the four target countries to discuss collaboration modalities. The national programs and authorities were enthusiastic collaborating with Soil Values because of possible added value to their physical investment. Many projects already have clauses allowing them to collaborate with other projects and programs. The Soil Values program was expected to suggest a framework for collaboration. A specific agreement is also expected to be discussed and signed to make sure that the collaboration on the field is based on the annual work plan of Soil Values and the national programs. For each specific activity, Terms of Reference will be issued to facilitate the process. Collaborative agreements between Soil Values and the national programs will be on a case-by-case basis.

The key outcomes are as follows:

- Since 2022, IFDC has signed memorandums of understanding (MOUs) with the Ministries of Agriculture, Livestock, and Fisheries in Burkina Faso, Niger, and Mali. In Nigeria, an MOU has been signed with the National Planning Commission. These existing MOUs will facilitate the collaboration between Soil Values and others national programs.
- Some projects/programs suggest that Soil Values provide a letter of recommendation from the authorities (Ministries of Agriculture, Livestock and Fisheries).

- Soil Values also needs to discuss some partnerships modalities with the projects' donors (World Bank, KfW, Fida, IsDB, etc.).
- Soil Values organized various meetings with some donors to discuss how to operationalize the partnerships between Soil Values and the World Bank-funded programs (FSRP, PRAPS, etc.)
- DGIS-funded programs, such as Pro-ARIDES, ISSD/Sahel, and 2SCALE, already have agreements between them. Pro-ARIDES suggested that Soil Values should be inspired by these agreements to move quickly.

5.3.3 Rationale of Selected Intervention Zones

The country selection for Soil Values is based on regional political, social, geographic, and climatologic coherence, where comparable production systems cut across the countries. The four focus countries for program implementation are Burkina Faso, Mali, Niger, and northern Nigeria. Burkina Faso, Mali, and Niger are DGIS food security focus countries. DGIS has a combined focus on Nigeria – trade and development cooperation activities. Together, these four countries cover almost the entire West African Sahelian zone. Given the ongoing policies and programs being implemented to enhance regional synergies, Ghana and Côte d'Ivoire, connecting the Sahel zone with the Atlantic Coast, will be strategic partnership countries, with seed money budgeted to catalyze strategic discussions. Both countries play a regional role in the south-north trade, as well as consumption of food and fertilizers, and in regional food security. In these two countries, coalition members IFDC and AGRA will seek to leverage regional and national public and private sector initiatives to increase regional trade and food supplies, including the national and regional strategic grain reserves established by ECOWAS.

In addition, Soil Values specified the target agroecological areas by overlaying watersheds in programs from World Bank FSRP, partners, and national governments. The intervention watersheds were chosen based on criteria such as: (i) **security**; (ii) **presence of FSRP and other programs**, (iii) **existence of physical investment**; and (iv) **type of agroecological zone**. In areas where FSRP is not operational, selection was guided by the desire to have good coverage across different agroecologies, conflict risk management, and the availability of strong local partners. Based on this criteria, eight watersheds (Figure 11) regrouping several communities were identified for the implementation of activities in 2024. The selection of pilot communities will be guided by watershed mapping and a participatory approach with national partner programs' contribution.

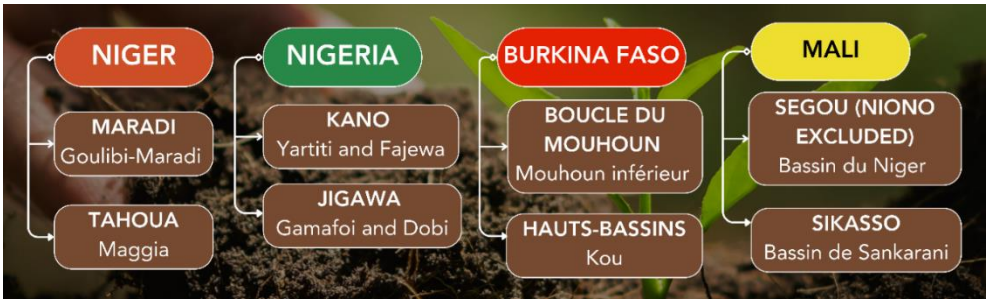


Figure 11. Watersheds Selected for Pilot Activities

A summary of the characteristics of these watersheds is provided in Annex 2.

5.3.4 Focus Crops per Country

Soil Values will be implemented through national programs in the four target countries. Discussions were held during the national workshops to identify the priority crops in each country. The focus crops identified are country-specific priorities and based on what national programs have worked on. Table 13 provides the details on the crops identified in these workshops.

Table 13. List of Priority Crops per Country for Pilot Activities

Intervention Areas	Priority Crops
Nigeria Kano and Jigawa	Rice, millet, wheat, maize, forage, vegetable crops
Mali Sikasso and Segou (excluding Niono for now)	Rice, maize, millet, groundnut, onion and shallot, cowpea
Burkina Faso Boucle de Mouhoun (lowland) and Hauts Bassins	Forage, maize, cowpea, vegetables, groundnut, rice
Niger Tahoua and Maradi	Cowpea, onion, millet, sorghum, bean, vegetable

Training sessions on conservation and processing techniques can be offered to small producers to add value to these main crops. Some innovative technologies to promote are proposed in the next section.

5.3.5 Activities per Intervention Area

5.3.5.1 Bundling Activities

During the regional launch of Soil Values in Abuja, Nigeria, on April 16, 2024, group work highlighted available technologies at the regional/global level which could be

used by the program to address agricultural issues facing smallholder farmers. The technologies are classified in four categories: crop rotation, soil amendment and fertilization, soil and water management, and integration of agriculture and livestock (Table 14). National workshops organized in the four focus countries (Burkina Faso, Mali, Niger and northern Nigeria) in May 2024 shed more light on the most prominent production technologies being disseminated by various partner projects and programs and contributed to the identification of production gaps and related constraining factors and appropriate solutions. The types of prominent production technologies identified for each country are similar.

Table 14. Technologies Disseminated in the Four Soil Values Focus Countries by Project/Programs Partners

ISFM	Identified Technologies and Techniques	Partner Role
Soil Amendment and Fertilization	Improved seeds, reduced or zero tillage, compost manure, cover and catch cropping, green manure, organic amendments, efficient use of chemical fertilizers (NPK, urea, DAP, etc.), local phosphate, compost, biochar, microdosing, biodigester (biogas), combined use of organic and mineral fertilizer, biofertilization, farmer field school, initiation of soil testing (rapid soil testing using test kits), training on climate-smart agricultural practices for extension agents and farmers, neem-coated urea and micronutrient fertilizers on commodity value chain crops, and development of drone-mapping tools for more accurate soil analysis.	**IFDC**: Training on ISFM techniques, facilitation of mineral fertilizer access, training on small-dose fertilizer application, development of sheets on the efficient use of agricultural inputs, training on urea deep placement on cereals, etc. **SNV**: Farmer field school on ISFM, compost, biodigester, etc. **IITA**: Training on ISFM practices through community innovative platforms.
Soil and Water Management	Soil and water conservation techniques (mulching, zai, half-moon, etc.), ridge planting and development of wind breaks, water trapping/retention technology, Groasis Waterboxx, hedge planting, vegetized stone cords, bunds, filter bunds, rational use of irrigation techniques, watershed management, rehabilitation of contour lines, and machine learning to predict soil properties and optimize agricultural productivity.	**IWMI**: Training on efficient water management, irrigation technologies, solar-driven water lifting, water-saving technologies.

ISFM	Identified Technologies and Techniques	Partner Role
Crop, Crop Rotation, and Crop Management	Legume-based crop rotation, intercropping, biopesticides, plant inoculation, dual purpose varieties, improved seeds, and establishment of a dashboard for crop monitoring, yield estimation, and alert and advisory services for producers.	**ICRAF**: Introduction of cereal with dual purpose (fodder and carbon stock), etc. **IITA**: Rotation/strip cropping of cereals and legumes techniques.
Better Integration of Crops and Livestock	Assisted natural regeneration ANR, seedling of pastoral land reclamation, grass strips, improved animal manure management, nutritional evaluation of fodder species, recommendations on efficient use by livestock, and sustainability assessment of mixed crop-livestock (agro-pastoral) systems.	**ICRAF**: Training on land restoration techniques and regreening practices, introduction of new ICRAF: fodder species: *Panicum maximum, Penissetum purpurin, Bracharia* sp., *Luzerne* (maralfalfa), etc. **WUR**: Training on sustainability assessment tool.
Resilience Kits	Purdue Improved Crop Storage (PICS) bags, production of package bags for transformation, flour production kit, Participatory Integrated Climate Services for Agriculture (PICSA), smart villages, community radio programs, digital vulgarized platforms, community call center (National Network of Chambers of Agriculture of Niger [RECA]/FSRP), web and mobile applications for agricultural product information such as GARBAL, Agricultural Market Information System (SIMA), platform on land recovery and restoration technologies of the Ministry of Environment, etc.	**ICRAF**: Training and dissemination of digital technology on the Regreening Africa app. **ISRIC**: Training and dissemination of digital technology/tools on soil health analysis (LandPKS app, etc.)

5.3.5.2 Integrating Activities

Establishment of an initial list of watersheds in the four countries

The preliminary collection of data on watersheds has made it possible to establish an initial list of approximately 128 watersheds in the program intervention areas (Table 15).

Table 15. List of Watersheds per Implementation Country

Burkina Faso (30)	Mali (21)	Niger (19)	Nigeria (58)
Watershed of Como (Léraba, Haute Comoé, Iroungou, Baoué) Watershed of Mouhoun (Sub-watershed Mouhoun inférieur, Sub-watershed Banifing, Mouhoun supérieur) Watershed of Niger (sub-watershed of Gorouol; sub-watershed of Faga; sub-watershed of Béli ; sub-watershed of Sirba; sub-watershed of Tapoa ; sub-watershed of Dargol; sub-watershed of Bonsaoga; sub-watershed of Dyamongou) Watershed of Nakanbé (sub-watershed Nakanbé; sub-watershed Massili; sub-watershed Koulipelé; sub-watershed Dougoulamondi; sub-watershed Tcherbo; sub-watershed Nouaho; sub-watershed of Nazinon; sub-watershed of Sissili	Watershed of Baoulé (Koumankou, Dogoni) Moyen Bani (Koutiala) Banifing (Koutiala) Vallée du Lotio (Sikasso) Banifing (Sikasso) Bagoué (Sikasso) Watershed of Niger (sub-watershed of Fala Molodo and Canal du Sahel) Sub-watershed of Niger Ségou Bani Ségou Inter fleuve Bani-Niger (Boussin) Niger à Koulikoro Sankarani Sankarani au Barrage de sélingué Baoulé Baoulé à Bougouni Banifing de SAN Falla de Molodo 1 Fala de Molodo 5	Watershef of Maggia (Taouha): Tsernaoua, Malbaza, Doguéraoua, Konni, Tama, Bouza, Bazaga, Galma, Sabon guida, Bangui, Goulbi Watershed of Maradi: Korahane, Dakoro, Kornaka, Adjékoria, Attantané, Badar Goula, Azagor	Dawan, Fajewa Yar Titi, Bulbula/Gayawa, Rarin, Tudun Fulani, Kauyen Alu, Tudun Fulani, Kauyen Alu Kamanda, Mimah Jagamato, Giyafud Musogo, Langs Cheledi, Gololo Jamaare, Misau Yankari, Markudi Vandeikya, Ngamdu Uba, Kuje, Kwali Zuba, FCE, Bajoga, Dobi Gamafoi, Kudan, Kubau, Jibia, Katsina, Badariya Zuru, Omigbo Etahi, Ankpa Lata, Share Asadam, Toto Doma, Mokwa Babanrami, Bingham Langtang, Lugu Wurno, Ndibam Mayo_Gwoi, Sumsumma Nguru, Wanke, Gidan Gwari,

In Burkina Faso, three sub-watersheds, the Mouhoun Inférieur, the Kou, and the Sirba, with an area of approximately 2 million ha, are being investigated by the National Bureau of Soils (BUNASOLS) at the request of FSRP. Furthermore, irrigated land within the Regional Support Project for Irrigation Initiative in the Sahel (PARIIS) will also be investigated. Soil Values will make a good use of the collected data within these partner programs for effective implementation. In Mali, PRAPS has already carried out major development work, including beaconing of 500 kilometers (km) of trails to mark animal paths and pastoral tracks (Sikasso, Segou, Kayes), rehabilitation and reclamation of 300 km, recovery of 4,000 ha of pasture (Segou, Sikasso, Mopti, Timbuktu), and development of 3,000 ha of bourgoutiere (Segou, Mopti, Timbuktu), 375 km of firebreak (Sikasso, Segou, Kayes Mopti), and

160,000 ha of pastoral perimeter (Sikasso, Segou, Kayes, Mopti, Timbuktu, Koulikoro). PRAPS will be an important partner of Soil Values. FSRP is already planning to reclaim 4,000 ha of dryland, 1000 ha of lowland, and 50 ha of irrigated area in Sikasso, Koutiala, and Segou, respectively.

Identification of national partners

Several potential partner programs and government structures have contributed to the current first phase of secondary data collection in the different countries:

- In Burkina Faso, the Soil Values team met with several programs (ProSol/GIZ, PReCA, Agricultural Value Chains Promotion Project [PAPFA], FSRP) as well as the state structures (Regional Directorate of Agriculture, Animal and Fisheries Resources of Comoé, South-West, Cascades, Boucle du Mouhoun, Regional Directorate in charge of Women and Gender of Hauts-Bassins, Water Agencies of Nakambé, Mouhoun and Cascades, General Directorate of Agricultural Development and irrigation development, etc.).
- In Mali, the Soil Values team met with several programs (FSRP, Pro-ARIDES, PASARC II, PRODEAU, etc.) as well as government structures (Regional Directorates of Agriculture, Rural Engineering, Production and Animal Industries, Water and Forests, Promotion of Women and Family; Regional Chamber of Agriculture, Niger, Riz/Ségou, Middle Bani, etc.).
- In Niger, the Soil Values team met with several projects/programs (PRECIS, FSRP, Pro-ARIDES, IDAN, PRAPS, PGIP, PISEN, PASEFA, PSA2, INRAN) as well as state technical directorates (Regional Directorates of Agriculture, Livestock, Environment, Rural Engineering)
- In Nigeria, the team met with ACReSAL and L-PRES as well as several state services.

At the end of this exploratory study, a list of potential Soil Values partners will be created.

Needs of potential partners of the Soil Values program

The country workshops contributed to identifying training and capacity building needs of the potential partner programs of Soil Values, including (but not limited to):

- Developing rainwater recovery and retention techniques.
- Developing soil fertility mapping.
- Updating the inventory list of watersheds (mapping watersheds and degraded areas).
- Establishing and training of watershed management committees.
- Promoting integrated and participatory bottom-up planning on integrated landscape management, including participatory land use planning.
- Strengthening the resilience of ecosystems and food systems in priority landscapes.
- Disseminating good agronomic and integrated landscape practices for sustainable land and water use and management.

- Developing and equipping pastoral areas for better animal husbandry practices.
- Inventorying existing anti-erosion control systems within the framework of sustainable land management.
- Harmonizing proposed studies on soil health and conducting a basic study to assess the level of soil fertility.
- Developing and/or revisiting natural resource management agreements.
- Elaborating development plans and supporting communities in the implementation of plans to manage irrigation schemes.
- Promoting soil-fixing species.
- Strengthening the capacities of producers on conservation agriculture by using organic waste to improve ecosystem services.
- Promoting efficient irrigation systems at watershed level.
- Promoting agricultural intensification of rice, maize, and millet (introduction of varieties adapted to local climatic conditions) through the scaling up of the System of Rice Intensification.
- Promoting the use of effluents (construction of biodigesters).
- Supporting the operationalization of land management committees and strengthening the advocacy capacities of producer organizations.
- Restoring degraded pastoral lands, dune fixation, etc.

The workshops aimed at collecting field data are still ongoing in the respective countries to better revisit the needs of Soil Values partners.

Soil mapping and data collection

During the Soil Values program launch in Abuja, Nigeria, ISRIC contributed to sessions on technology inventory, capacity building, and policy dialogue and was confirmed as the lead for Soil Data and Soil Mapping, with support from IFDC, IITA, and ICRAF. National workshops in Nigeria, Niger, Mali, and Burkina Faso involved the participation of partners from existing programs, such as Soil4Africa. Feedback from these workshops helped in the design of ISRIC's activities, consistent with the steps of the soil information system workflow (Figure 12). Consultations with national partners helped refine activity lists for each country and the needs from leads of each intervention area, and technical partners were gathered to inform ISRIC's contributions.

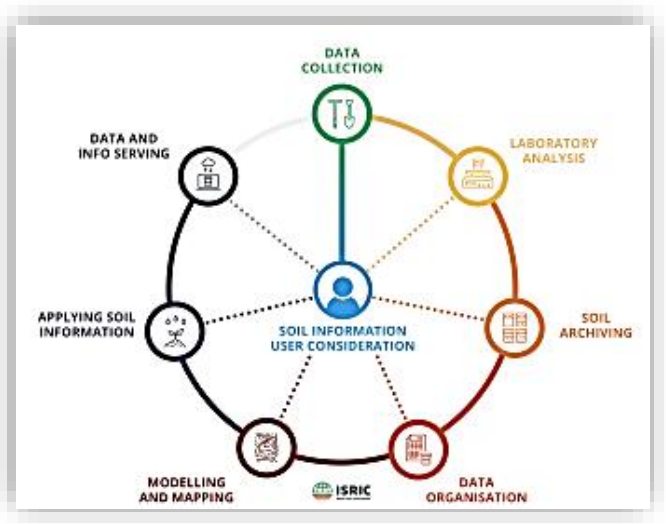


Figure 12. Soil Information System Workflow

Data and tools likely to support the Soil Values program are available on ISRIC's platforms. Relevant projects and datasets to consider in program's area of intervention include the soil information service for Africa (Soil4Africa), site-specific fertilizer recommendations (Fertilizer-recommendations; Implementation-soil-fertility), land crop and information service (I-LCS), and the World Soil Information Service (WoSIS). The program can also benefit from the community of practice (Community-practice) as well as the resource library (ISRIC-Resource-Library).

GESI mainstreaming

During the national workshops, GESI data were collected across the four target countries. A total of 15 GESI organizations/groups participated, including national government ministries (Ministry of Women Affairs, Youth, and Social Development) at the national and state/provincial levels. Others included women-led groups, farmer associations, and representatives of people with disabilities. Some of the key GESI insights/takeaways from the national workshops included the need for more inclusive participation of marginalized groups in project activities and a lack of financial literacy, which makes it hard for women and youth to access loans from financial institutions. Another is the cultural norms restricting women from participating in agricultural activities in some regions, which could potentially impact achievement of the number of female farmers targeted by the project, i.e., 800,000 females out of the total of 1.5 million farmers. A more strategic and systematic approach is needed to achieve the targets and address social, institutional, and cultural barriers that could affect their effective participation. This includes engaging with men to help them become GESI champions to create an enabling environment for women and vulnerable groups to succeed and promoting the participation of women-led groups to ensure their participation in governance and decision-making. Partners during the

workshop demonstrated an interest in and commitment to mainstreaming GESI in their respective programs. They will be supported with further training to effectively integrate GESI, ensuring that the Soil Values program is GESI responsive. Mapping of GESI organizations in selected watersheds for effective GESI mainstreaming is ongoing. Intersectional targeting of project participants will be carried out during implementation across all program activities for a more equitable and sustainable program outcome. The findings from the GESI analysis will provide practical recommendations and help create a strategy to help program staff and partners to reach the targets in a GESI-responsive manner while inspiring the use of GESI-transformative approaches whenever possible. Details of the guidelines for making GESI interventions responsive are presented in Annex 3.

Governance and conflict management

According to a United Nations database, women's participation in governance in Burkina Faso, Mali, Niger, and Nigeria is below the average of 23.4% for Africa.[1] This underrepresentation stems from factors such as high political costs, cultural and religious norms, gender stereotypes, sexual violence, pay gaps, and unpaid labor, which disadvantage even educated women. Efforts to enhance women's roles in territorial governance is crucial for balancing power and addressing women-specific issues. Resource inequality between men and women leads to production inefficiency. According to the Food and Agricultural Organization of the United Nations (FAO), women constitute a significant agricultural labor force, contributing to 80% of food production. Only 14% own the land they cultivate. Conflicts over resources, land tenure disputes, climate change, and market access are prevalent. To address these, integrating GESI and conflict management into the Soil Values program involves participatory approaches, training in conflict resolution and GESI principles, raising awareness, advocating for supportive policies, and developing indicators to monitor the impact on gender equality, social inclusion, and conflict dynamics.

5.3.5.3 Brokering Activities

The Soil Values program aims to mobilize additional funding of about €300 million through the development of a strategy to rally potential public and private partners in the sustainable management of soil health and fertility, focusing on solutions that go beyond the simple financing of fertilizers. It is therefore essential to support governments and national financial institutions in the creation of profitable long-term investment and financing projects focused on soil and landscape fertility management by taking advantage of the opportunities offered by green and climate funds and other advantageous financing mechanisms. Brainstorming sessions on mobilizing additional resources were held at the national and regional technical workshops.

At regional level: During the period under review, the Soil Values program met with various international and regional partners to discuss not only areas of synergy but also areas of possible collaboration to boost and or catalyze investment in soil health

[1] https://localgov.unwomen.org

and soil fertility. In this regard, high-level meetings were organized with the World Bank for more leveraging of existing and incoming national and regional program funding in Soil Values focus countries; with ECOWAS (Lomé Declaration) and the Africa Union (Nairobi Declaration) to leverage the regional institutions' initiatives; and with the private sector through ongoing engagements with WAFA and its main fertilizer industry leaders, such as OCP and Dangote Fertilizer Industries Ltd.

Soil Values also used its regional launch in Abuja, Nigeria, to renew the call for mobilizing additional funding for long-term soil health and soil fertility investments. This was particularly emphasized during the program's panel discussion on "Building soil fertility is a long-term endeavor that calls for collective investments."

At national level: Several investment mechanisms and opportunities for financing soil fertility and health were identified in the four intervention countries. These mechanisms include microcredits and the pre-financing of fertilizers and other agricultural inputs and the introduction of crop insurance with the aim of reducing producers' vulnerability to production-related risks, particularly climatic risks. Table 16 summarizes the suggested key takeaways on brokering from each country.

Table 16. Key Takeaways from National Workshops on Brokering

Country	Key Takeaways
Burkina Faso	• For the system of financing agricultural activities, warrantage is an interesting tool to append to agricultural insurance, as it enables the networking of farmers, producer organizations, and financial structures, thus fostering greater trust between these parties. In this respect, the law on warrantage and third-party holding has been adopted by the National Assembly, providing a legal basis. • Mechanisms for financing and providing access to inputs and technology packages have been recommended, with the involvement of the private sector, such as agro-dealers (Agro-Input Wholesalers and Retailers Association [AGRODIA] and the Administrative Council of Agricultural Input and Equipment Traders of Burkina Faso [CIMA-BF]). • Further thought should be given to tripartite technology co-financing solutions.

Country	Key Takeaways
Mali	• Establish well-structured groups (producer organizations, cooperation) to facilitate access to inputs and credits, access to finances (savings, credit). • Use contributions from members of producer organizations and umbrella organizations for the financing mechanism on soil fertility and health. • Actively involve the private sector in the financing mechanism for soil fertility and health. • Scale the village savings and loan association (VSLA) approach, • Popularize the voucher system for financing. • Facilitate financing for agro-dealers to ensure availability and access to inputs. • Promote the shared risk credit access system. • Implement an endogenous development model and the warrantage system.
Niger	• Focus on warrantage, which is the only financing mechanism that has already been utilized several times and remains the only non-binding mechanism being promoted in Niger. • Strengthen private sector initiatives to invest in the activated natural phosphate production from natural phosphate. • Consider soil mapping and the development of specific fertilizer formulations as an opportunity to stimulate private sector investment through the establishment of fertilizer blending units. • Provide capacity building for women's and youth groups on associative life and microfinance.
Nigeria	• Leverage the support provided by financial institutions for smallholder farmers, such as Nigeria Incentive-Based Risk Sharing System for Agricultural Lending (NIRSAL) Microfinance Bank, Bank of Agriculture, Bank of Industry, and others. • Encourage public-private partnerships between the government and private sector entities, such as Flour Mills of Nigeria, Indorama, and OCP, which have supported sustainable agriculture through investments in supply chain infrastructure, farmer training, and technology adoption. • Leverage the community revolving funds of ACReSAL to facilitate credit programs for farmers. • Support the work of the Nigeria Agribusiness Register to facilitate partnerships between investors and agricultural businesses to drive investments in the sector.

5.3.5.4 Convening Activities

During the regional and national technical workshops, brainstorming sessions on brokering activities were conducted. They provided an opportunity to gather relevant suggestions on experiences around innovation platforms at the national, regional, and international levels and the opportunities to leverage other existing national and regional programs in collaboration with various regional communities of economic

integration and donor communities. At the national level, the focus was on research, training, extension, and finance platforms. Emphasis was also placed on the transversality of the platforms and their accessibility at the community level. Women and youths should be considered when setting up these platforms. Table 17 presents a summary of key takeaways for each target country.

Table 17. Key Takeaways on Innovation Platforms at the Country Level

Country	Key Takeaways
Burkina Faso	- Establish a research platform, bringing together all the actors along the value chain (service providers, research, producers, extension services, traders, etc.). - Initiate advocacy activities with national research and extension bodies for joint networking and scaling out of climate-smart and productivity-increasing technologies. - Develop initiatives to make platforms sustainable, as the source of funding is their weak point. - Choose players who are motivated and fully committed to their ideals to be involved in the platforms to ensure sustainability. - Disseminate the national strategy for an agroecological transition with stakeholders. - Establish a consultation framework at the national level for land management.
Mali	- Establish sectoral platforms (national, regional) and consultation frameworks between stakeholders to facilitate the dissemination of and access to information related to available crop production technologies and experience sharing. - Conduct a strengths, weaknesses, opportunities, and threats (SWOT) analysis before embarking on development of any new platform, as many platforms created by projects/programs disappear when they come to an end. - Focus on self-financing platforms to perpetuate actions. - Disseminate the national strategy for an agroecological transition with stakeholders. - Establish a consultation framework at the national level for land management.
Niger	- Create a multi-stakeholder platform, bringing together researchers, extension service bodies, development structures, the private sector, communities, etc. - Ensure the platform can share information at all levels, i.e., promoting accessible content tailored to the context of farmers. - Disseminate the national strategy for an agroecological transition with stakeholders. - Establish a consultation framework at the national level for land management.

Country	Key Takeaways
Nigeria	- Coordinate and strengthen already existing platforms, as there are many existing agricultural platforms that work in isolation. - Develop Terms of Reference to evaluate existing platforms, identify constraining factors, and take affirmative action toward improving their effectiveness in technology dissemination. - Disseminate the national strategy for an agroecological transition with stakeholders. - Establish a consultation framework at the national level for land management.

5.3.5.5 Scoping and Learning

National workshops brought together representatives of the Ministries of Agriculture and the Environment, research, universities, and farmer organizations. This provided an opportunity to develop activities, which are summarized in Table 18.

Table 18. Key Takeaways from National Workshops on Scoping and Learning

Country	Key Takeaways
Burkina Faso	- Analyze the impact of land tenure on reducing the agricultural production gap for vulnerable groups. - Develop methods for analyzing agricultural policies, programs, and strategies. - Develop soil health management curricula for colleges and universities.
Mali	- Reflect on research topics that could be used for master's or doctoral academic training. - Strengthen the capacities of stakeholders on climate-smart and gender-sensitive technologies. - Promote improved parks for production of organic manure and energy in the area. - Evaluate current subsidy systems and promote public-private partnership. - Popularize large-scale dissemination of best water conservation practices and techniques, as well as existing climate-smart agriculture technological packages.
Niger	- Develop a program on soil health and fertility management, efficient use of water and nutrients, soil quality monitoring, etc. - Develop curricula to train middle-level professionals (*Institut Pratique de développement* [IPDR], agricultural colleges, etc.) - Set up learning programs that promote the integration of agriculture and livestock farming (best use through innovative manuring in animal parks; promotion of fodder species around ranches – Maradi Goat Centre, Toukounous Park, Gadabedji, etc.)

Country	Key Takeaways
Nigeria	- Support institutions, such as the Center for Dryland Agriculture, in reviewing their curriculum for postgraduate programs in fertilizer studies as well as strengthen academic programs in soil health. Soil Values could engage in or facilitate lecturing, with a particular emphasis on fertilizer and soil health management. - Work with other knowledge and research institutions, including key national research institutes, to conduct research in soil health and fertility. - Strengthen national extension systems from the Agricultural Development Projects.

6 Ongoing Field Activities at Community Level

6.1 Selection of Communities

The selection of communities for pilot activities at the watershed level focuses on areas with operational physical investments that can support small-scale food farmers, particularly women and young people. These investments span approximately 451,260 ha across the four target countries. The process involves a rapid participatory diagnosis to assess the state of natural resources (soil, vegetation, and water) and the needs of local stakeholders. The primary objective of the diagnosis is to conduct a rapid participatory analysis with the communities at watershed level and include relevant needs in terms of technology packages, payment mechanisms, capacity building, and community-based resource management within the watersheds, information on services, and markets, etc. By leveraging these factors, Soil Values aims to co-design and implement effective interventions starting in the second half of 2024, in collaboration with local partners and communities. The selection criteria of these communities involve:

- The active presence of the World Bank-funded FSRP in target communities through specific activities.
- The presence of different categories of socio-professional groups, including vulnerable people.
- Existing soil degradation or fertility issues.
- Existence of operational hydro-agricultural infrastructure, such as developed lowlands and irrigated perimeters.

Key outcomes from the participatory diagnosis with the communities across the four targeted countries are described in the following section.

6.2 Diagnosis Outcomes

6.2.1 Nigeria Outcomes

On July 11, 2024, a community engagement and rapid participatory diagnosis meeting was held in the communities of Sani Babangida (Bichi Local Government Area [LGA]) and Dadauda (Bagwai LGA), located in the Yartiti and Fajewa watersheds, respectively. This community consultation provided an opportunity to present the Soil Values program to local farmers and explore tangible collaboration opportunities toward improving their resilience to climate change. A particular emphasis was placed on participatory identification of climate-smart, soil health-improving, and productivity-increasing technologies being used in the local watersheds.

The meetings were attended by over 60 farmers, including women, youths, and lead farmers. They were supported by seven extension agents from the Kano State Agriculture and Rural Development Authority (KNARDA), who provide extension services to the farmers within these communities. Also in attendance were members of the HortiNigeria team, an EKN-funded project that Soil Values is partnering with to scale its ongoing activities in the identified watersheds in Kano State.



Interactive sessions with farmers to introduce the Soil Values program and conduct a rapid participatory diagnosis of technologies in Bichi and Bagwai LGAs in Kano State.

The meetings provided an overview of the program's objectives, intervention areas, and the various soil management techniques it aims to promote. During the session, farmers shared their experiences and highlighted specific technological needs, such as improved irrigation systems, soil testing kits, and access to inputs, such as improved seeds, fertilizers, and organic pesticides. Farmers from both communities also requested that the Soil Values program strengthen their capacity on fertilizer deep placement technology and explore ways to simplify the application process to reduce drudgery.

The feedback gathered will play a crucial role in tailoring the Soil Values program to meet the unique needs of these farming communities, ensuring its effectiveness and sustainability. Several other participatory diagnosis sessions will be conducted with other communities in the two watersheds selected as pilots. This continued engagement will help refine and adapt the planned activities to ensure they address realistic challenges and opportunities faced by local farmers, further enhancing the program's relevance.

6.2.2 Niger Outcomes

In Niger, a participatory diagnosis for the co-design of Soil Values program interventions took place on July 16-17, 2024, in the Maggia watershed, Tahoua Region. Participants included individuals from various socio-professional backgrounds, such as members of farmer organizations (cooperatives, unions, federations), women's groups, and youth groups, who are already benefiting from interventions of the partner national programs, including FSRP (Doguéraoua) and Pro-ARIDES (Nadabar, Tsernaoua). Approximately 55 farmers participated, including 20 women and 15 young people. These activities were preceded by field visits and courtesy calls to departmental and communal authorities and technical services (prefectures, municipalities, agricultural services) to present the Soil Values program and gather their insights and expectations.

The Maggia watershed is an ecosystem that significantly contributes to the resilience of farming communities. During the low-water period, the valley is utilized for growing various off-season crops, primarily tomato, potato, and cabbage. Ongoing field activities supported by national programs in the Maggia watershed include farmer field schools, input distribution, and training for farmers, women, and youths. In the 2024 cropping season, Soil Values will leverage on these activities through needs-based training sessions and other interventions.



View of a farm in the Maggia watershed



Maggia watershed resource mapping session

At the end of this participatory consultation and field work, several satisfactory results were recorded (Table 19), facilitating the inclusive identification of interventions tailored to the needs of the target communities. These results include (but are not limited to):

- Resource mapping and possible future investments (weirs, grazing corridors, rehabilitated land, markets, hydro-agricultural investments) and challenges (silting, soil degradation).
- Technologies and agricultural practices used (mineral fertilizers, zaï, composting, biodigesters).
- Ecosystem players and their roles.
- Payment mechanisms (women's tontines).
- Watershed governance.
- Information on existing extension services and market opportunities.

Table 19. Summary of Key Diagnosis Outcomes in Niger

Aspects Assessed	Details
Physical Infrastructure	Dams, weirs, reclaimed sites, stone barriers, rural tracks, tomato sales, platforms, etc.
Key Operating Actors	Pro-ARIDES, FSRP, PRECIS, World Food Program, FAO, etc.
Major Challenges Identified	**Dune soils (plateau)** • Soil degradation, leading to sand movement into valleys. • Drastic drop in crop yields. • Pest pressure leading to huge crop losses. • Insufficient organic matter. • Lowland soils (valleys). • Silting leading to valley degradation. • Early lowering of the water table due to silting. • Compaction of valley soils, affecting their physicochemical characteristics. • Lower water levels in some parts of the valley. **Governance of shared resources** • Conflicts between valley farmers due to scarcity of irrigation water. • Pressure on water supply pipes. • Poor soil knowledge; low financing capacity, low processing capacity.

Aspects Assessed	Details
Technologies and Practices	• Compost, manure, package, assisted natural regeneration. • Mineral fertilizers, liquid mineral fertilizers, improved seeds, biopesticides. • Biodigesters, CES/DRS, farmers' field schools.
Urgent Needs Expressed	• Reinforcement of input distribution networks in the last few kilometers. • Farm mechanization kit for plowing (plows, tractors, etc.) • Techniques and practices for the mobilization and efficient management of groundwater resources (water tables of up to 25 meters). • Strengthening of appropriate financing mechanisms. • Soil fertility mapping.

6.2.3 Mali Outcomes

The community consultation in the Kaboïla landscape unit aimed to inform local communities and stakeholders about the "Soil Values" program, map natural resources and actors, and identify community constraints, needs, ongoing technologies, and involved stakeholders. Activities carried out included courtesy visits to regional authorities to enhance program visibility and institutional support.



Participatory diagnosis session with women and visit to a rainfed rice field after the session with men in the Lotio sub-watershed, Kaboïla

The participatory animation approach was used to engage three groups in discussion, each consisting of about twenty participants, with facilitation from the Soil Values' technical team and participating national extension service providers.

Table 20. Summary of Key Diagnosis Outcomes in Mali

- A thematic map of natural resources was developed to address various points of reflection, identifying three types of soil: sandy, clay-sandy, and gravel.
- Sandy clay soils quickly manifest fertility problems. Additionally, discussions highlighted a general low use of organic manure and an excessive use of herbicides.
- Common soil health improvement practices include stone lines, crop rotation, and crop associations.
- Requested support includes improving access to local irrigation water, affordable inputs, capacity building in smart technologies, and experience exchange visits. Producers also identified needs for capacity building in rapid composting and erosion control techniques, information on climate change (agricultural practices, adapted seeds, necessary technologies), micro-dam construction for water retention, rehabilitation of literacy centers for women, and securing market gardening areas.
- Current water management issues include noncompliance with watercourse easement zones, absence of animal watering points, and silted backwaters.
- The main challenges in the landscape unit are deforestation, land security governance, and lack of pastoral infrastructure.
- Agricultural services at the municipal level are provided by the Directorate of Agriculture (DRA), Regional Directorates of Animal Production and Animal Industries (DRPIA), Regional Office of Veterinary Services (DRSV), Compagnie Malienne pour le Développement des Textiles (CMDT), and various projects/programs.
- Identified agroecological technologies include urea deep placement, microdosing, improved parks, slow composting, market gardening-arboriculture-dry crop associations, storage of bags in runoff areas, and perpendicular plowing.
- Barriers to the large-scale and sustainable use of these technologies include lack of farm commitment, fragmentation of large families into small farms which increases the workload per worker, low capacity building for anti-erosion efforts, absence of soil data for appropriate input selection, and inadequate equipment for soil restoration activities.
- Infrastructure includes a health center, schools, water supply, merchant equipment, access to green energy, 25 ha of market gardening area, 3 ha of fishponds, and a degraded literacy center. Future needs include creation of water reservoirs for animals and market gardening irrigation during the dry season and establishment of agri-food processing units.
- An innovative microcredit mechanism in the form of revolving solidarity funds is required for easy and cost-effective access to input credit for small producers. Women's VSLAs currently lack sufficient financial capacity to meet financing needs.
- The main challenges faced by farmers include lack of perennial water reservoirs, pastoral tracks, improved seeds, and skills for wind and water erosion-control techniques.

- Generally, producers obtain weather information from television and radio and relay information through the DRA, CMDT, town hall, and digital tools (telephone, WhatsApp, platforms). Their primary interests are agricultural and agropastoral extension services.

6.2.4 Burkina Faso Outcomes

From July 22 to 26, 2024, the Soil Values Program, in collaboration with FSRP-BF, conducted a participatory diagnosis with communities in the Kou sub-watershed. These communities benefit from the Bama plain hydro-agricultural area (1260 ha) and irrigation facilities established by World Bank-funded programs such as PReCA, PRAPS, and PRSA-BF, aimed at addressing soil degradation. The diagnosis helped establish the current state of (i) natural resources and stakeholders, (ii) soil fertility challenges, and (iii) community needs for technological packages and activities to enhance productivity.



Participatory diagnosis session with women and visit to a rainfed rice field after the session with men in the Lotio sub-watershed, Kaboïla

Key findings of the diagnosis are threefold: soil fertility management constraints, the community's requests to address these constraints, and current community practices for managing soil fertility. In the villages of Diarradougou (Bama commune) and Koumbadougou (Karangasso Sambla commune) in the Kou sub-watershed, major soil fertility management constraints identified include:

- Agricultural Inputs: Limited access, poor quality, and improper use of fertilizers and pesticides.
- Knowledge Gaps: Lack of understanding of effective soil management practices.
- Anthropogenic Actions: Negative impacts from bush fires, excessive wood cutting, and roaming animals.
- Water Erosion: Loss of fertile soil layers due to erosion.
- Land Access for Women: Women face challenges in accessing land.
- Irrigation Management: Poor management of irrigation schemes.

To address these constraints, communities requested capacity-building actions in:

- Sustainable soil management
- Production of organic (compost) and biological (biopesticides) fertilizers
- Revitalization of village land commissions for better land security
- Soil and water conservation practices (stone lines, grassy strips, hedges)
- Reforestation of degraded areas (over 300 ha of forests)
- Landscape management to resolve conflicts between farmers and herders
- Made forage available

During the diagnosis, extension services mentioned that communities are aware of certain technologies to improve soil fertility. However, they argued that these approaches are not being properly deployed at a large scale. Those technologies listed by extension services include:

- Reforestation and agroforestry
- Grafting of local plants
- Production of organic manure
- Soil and water conservation and soil restoration
- Fodder cultivation
- Use of improved seeds
- Crop association and rotation

Besides, the diagnosis activity enabled the Soil Values team to present the program to local agricultural, livestock, water, and environmental services. It also provided an opportunity to engage with the Soil Protection and Rehabilitation Project for Food Security (PROSOL), whose focus areas align with the five intervention areas of Soil Values. PROSOL plans to involve Soil Values in organizing the next Regional Agroecology Day and competitions for the best practices in soil restoration, fertility management, and soil health.

Overall, the participatory diagnosis highlighted key soil fertility issues and community needs in the Kou sub-watershed. Soil Values will provide innovative solutions and technologies to address these challenges, fostering collaboration with knowledge partners and contributing to sustainable agricultural development.

6.3 Soil Values' Active Role in Burkina Faso's Sixth National Tree Day

Technical workshops with national partners facilitated the identification of consultation frameworks on soil, plants, and agroecology where Soil Values can contribute. Accordingly, Soil Values (IFDC and ICRAF) played a crucial role in organizing and holding the sixth edition of Burkina Faso's National Tree Day, which took place in Bobo-Dioulasso June 21-22, 2024. Under the patronage of the President of Burkina Faso, this event aimed to raise awareness among the entire population about the importance of trees in Burkina Faso's socio-economic development. The Soil Values contribution included:

- Participating in two panel discussions on “The Role and Place of Trees in Achieving the Agropastoral and Fisheries Offensive 2023-2025” and “Trees: The Foundation of Endogenous Development.”
- Presenting IFDC and ICRAF technologies for soil fertility management and reforestation. The Soil Values stand was visited by Burkina Faso’s highest authorities, including the Prime Minister, the President of the National Assembly, and the Minister of the Environment, Water and Sanitation, as well as farmers, farmer organizations, students, and agronomy researchers.
- Participating in the planting of over 2,000 trees in the 5 ha Dinderesso Classified Forest.

Soil Values received a certificate of recognition for its contribution to the success of the National Tree Day. By participating in this event, Soil Values implemented its first concrete field activity in synergy with the Ministry of the Environment, Water and Sanitation.





Soil Values staff participate in National Tree Day in Burkina Faso

Soil Values plans to take several follow-up actions to build on the momentum generated from this successful event. These actions include monitoring the growth and health of the planted trees, organizing additional training sessions for farmers on soil fertility and reforestation techniques, and continuing to engage with national partners to identify further opportunities for collaboration. Soil Values will also track the long-term socio-economic impacts of these activities to ensure they contribute meaningfully to Burkina Faso’s development goals.

7 Key Field and Capacity Building Activities for the Second Half of 2024

Most of the activities planned for 2024 by the consortium members and knowledge partners focus on: (i) baseline studies (watershed, technologies, indicators, etc.); (ii) participatory community consultation workshops to define priority activities in line with the soil values objectives; (iii) strategic meetings to define the framework for collaboration on leveraging at the national, regional, and international levels; and (iv) capacity building assessment and framework elaboration for local, national and regional institutions, etc.

Table 21. Activity Work Plan for 2024

Activity		Lead	July 24	Augt 24	Sep 24	Oct 24	Nov 24	Dec 24
BUNDLE								
1	Conduct training on soil restoration techniques (ISFM type to be determined) (four locations).	IFDC						
2	Cascade training of technical agents, endogenous animators, and producers in ISFM.							
3	Cascade training of technical agents, endogenous animators, and producers in water management at the plot level using the latest technologies.							
4	Set up demonstration plots/farmers field school to build capacity on ISFM practices.							
5	Establish demonstration plots for fodder cultivation.							
6	Cascade training of extension agents on fertilizer deep placement techniques for vegetable producers in pilot states.							
7	Promote the setting up of farm input stores through shared-cost financing; build the capacity of input suppliers to manage farm input sales outlets.							
8	Initiate a Soil Day during the International Day of the Tree and award a national prize to soil recovery champions.							
9	Support *cellule terres agricoles* (CTA) exchange meetings.							
10	Assess the needs of women and youth for tailored service delivery (location, content, delivery).	SNV						
11	Organize social behavioral change trainings for selected communities at watershed level to address gender and social norms issues and social inclusion practices.							
12	Strengthen partners' skills and understand and address GESI gaps.							
13	Identify and promote agroforestry technologies tailored to the local socio-ecological context, enhancing soil health and diversifying farm incomes.	ICRAF						
14	Enhance the skills and knowledge of implementation partners for effective deployment and management of agroforestry technologies.							
15	Carry out ex-ante analysis.	IITA						
16	Bundle climate-smart agriculture technologies.							
17	Map the spatial distribution of technologies in the catchments.	ISRIC						
18	Promote solar-based irrigation.	IWMI						

Activity		Lead	July 24	Augt 24	Sep 24	Oct 24	Nov 24	Dec 24
19	Promote use of soil moisture sensor and irrigation scheduling bundled with good agricultural practices.							
20	Train project and program technicians in plot-based water management using the latest technologies.							
21	Train producers in plot-based water management using irrigation technologies/positive masculinity.							
22	Set up demonstration plots on irrigation techniques in lowlands and flood plains.							
INTEGRATE								
1	Community engagement for stakeholder buy-ins and assess technologies being implemented.	IFDC						
2	Make a participatory inventory of available natural resources at the watersheds with rural communities.							
3	Map watersheds.	SNV						
4	Identify watersheds (area, boundaries, shape maps ,and characteristics).							
5	Conduct an analysis and socio-economic mapping of watersheds.							
6	Conduct a study on land governance and conflict mapping.							
7	Conduct GESI analysis and develop GESI strategy for integrated watersheds.							
8	Develop social and agrotechnical interventions.							
9	Identify of successful interventions, support structures, and civil society.							
10	Map natural resources.							
11	Analyze the links between inputs and outputs and the role of the private sector.							
12	Analyze women's and young people's access to and ownership of land.							
13	Take stock of ongoing watershed – landscape-based programs							
14	Assess watershed governance issues (conflicts, displacements, grazing routes, and power relations).	WUR						
15	Assess climate risk/resilience.							
16	Assess sustainability of mixed crop-livestock (agro-pastoral) systems at the watersheds.							
17	Contribute to the delineation and characterization of eight target watersheds in the four countries.	ICRAF						
18	Develop a comprehensive strategy for integrated soil fertility management and agroforestry.							
19	Assist in developing an integrated watershed plan and conduct higher-level reviews on progress in watershed activities.							
20	Commence agroforestry trainings and tree planting.							

Activity		Lead	July 24	Augt 24	Sep 24	Oct 24	Nov 24	Dec 24
21	Survey programs working on a landscape-based approach.							
22	Enhance the skills of implementation partners on legacy soil data collection.	ISRIC						
23	Collect and assess existing soil information at levels (watersheds, sub-national, and national).							
24	Review the Nigerian Integrated Water Management Policy.	IWMI						
BROKER								
1	Hold brainstorming sessions on mobilizing climate funds and other advantageous financing mechanisms.	IFDC						
2	Conduct a diagnostic study to identify the various financing mechanisms at watershed level in order to determine capacity-building needs (micro-credit, savings, tontine, etc.).							
4	Connect producers with the Informal Alliance for Change.							
5	Review insurance policies and risk sharing mechanisms for farmers.							
6	Identify and analyze national financial programs and service providers around the watersheds.							
7	Train women farmers on financial literacy and women-friendly technologies.	SNV						
8	Train VSLAs on financial education and internal resource mobilization.							
9	Organize workshops on financial instruments to provide financial incentives to farmers to sustainably manage soil fertility.	AGRA						
10	Collaborate on joint project proposal writing in response to relevant calls for proposals.	ICRAF						
11	Engage with local agro-input dealers on fertilizer quality and testing.	IITA						
12	Provide climate-smart irrigation investment and information services through digital service platforms.	IWMI						
CONVENE								
1	Capacity building for the development of policies favorable to sustainable soil fertility management practices.	IFDC						
2	Revitalization (diagnosis) and capacity building of natural resource management committee stakeholders in relation to ISFM and soil carbon sequestration.							
3	Diagnostic of existing platforms on soil fertility and development of a revitalization plan							
5	Engagement with OCP-Indorama on crop-site specific fertilizer in collaboration with the CGIAR-Excellence in Agronomy program.							

Activity		Lead	July 24	Augt 24	Sep 24	Oct 24	Nov 24	Dec 24
6	Leverage international celebrations to amplify the voices of women in agriculture and promote GESI.	SNV						
7	Conduct workshop on soil fertility mapping.							
8	Set up a platform for soil fertility financing with experts from partner organizations.	AGRA						
9	Engage in the European Union-African Union dialogue on agricultural systems, contrasting agroecology with sustainable farming.							
10	Organize Africa Food Systems Forum.							
11	Stakeholder convening on water management, flooding, and erosion in northern Nigeria.							
12	Stakeholder convening on National Fertilizer Roadmap (raising concerns for soil health in Nigeria), including GESI issues.							
13	Private sector convening for investment at watershed level.							
14	Advocacy engagements with government at federal and state levels on fertilizer and seed subsidy.							
15	Support the development of soil health policy in Burkina Faso by aligning with the Soil Initiative for Africa 10-year strategy.	ICRAF						
16	Represent Soil Values in the Africa Food System Forum 2024, which will be held in Kigali, Rwanda, September 2-6, 2024.							
17	Represent Soil Values at the UNCCD COP 16 in Riyadh, Saudi Arabia December 2-13, 2024.							
18	Facilitate the regional Fertilizer and Soil Health Hub Launch.	IITA						
19	Organize Soil Information System Community of Practice in Africa.	ISRIC						
20	Contribute to mapping the co-designing of community-led management action plans.	IWMI						
21	Set up multi-stakeholder innovation platforms.							
SCOPE AND LEARN								
1	Train young professionals.	IFDC						
2	Facilitate study tours and visits.							
3	Share training module online to prevent conflict between farmers and pastoralists.	SNV						
4	Develop a framework for the scoping and learning intervention area.	WUR						
5	Conduct capacity building assessment.							
6	Develop five Ph.D. projects and a series of 10 master's degrees and the selection criteria.							
7	Assist in establishing advanced M.Sc. education on soil health.							

Activity		Lead	July 24	Augt 24	Sep 24	Oct 24	Nov 24	Dec 24
8	Conduct training needs assessment on the various watersheds.							
9	Develop training modules for conflict analysis and conflict sensitivity.							
10	Provide technical assistance in the use of agroforestry for soil improvement and integrated watershed development.	ICRAF						
11	Hold workshop to identify proven technologies and approaches to achieve innovative agro-technical and socio-institutional interventions.							
12	Train farmers in the use of climate-smart agriculture technologies.	IITA						
13	Develop a facilitator guidebook and training materials that will be used to capacitate practitioners.	IWMI						
14	Finalize Indicator Reference Sheets.	IFDC						
15	Conduct baseline assessment for determining reference situations.	IFDC						
16	Establishment of a platform for the output tracking dashboard.	IFDC						

8 Conclusion

After a slight initial delay due to the eminent exit of Sahelian countries from ECOWAS, Soil Values team has been able to initiate national and regional kickoff events in the past six months to increase awareness about the program. It also stimulated strong commitment from various national stakeholders and partner programs, donor communities, regional integration bodies, and coalition partners to putting soil health on the regional and national priority agenda. Key expected outcome is to effectively reverse the advancement of desertification and soil health degradation due to climate change manifestation and sustainably manage soil fertility toward increasing food production and improving the resilience of production systems and smallholder farmers to climate change in the Sahel.

Soil Values initiated an inclusive dialogue with participating partner institutions and donor communities to collectively reflect on possible development models and investment opportunities for mainstreaming soil health and leveraging to enhance lasting impact at scale. The above will guide the collective, coherent, and effective implementation of Soil Values, resulting in effective leveraging through an accelerated integration of Soil Values into soil health related national and regional initiatives and investments in soil health and fertilizer sector development.

The staff retreat in early July laid solid groundwork for developing and/or strengthening the team spirit among Soil Values coalition partners. As a tangible result, participating coalition partners collectively discussed and harmonized their understanding of key characteristics of watersheds and related principles and intervention domains. Integrated work plans were collectively developed, including watershed-specific activities and country budgets for the 2024 and 2025 cropping seasons. To ensure coherence in implementation, technical teams were formed around each watershed, with one partner taking the lead role for each watershed. This resulted in the proactive development of a leadership chart that illustrates roles and responsibilities of all coalition partners for improved coherence and better coordination of activities around selected watersheds. The leadership chart is a critical tool that will also improve team cohesion for collective and affirmative action around the selected watersheds.

The next is to define the collaboration modalities that will govern the partnership in accordance with the established collaboration matrix and identified national partner programs. This will smooth the collaboration process and contribute to the collective and integrated implementation of work plans in the selected watersheds.

Annexes

Annex 1. Detailed Risk Assessment Matrix

Risk Factors	Type and Level of Effect	Probability	Mitigation Measures	Residual Risk	
Color Code	**Low**	**Medium-Low**	**Medium-High**	**High**	
1. Contextual risks – events, factors or dynamics occurring in the broader environment that affect programming or operations yet are beyond the control of organizations or individuals					
Insecurity	In Mali and Burkina Faso, insecurity is driven by farmer-herder conflicts and jihadist attacks. In Niger and northern Nigeria, insecurity risks include kidnappings, banditry, and tribal clashes. Insecurity in all four countries hinders agriculture, limits resource, and causes conflicts, displacements, and the need for food aid. The porous borders have facilitated the proliferation of arms among the countries. The Nigerien government recently published a press statement banning all field trips by NGOs without a military escort. These issues can negatively impact the program. Insecurity can lead to the disruption of program activities, hindering progress and causing delays. In addition, insecurity threatens the safety of program staff, partners, and beneficiaries. It can expose them to risks such as violence, theft, kidnapping, or other forms of harm, jeopardizing both individuals and the program's continuity. ***A detailed security analysis is available.***	Burkina Faso Mali Niger Nigeria	Consortium partners to implement comprehensive safety and security plans, standard operating procedures, and staff training across all target countries to address residual insecurity risks and ensure project personnel and operation safety. Similarly, Soil Values will conduct thorough security assessments to identify potential threats and vulnerabilities and develop robust security plans to mitigate risks. This will also involve working with security experts or local authorities to assess the situation and implement appropriate measures. At the local level, initiatives such as training on resilient production techniques, conflict prevention, and local management structures further enhance risk mitigation and project resilience. All travel must receive security approvals/clearance. Regular security information and advisory will be shared with partners and the program team. Finally, the team shall maintain flexibility in program implementation to adapt to changing security dynamics and unforeseen challenges.	Mali, Burkina Faso Niger	Nigeria

Risk Factors	Type and Level of Effect	Probability	Mitigation Measures	Residual Risk
Color Code	**Low**	**Medium-Low**	**Medium-High**	**High**
COVID-19 restrictions	COVID-19 has the potential to disrupt program activities through lockdowns, travel restrictions, and supply chain disruptions. This can lead to delays in timelines and hinder the achievement of objectives. Similarly, inadequate measures to prevent the spread of the virus can result in illness, absenteeism, and increased healthcare costs, impacting both individuals and project operations.	Burkina Faso Mali Niger Nigeria	Preventive measures promoted, including digitized tools and local expertise utilization. Online meetings encouraged, compliance with regulations, and sanitizer/personal protective equipment (PPE) provided for field events. Preventive measures include testing for international travel and vaccination campaigns. General population immunity against the disease reduces the risk of infection of the team.	Burkina Faso Mali Niger Nigeria
Political instability	Burkina Faso's political stability remains fragile, as the government is in a transition phase. The calendar for a return to civilian rule is delayed beyond 2024 due to the logistical and security challenges of preparing for elections. Mali remains broadly isolated on the international scene, and Niger just had a military coup with an outcome that is currently unknown. These issues could affect the performance of the program in terms of unpredictability in laws/decrees/decisions at both national and regional levels, the closure of airspace and restrictions on movement of persons, policy consistency, unpredictable business/agricultural environment, etc. In addition, political instability can disrupt program activities through civil unrest, protests, or government transitions. This can lead to delays in program implementation, uncertainty in decision-making, and challenges in securing necessary approvals or permits.	Burkina Faso Mali Niger	The consortium has vast experience in the Sahel and has security plans in place for on-the-ground activities. Staff are trained on security measures and various scenarios. The consortium will follow the evolution of the security context and pursue adaptive management. Soil Values will receive regular alerts from the U.S. Embassy and United Nations. In addition, Soil Values will conduct thorough political risk assessments to identify potential threats and vulnerabilities arising from political instability. This may involve analyzing political dynamics, stakeholder interests, and historical trends to anticipate potential challenges and inform risk mitigation strategies. Constructive relationships will be established with government authorities, local leaders, and key stakeholders to navigate political dynamics and address regulatory concerns.	Burkina Faso Mali Niger
		Nigeria		Nigeria

Risk Factors	Type and Level of Effect	Probability		Mitigation Measures	Residual Risk
Color Code	**Low**	**Medium-Low**		**Medium-High**	**High**
Effects of climate change and other adverse weather on agricultural productivity and the livelihoods of smallholder farmers	All four countries face climate change challenges, impacting agricultural productivity and smallholder farmers' livelihoods. Mali and Burkina Faso have a medium possibility of negative effects, including declining productivity and increased costs. Niger and Nigeria face a higher possibility, with practices becoming less effective and potential risks increasing in the long run. These could affect key result areas of Soil Values, endangering the success of the program. Climatic conditions, such as extreme weather events, rising temperatures, flooding, drought, and changing precipitation patterns, can exacerbate soil degradation. This may include deforestation, soil erosion, habitat loss, and biodiversity decline, affecting ecosystems and natural resources critical to the success of the Soil Values program.	Burkina Faso Mali	Niger Nigeria	In Mali and Burkina Faso, measures such as good agricultural practices, improved seeds, and information dissemination will be promoted to boost adaptation and resilience to climate change. In Niger, the focus will be on increasing access to drought-tolerant varieties and expanding irrigated land, while the focus in Nigeria will be on pest and disease identification through training and digital tools and other resilient agricultural practices. Soil Values will also foster knowledge sharing on climate change adaptation and mitigation strategies. This may involve training programs, awareness campaigns, and peer-to-peer learning networks to empower communities, policymakers, and practitioners to take proactive measures to address climate risks and build resilience.	Burkin Faso Mali Niger Nigeria
Impact of international crises on the input market	Mali, Niger, and Burkina Faso are heavily dependent on input imports, especially fertilizer, as there is not enough national production or blending. Nigeria has the facilities to meet its demand for urea but relies on imports for potash and phosphate. Access to inputs (especially fertilizers) is critical, as they are less available on the market in quality and quantity, leading to high costs for farmers. The impact of such a disruption could lead to delays or shortages in acquiring necessary resources, such as fertilizers, seeds, equipment, or expertise	Burkin Faso Mali Niger Nigeria		In Mali, efforts are directed toward utilizing organic fertilizers and strengthening trade relations with neighboring countries. Burkina Faso is focusing on developing organic fertilizers, establishing a national blending company, and fostering trade relations. Nigeria is promoting local blending, encouraging organic fertilizer production, and minimizing reliance on imports. Niger has taken significant steps to improve fertilizer availability and affordability for farmers through the Fertilizer Sector Reform Support Project in Niger (PARSEN). Côte	Burkina Faso Mali Niger Nigeria

Risk Factors	Type and Level of Effect	Probability	Mitigation Measures	Residual Risk
Color Code	**Low**	**Medium-Low**	**Medium-High**	**High**
	critical for soil improvement initiatives. This, in turn, could hinder program timelines, escalate costs, and potentially compromise t outcomes.		d'Ivoire and Ghana, as strategic countries, especially in the area of trade and supply chain of farm inputs, play a significant role in the availability of fertilizers and other farm inputs for farmers. There is need for a business conversation with these countries on the ease of doing business in fertilizer and other agro-input trade discussions. Benin could be another option to facilitate trade in the region.	
2. Programmatic Risks – risk related to the potential for not achieving the objective of interventions or to exacerbated contextual risk				
Land insecurity, non-application of the land code	The high probability of land insecurity and non-application of land codes in all countries pose challenges to agriculture and smallholder farmers' livelihoods, leading to conflicts and limited access for marginalized groups. Particularly for women and youth, in all the countries, access to and ownership of land is weak, resulting a shift in women's and youths' agricultural participation from production to other aspects of the value chain. Invasion of farmlands by pastoralists is another issue, resulting in farmer-herder clashes, especially in the implementing countries. Without clear land ownership rights, it becomes challenging to implement long-term soil improvement strategies. In addition, the goal of having women as a significant portion of the program beneficiaries could also be compromised when land insecurity issues occur.	Burkina Faso Mali Niger Nigeria	Key measures include disseminating mining and land regulatory texts, implementing the land code, and promoting the Agricultural Orientation Law. Additionally, enhancing the involvement of women and young people in acquiring and utilizing agricultural land can contribute to long-term solutions for sustainable agricultural development and livelihoods in the respective countries. Similarly, resolving grazing routes for pastoralist in Nigeria will ensure farmers' lands are protected from cattle invasions. Engagement with local communities, authorities, and landowners will foster understanding and support for the program's objectives and ensure compliance with land codes.	Burkina Faso Mali Niger Nigeria

Risk Factors	Type and Level of Effect	Probability	Mitigation Measures	Residual Risk
Color Code	**Low**	**Medium-Low**	**Medium-High**	**High**
Reluctance of smallholder farmers to invest in soil value and fertility	Small producers face barriers such as limited access to financial resources, agricultural extension services, and equipment, which hinder investments in soil conservation and sustainable agricultural practices. This leads to degradation of agricultural land and water resources. The willingness of farmers to participate in the program could go a long way toward achieving the target. Without the active participation of and investment from smallholder farmers, the program's objectives may not be fully achieved, as they play a crucial role in agricultural activities within these regions. Such reluctance can lead to limited adoption of program interventions, such as soil improvement techniques or agricultural practices aimed at enhancing soil fertility. This could result in suboptimal outcomes in terms of soil quality improvement and agricultural productivity, ultimately affecting the program's overall effectiveness.	Burkina Faso Mali Niger Nigeria	Key measures include raising awareness about soil value and fertility, facilitating access to finance, developing technological tools for information dissemination, and promoting successful indigenous practices. Soil Values, through its partners, may establish demonstration farms or pilot projects where farmers can observe firsthand the positive outcomes of implementing soil improvement techniques. Similarly, Soil Values partners will make the program participatory and innovative. This will help build trust and confidence among farmers and encourage adoption.	Burkina Faso Mali Niger Nigeria
Decrease in water supply, affecting the supply of submersion plains	Climate change and human activities impact the water resource potential in the four countries, posing a serious threat to agricultural productivity and food security. A decrease in water supply could lead to reduced availability of water for irrigation, affecting the productivity of submersion plains. This can result in decreased crop yields, limited agricultural diversification, and economic hardships for farmers reliant	Burkina Faso Mali Niger Nigeria	Key measures include the development and promotion of adapted irrigation systems, soil and water conservation mechanisms, and sustainable management of water reservoirs and developed perimeters. Soil Values will work with partners on location with active irrigation facilities and invest in selected watershed irrigation facilities, where necessary. Since the program will work with watershed areas, irrigation	Burkina Faso Mali Niger Nigeria

Risk Factors	Type and Level of Effect	Probability		Mitigation Measures	Residual Risk
Color Code	**Low**	**Medium-Low**		**Medium-High**	**High**
	on these lands.			perimeters, and surrounding lands, there is need to reflect on the availability of water in lieu of fluctuating climatic conditions.	
Misuse of fertilizers	In Mali, Niger, and Burkina Faso, there is a medium probability of fertilizer misuse due to declining yields and lack of knowledge among producers. In Nigeria, there is low probability, as farmers observe better results with proper application methods. This could affect soil fertility, as farmers may be tempted to overapply fertilizers, increasing the acidity level of the soil, including nutrient imbalances, soil acidification, and salinization, thus hampering the overall goal of restoring soil health.	Mali, Niger, Burkina Faso	Nigeria	In Mali, Niger, and Burkina Faso, measures include raising awareness and promoting good agricultural practices, specific fertilizer types, and the 4Rs of Nutrient Stewardship. In Nigeria, an emphasis is placed on proper chemical selection and use. Youths will be trained as spraying service providers for professional pesticide application to farmers' fields. Other innovative approaches will be considered to ensure that the maximum farmers are reached.	Burkina Faso Mali Niger Nigeria
Lack of coordination at the local level (community actors)	Effective coordination among local stakeholders, including government agencies, community groups, NGOs, and other relevant actors, is essential for ensuring alignment of efforts, maximizing resources, and achieving program objectives. In all the countries, the involvement of community actors is crucial for sustainability in the capitalization and scaling up of achievements; thus, good coordination both with the decentralized services of the state and with national NGOs and other local actors is essential. Weak coordination would impact the program negatively, resulting in fragmented initiatives, conflicting priorities, and missed opportunities for synergy and collaboration.	Burkina Faso Mali Niger Nigeria		Key measures include creation of conditions for good coordination with local support structures, promotion of advisory support services, creation of local consultation frameworks, and capacity building of local management actors. Where necessary, there shall be regular training for national and local partners to build capacity on coordination and community entry. In addition, Soil Values will engage stakeholders through regular meetings, consultations, monitoring and tracking as well as community participatory processes to ensure program coordination.	Burkina Faso Mali Niger Nigeria

Risk Factors	Type and Level of Effect	Probability	Mitigation Measures	Residual Risk
Color Code	**Low**	**Medium-Low**	**Medium-High**	**High**
Inclusion of vulnerable groups (women and youths)	In Burkina Faso and Mali, the challenge lies in the inclusion of women and youths due to family-based farming practices and customary land acquisition rules that marginalize the most vulnerable. In Niger and Nigeria, the cultural norm is for men to own lands and benefit more from agricultural activities. Women and youths often face systemic barriers that limit their access to resources, decision-making processes, and opportunities for meaningful participation. Lack of inclusion can exacerbate disparities in access to resources, opportunities, and benefits. The exclusion of these group could translate to a reduction in the number of women beneficiaries for this program.	Burkina Faso Mali Niger Nigeria	Key measures include working through a GESI approach while raising awareness and promoting stakeholder participation of women and vulnerable groups. Furthermore, actors will be sensitized about the vital role of women and youths in agriculture and food security. The program will facilitate more women's participation and ownership of land, providing the necessary capacity for women and vulnerable groups to effectively utilize available land.	Burkina Faso Mali Niger Nigeria
Insufficient involvement of the private sector	As an activity mainly reserved for farmers, the actors in the agriculture sector work for the most part in the informal sector in Burkina Faso and Mali, which limits their access to agricultural services and products adapted to their needs; thus, very few actors of the formal private sector are interested in agriculture, resulting in low investment in the agriculture sector. Private sector investment in Nigeria is fair. Agri-fintech companies provide financial and input services for farmers. Mobilizing additional funds could be difficult if their involvement in terms of improving soil health is low. Their lack of involvement may also translate into	Burkina Faso Mali Niger Nigeria	Mitigation measures are focused on promoting Mali's and Burkina Faso's agricultural potential, creating awareness about the private sector's role in local and national development, providing training on market gardening and soilless agriculture, and promoting youth entrepreneurship. Similarly, developing a strong business case for the private sector and points of entry will stimulate their participation and investments.	Burkina Faso Mali Niger Nigeria

Risk Factors	Type and Level of Effect	Probability	Mitigation Measures	Residual Risk
Color Code	**Low**	**Medium-Low**	**Medium-High**	**High**
	low funding contribution for the program.			
Wrong entry point into communities	Projects often employ an approach that turns out to not be suitable for community entry. This has the possibility of negatively affecting program execution. If the team fails to engage with communities effectively or chooses an inappropriate entry point, it can lead to distrust, resistance, or even hostility from community members. This can hinder the program's ability to access land for implementation, gather necessary data, enlist local support, and ultimately achieve its objectives.	Burkina Faso Mali Niger Nigeria	The program will leverage expertise from multiple disciplines and experts to ensure the right community entry strategy for a successful program implementation. Program staff will prioritize political correctness and carefully consider the political sensibilities in the project locations, fostering a conducive and sensitive environment for successful execution. Local NGOs will deploy best practices in community engagement and community entry. Soil Values will also deploy innovative approaches to community entry, including leveraging existing relationships of national and technical partners.	Burkina Faso Mali Niger Nigeria
3. Institutional Risks – internal risks within the program to the range of potential adverse consequences of intervention for the implementing organization and its staff				
Staff turnover	Medium staff turnover due to a high level of donor activity. Staff who leave the program for other organization will leave with institutional knowledge, thereby potentially weakening the performance of the program.	Burkina Faso Mali Niger Nigeria	While staff turnover in the program region is medium-low, consortium partners have robust recruitment procedures and maintain a pipeline of candidates to fill potential vacancies. Overlapping technical competencies are harnessed to jointly deliver on common technical areas, while the extra capacity allows for continued program implementation in instances of staff turnover.	Burkina Faso Mali Niger Nigeria

Risk Factors	Type and Level of Effect	Probability		Mitigation Measures	Residual Risk
Color Code	**Low**	**Medium-Low**		**Medium-High**	**High**
Implementation delays due to delays in hiring and procurement	Hiring and procurement delays can result from recruitment process issues, skill shortages, budget constraints, administrative bottlenecks, and onboarding time. This can lead to incomplete teams, reduced efficiency, missed deadlines, and compromised program outcomes.	Burkina Faso Mali Niger Nigeria		Consortium members have robust recruitment procedures and maintain a pipeline of candidates. Consortium partners have already begun recruitment and/or identification of internal candidates to fill positions. Soil Values commits to having the program director and senior program team in place in the first month. Key positions will be recruited as the opportunity exist.	Burkina Faso Mali Niger Nigeria
Exchange rate fluctuation	Medium in Niger, Mali, and Burkina Faso, due to the fixed exchange rate (peg) of CFA to euro. High for Nigeria due to weak performance of the naira. This results in high cost of program consumables and transports. It is most likely to result in staff demotivation when their salaries are not increased over time to compensate for the rate of naira devaluation. Fluctuations in exchange rates will affect procurement processes, which may affect the availability of equipment and tools to deliver on the program.	Niger, Mali, Burkina Faso	Nigeria	Salaries of staff will be adjusted from time to time compensate for the rate of devaluation of the naira versus the euro/U.S. dollar. In Nigeria, the procurement process will commence early to reduce the gap from provision of invoice to approval since prices may change during delays.	Burkina Faso Mali Niger Nigeria
Inflation	Medium to high in Niger, Mali, and Burkina Faso. Due to the political instability in these countries, regional and international economic sanctions could cause inflation. The case is high for Nigeria; however, the effect will be medium on the project, since the budget will be euro/U.S. dollar based. The possible effect of inflation in Nigeria will not seriously affect procurement of program items since the euro/U.S. dollar is	Burkina Faso Mali Niger	Nigeria	The exchange rate for euro/U.S. dollar to naira must be regularly reviewed to reflect the reality in the country. The MEL team will establish robust monitoring mechanisms to track inflation rates and their impact on household income regularly. Soil Values will adapt project strategies and interventions as necessary to address emerging challenges and ensure continued project relevance and effectiveness.	Burkina Faso Mali Niger Nigeria

Risk Factors	Type and Level of Effect	Probability	Mitigation Measures	Residual Risk
Color Code	**Low**	**Medium-Low**	**Medium-High**	**High**
	stable. Inflationary pressures can lead to increased costs of living, reduced disposable income, and heightened socio-economic challenges for local communities, potentially affecting their participation and support for the program. Furthermore, inflation could impact the income indicators, as change in income data collected in the previous year may not reflect the real changes caused by inflation in the succeeding years.			
Data quality issues	Low to medium in all countries. The quality of data highly depends on the control procedures put in place to ensure data quality. The data quality assessment of each partner may affect the Soil Values M&E process by either making it more complex or easier to manage. Issues such as incomplete or outdated data, the absence of standardized protocols and methodologies for data collection, storage, and analysis across the four countries, and limited access to relevant data due to bureaucratic hurdles and data hoarding can result in inconsistencies and discrepancies in the data obtained from different sources.	Burkina Faso Mali Niger Nigeria	To ensure data quality and mitigate issues, the consortium will develop a manual that explains how to collect data, use standardized tools, train staff, validate and clean data, secure access, maintain documentation, verify data with reliable sources, conduct regular monitoring and audits, pursue continuous improvement, establish data governance, and leverage technology for automated processes. Soil Values, through the MEL team, will establish data-sharing agreements, implementing standardized data collection protocols, to promote transparency and open data principles to help improve the quality, accessibility, and usability of data.	Burkina Faso Mali Niger Nigeria

Risk Factors	Type and Level of Effect	Probability	Mitigation Measures	Residual Risk
Color Code	**Low**	**Medium-Low**	**Medium-High**	**High**
Weak program governance	Weak governance poses substantial risks to development programs, hindering progress, increasing costs, and undermining project sustainability. Weak governance structures and fragmented institutional arrangements may lead to a lack of coordination among relevant government agencies, ministries, and stakeholders involved in the program. Similarly, weak governance may subject the program to political interference, patronage, or vested interests, potentially compromising its objectives and integrity.	Burkina Faso Mali Niger Nigeria	The Soil Values program aims to deploy adaptive management principles to mitigate program weak governance. Adaptive management encourages experimentation and innovation to address governance challenges creatively. In addition, the Soil Values management approach builds on best practices and lessons learned from other DGIS-funded multi-country, multi-phase programs, including 2SCALE (two phases), ISSD/Sahel, and Pro-ARIDES. It also builds on the consortium's combined 200+ years of implementation of agricultural and market development projects and programs.	Burkina Faso Mali Niger Nigeria
Limited staff or partner capacity	Risks related to limited staff or partner capacity can include inadequate expertise, resources, and capacity to effectively implement the program. This may lead to delays, compromised project quality, and challenges in achieving project objectives and outcomes.	Burkina Faso Mali Niger Nigeria	Soil Values has a robust management structure, leveraging partners' institutional strength for technical assistance and implementation. Overlapping competencies ensure continuity during staff turnover, and the team's extensive experience and proven partners contribute to program success. Soil Values will also deploy adaptive measures to provide capacity to weak areas and strengthen partners efforts.	Burkina Faso Mali Niger Nigeria
Shifts in context (needs, knowledge, practice and approaches)	The risks include changes in program requirements, new information, or shifting priorities that may necessitate adjustments to project plans or strategies. This can lead to potential delays, resource reallocation, and the need for continuous adaptation to ensure alignment with current knowledge and priorities.	Burkina Faso Mali Niger Nigeria	The Soil Values team is comprised of consortium members and knowledge partners who are recognized leaders in their respective fields. The program also has a specific intervention area (Scoping and Learning) dedicated to identifying and incorporating evolving knowledge and priorities. Soil Values will be adaptive and emphasize continuous learning from	Burkina Faso Mali Niger Nigeria

Risk Factors	Type and Level of Effect	Probability	Mitigation Measures	Residual Risk
Color Code	**Low**	**Medium-Low**	**Medium-High**	**High**
			program implementation, enabling partners to stay attuned to shifts in the context. This will include establishing necessary feedback loops, timely dissemination of information, and other relevant adaptive practices.	
Fraud and corruption risks	There are high potential effects of fraud and corruption in all target countries (Burkina Faso, Mali, Nigeria, and Niger). Misuse of funds can erode trust among program actors, attract negative media attention, and prompt inquiries from the Dutch parliament. Corrupt actions and sharp practices by the national programs could also compromise the success of the program.	Burkina Faso Mali Niger Nigeria	All consortium partners have anti-fraud policies and commit to immediate reporting. Target countries implement effective mitigation measures, including anti-fraud policies, due diligence, involvement of the public sector, and digitized payment systems, resulting in a low residual risk. Consortium partners' practices increase transparency, and field offices reduce safety risks. Consortium partners' financial systems minimize fraud, and staff follow a Code of Business Ethics and Conduct.	Burkina Faso Mali Niger Nigeria

Annex 2. Characterization of the Selected Watersheds for Pilot Activities

Country	Watershed	Biophysical and Socio-Economic Details of the Watershed
Nigeria	Yartiti	• Geographic localization: N 11° 25’ 42.90’’ E 009° 12’ 01.70 • Yar Titi watershed features a water conservation structure and a minor irrigation facility • The total area covered by the dam is 5130 square meters. • Cover types influence the partitioning of rainfall into infiltration, overland flow, and evapotranspiration • Soil and Water Conservation Practices • Provides minor irrigation facilities. Aims to enhance water availability for agriculture. • Topographically delineated areas that contribute to the natural drainage system • Mix of land use systems such as forests, agricultural cropped areas, grass/rangeland, and water bodies. • Dry season production of market gardening crops • This involves growing crops like tomatoes, peppers, and leafy greens. • Farmers rely on irrigation from flood plains, floodable low terraces, and seasonally flooded upland areas. • Soil Erosion: Soil erosion has caused long-term environmental degradation in many parts of the world. In Nigeria, deforestation and land degradation exacerbate climate change, biodiversity loss, and ecosystem service declines. The Yartiti and Fajewa watersheds are no exception, experiencing soil erosion that threatens land productivity, infrastructure, and livelihoods. • Economic Impact: Eroded land affects economic growth and poverty alleviation. The Nigerian government sought intervention through the Erosion and Watershed Management Project (NEWMAP), supported by the World Bank. This project aims to address soil erosion and improve watershed management through interventions like afforestation, soil conservation, and sustainable land use practices. Another initiative is the Agro-climatic Resilience in Semi-Arid Landscapes (ACReSAL) project, which focuses on water conservation structures and minor irrigation facilities. One such site is the Dawan Kaya Water Conservation Structure in Makoda L.G.A., designed to store 6.35 million cubic meters of water. • Water Supply Challenges: Water supply to the metropolitan Kano area and other parts of the state has been a significant infrastructural challenge. The Tiga Dam, a 10MW hydropower project, aims to alleviate water scarcity and enhance security in the region. • Hydrologic Data: Collecting hydrologic data from small watersheds is crucial for assessing the impacts of management interventions and informing local development plans. Such data help monitor water resources and guide irrigation development.
	Fajewa	• Localization of the watershed: N 12° 02’ 29.6’’ E 8° 33’ 27.73 • Supports irrigation and water management. • The total storage capacity of the Fajewa structure is 1.06 million cubic meters. • Supports rain-fed and irrigated farming. • Aims to combat desertification, restore degraded lands, and promote sustainable agriculture. • Combination of land uses in the watershed, including croplands and grazing lands • Land cover changes impact soil moisture recharge, groundwater recharge, and streamflow. • Topographically delineated areas that contribute to the natural drainage system • Mix of land use systems such as forests, agricultural cropped areas, grass/rangeland, and water bodies. During the dry season, we have a production of market gardening crops • Soil Erosion: Soil erosion has caused long-term environmental degradation in many parts of the world. In Nigeria, deforestation and land degradation exacerbate climate change, biodiversity loss, and ecosystem service declines. The Yartiti and Fajewa watersheds are no exception, experiencing soil erosion that threatens land productivity, infrastructure, and livelihoods [1]. • Economic Impact: Eroded land affects economic growth and poverty alleviation. The Nigerian government sought intervention through the Erosion and Watershed Management Project (NEWMAP), supported by the World Bank. This project aims to address soil erosion and improve watershed management in Kano State. • Water Supply Challenges: Water supply to the metropolitan Kano area and other parts of the state has been a significant infrastructural challenge. The Tiga Dam, a 10MW hydropower project, aims to alleviate water scarcity and enhance security in the region. • Hydrologic Data: Collecting hydrologic data from small watersheds is crucial for assessing the impacts of management interventions and informing local development plans. Such data help monitor water resources and guide irrigation development.

Country	Watershed	Biophysical and Socio-Economic Details of the Watershed
Burkina Faso	Boucle du Mouhoun Inferieur	• Climate: the climate has precipitation ranging from 600 mm to 1200 mm from north to south and a dry season of 5 to 8 months • The agricultural crops mainly produced are cereals which represent 68.8% of cultivated areas; The cash crops represents 27% of cultivated areas and other crops (cowpea, voandzou, etc.) with 4.2%. • Nearly 20,000 ha of irrigation schemes including: (i) nearly 7,000 ha (35%) of irrigated areas; (ii) 7000 ha (35%) of lowlands developed under partial control and (iii) 6000 ha (30%) of small irrigation by pumping. • Irrigated agriculture in downstream is dominated by rice cultivation. Market gardening and corn are mainly practiced in the off-season • Livestock breeding by pastoralism is major activity. • Raw mineral soils and poorly evolved erosion soils (lithosol), Vertisols, Tropical brown soils, Ferruginous soils, Deep ferralitic soils, Hydromorphic soils • Several stakeholders at the regional level to know: PAPSA, PPIG, GPR, P1P2RS, PCA-BF/CH, PRP, PSSA, PAPFA, PAPFA-4R, FAO, CPP, RESICOM, PUDTR, PADL/CLK, • Development opportunities: Strengthening Organization of producers, supporting agricultural and financial inputs and materials from the various stakeholders. • Agrotechnologies: GIFS/WSC, stone lines (vegetated), Ravine treatment techniques, agroforestry practices (assisted natural regeneration, live hedge, planting of fertilizing trees), Management of organic matter pesticides (compost, bokashi, liquid compost , the production of green manure, effluent and bio-compost from the biodigester), Improved seed varieties (Use of early varieties sensitive to the climate (millet, sorghum, rice, cowpea, etc.), Cultivation practices (mulching, grass strips , Crop rotation, Crop association, Crop rotation), Management of inorganic fertilizers (organo-mineral fertilization); • Local rural communities: Farmers, breeders and local populations are the main actors involved in agricultural management, livestock breeding, forestry management and water management. Women and youth: Women play a central role in food production and water management, often using adapted and sustainable agricultural practices. Young people are also increasingly involved in watershed management initiatives, bringing innovations and innovative solutions. Community leaders and traditional chiefs: Traditional chiefs and community leaders play a crucial role in mediating conflicts and promoting sustainable practices within local communities; • Existing platforms: Research networks and academic institutions, Universities and research centers play a crucial role in collecting scientific data and assessing the environmental and social impacts of watershed management initiatives. Local Water Committees (CLE) are local governance forums where all water users, including farmers, fishermen, livestock breeders, women, youth, municipal representatives, organizations civil society and other stakeholders, come together to collectively discuss and decide on the management of water resources
	Kou	• The Kou watershed with an area of 1860 km² is located in the administrative zone of the Hauts Bassins region and is home to the country's second largest city, Bobo-Dioulasso. • Climate: the Kou watershed is under the influence of the Sudanian climate where annual rainfall varies between 900 and 1200 mm. The rainy season generally lasts five months (May to September) • In the Kou sub-watershed specifically, the soils present in the basin are leached tropical ferruginous soils, ferralitic soils and surface poorly evolved soils; • Several developments have been carried out in this sub-basin, namely: 1064 ha of developed lowlands and 1260 ha of irrigated perimeter in the Kou sub-basin. • Analysis of overall land occupation shows that 45.16% is cultivated. Potentially cultivable but unexploited land represents 36.84%. • Pastoral areas occupy 2.85%, classified forests 9.25% in the watershed. • Hydrographically, the perennial Kou River, with a length of approximately 70 km, is the first major tributary on the right bank of the Mouhoun River. The main tributaries are the Yengué, Niamé, Suo, Farakoba, Bingbélé, Wé, Pesso, Niamé – Baoulé Diaradougou Yakouba and Bango. • The farming systems of the populations of the basin consist mainly of strict rainfed crops, lowland crops and small irrigation practiced on areas developed by the State and so-called informal areas. • Agriculture: It is dominated by the cereal sector (corn, rice, sorghum, millet) due to its significant weight in the total production of the basin, it in fact occupies 70% of the sown areas. Other productions share the rest of the surface area, i.e. 30%. Among them, two sectors stand out, namely the fruit and vegetable sector and the cotton sector. • Livestock breeding in the Kou basin is based on the exploitation of natural resources. As a result, it depends, among other things, on climatic factors, primary production; • Agrotechnologies in the basin: CES/DRS, stone lines (vegetated), Ravine treatment techniques, Agroforestry practices (assisted natural regeneration, live hedge, planting of fertilizing trees), Management of organic matter pesticides (compost, bokashi , liquid compost, the production of green fertilizers, effluent and bio-compost from the biodigester), Improved seed varieties (Use of early varieties sensitive to the climate (millet, sorghum, rice, cowpea etc.), Cultivation practices (mulching , Grass strips, Crop rotation, Crop association, Crop rotation), Management of inorganic fertilizers (organo-mineral fertilization); • Several stakeholders at the regional level: PAPSA, PPIG, GPR, P1P2RS, PCA-BF/CH, PRP, PSSA, PAPFA, PAPFA-4R, FAO, CPP, RESICOM, PUDTR, PADL/CLK, • Development opportunities: producers organization strengthening, support access of agricultural and financial inputs and materials from the various stakeholders

Country	Watershed	Biophysical and Socio-Economic Details of the Watershed
		• Communities involved in the management and development of watersheds include: Farmers, breeders and local populations are the main actors involved in agricultural management, livestock breeding, forestry management and water management. Women and youth: Women play a central role in food production and water management, often using adapted and sustainable agricultural practices. Young people are also increasingly involved in watershed management initiatives, bringing innovations and innovative solutions. Community leaders and traditional chiefs: Traditional chiefs and community leaders play a crucial role in mediating conflicts and promoting sustainable practices within local communities. • Existing platforms: Research networks and academic institutions: Universities and research centers play a crucial role in collecting scientific data and assessing the environmental and social impacts of watershed management initiatives. Local Water Committees (CLE) are local governance forums where all water users, including farmers, fishermen, livestock breeders, women, youth, municipal representatives, organizations civil society and other stakeholders, come together to discuss and decide collectively on the management of water resources.
Mali	Sikasso (Bani)	• Climate: the climate has a rainfall of 1,300 mm in a normal year, currently between 800 mm and 1,000 mm • Soils: Tropical ferruginous soils favorable to intensive agriculture • Irrigated areas, developed lowlands, valleys and market gardening areas favorable to rice growing and market gardening. • The Bani basin includes three major rivers which are, from West to East, the Baoulé, the Bagoé and the Banifing de Kouoro • Vegetation: Clear forest and savannah. • Crops grown: corn, millet, sorghum, cotton, rice (wintering), sweet peas, arboriculture, market gardening in the off-season, especially potatoes. Livestock activities concern breeding of cattle, sheep, goats and poultry farming. • Types of economic activities: Agriculture, market gardening, arboriculture, picking, breeding, fishing/fish farming as the main economic activities • Developable potential: More than 19,780 ha of developable lowlands • Platforms and communities: Federation of potato producers, Regional Federation of milk producers (FERLAIT), Federation of the livestock-meat sector, Regional Federation of fish farmers and aquaculturists, Association for the Promotion of Rural Women (ASPROFER), Regional Committee rural youth (CRJR), Regional Platform of Rice Producers, Regional Federation of Market Gardeners • Agricultural and land recovery practices restoration of degraded lands and agroecological practices • Several stakeholders in the watershed: Doutouloma, FSRP, MERIT, PAFA, CIV, IPRO-IRRIGAR, PN SRI, Agricultural Support Services project, RICOWAS, PAESOL, USAID Anka Jiko, GRAT, IRED-MALI, ACOL-MALI, WANEP-MALI, Platform of Sikasso, GRAADECOM, ACEVE, AMAED, ADH/MALI, AMADECOM, A.CO.D Nièтaaso, COFERSA • Agricultural inter-professionals: Rice inter-professional, corn inter-professional, potato inter-professional, mango inter-professional in place. • Farmers, agro-pastoralists, fishermen, pastoralists through their grassroots organizations and their umbrella at local and regional levels. • Development opportunities: Sustainable and equitable management of the resources of the different landscape units, the organization of key players and the construction of infrastructure. Furthermore, updating geo-referencing and inventory studies of the potential of sub-basins is essential.
	Segou	• Climate: Tropical Sahelian climate characterized by an alternation of rainy season (June to October) and dry season (November to May). Average annual rainfall of 500 to 600 mm • Sandy soil favorable for the cultivation of millet, sorghum, and livestock, sandy-loamy, loam-sandy, loamy, clay-loamy, sandy-clayey and loamy-clayey in the lowlands and along the watercourses (areas with temporary hydromorphism). • Market gardening areas, irrigated areas available. • Alluvial plains, ponds, lowlands, Niger River, Bani River, Dioro canal, irrigated areas, classified forests, massifs • Food crops (millet, sorghum, corn, fonio, rice); cash crops (cotton, peanuts, cowpea, voandzou, sesame, guinea sorrel); market garden crops (potato, onion, pepper, cabbage, tomato, lettuce) • Agriculture, breeding, market gardening, vaccination parks, livestock market • The presence of the Office Riz of Ségou and the Office of Niger constitutes an opportunity for synergy at the watershed level. • Pro-ARIDES (on the performance of the agri-food system) and PRODEAU (on issues of efficient management of irrigation water at the Office du Niger). • Several partners working on issues of food and nutritional security, economic sustainability of the environment at the watershed level • Drastic reduction in plant cover, high propensity for degraded soils, generalized drop in yield of the main dry crops practiced

Country	Watershed	Biophysical and Socio-Economic Details of the Watershed
Niger	Maradi (Goulbi Maradi)	• It is located from upstream to downstream between latitudes 13°08' and 13°39'21" North and longitudes 7°12' and 6°27'2" East and covers an area of 9787 km2 including 3083 km^2 in Nigeria. The flows have a general south-north orientation. The basin is between the 550 and 850 mm isohyets. • Climate: The entire basin experiences a Sahelian continental climate characterized by average annual precipitation of between 500 and 600mm distributed between June and October (DRS/Maradi, 2016). The average temperature is 21°C with a maximum of 41°C observed in April and falling to a minimum of 14.7°C in January. Potential evapotranspiration is maximum in March (218 mm) with an average annual accumulation of 2178 mm. The entire basin experiences a Sahelian continental climate characterized by average annual precipitation of between 500 and 600mm distributed between June and October (DRS/Maradi, 2016). The average temperature is 21°C with a maximum of 41°C observed in April and falling to a minimum of 14.7°C in January. Potential evapotranspiration is maximum in March (218 mm) with an annual average cumulative of 2178 mm. • In the Goulbi de Maradi and Goulbin Kaba watershed, two types of soils are identified: Tropical ferruginous soils and hydromorphic soils. • Hydro-agricultural developments, irrigated areas, swamp forest, CES/DRS activities, over-digging of the pond, etc. • Crops under mixed parks (71.03%) are mainly dominant. They are followed by shrub savannahs, park crops in Gao, and rainfed crops. Irrigated crops represent only 3.2% in the Goulbi Maradi valley. • Goulbi is ideal for market gardening, rainfed cereals, flood recession crops, and arboriculture. • Agricultural and pastoral half-moon, assisted natural regeneration, pond mowing, fight against invasive species, zai + improved seeds, half-moon + improved seeds, advisory support for producers, mulching, mulching, market gardening, composting, improved hearth, parking of animals in the fields. • The communities that work in the Goulbi watershed are made up of Haousa (70%), Tuareg (25%) and Fulani (5%) • The main constraint to the development of irrigated agriculture remains the insufficiency of water resources which does not allow the entire irrigable potential to be planted. The advance of the agricultural front in the valley has led to the disappearance of fallows, the reduction of pasture areas, the closure of access to water points and pastoral enclaves, the multiplication of conflicts between farmers and breeders, and the degradation of pastures. The proliferation of unpalatable invasive species including Sida cordifolia L. and also the desertification of certain parts of the valley covered by unstable sand dunes.
	Taoua (Maggia)	• The Maggia watershed is a transboundary basin, located in the southern agricultural strip of Niger and the north-western part of Nigeria. It is located between 4o55' and 6o0' of eastern longitude and 13°10' and 14°35' of northern latitude. The Basin has an area of 5616.03 km^2 including 3080.31 km^2 or 54.85% in Niger and 2535.72 km^2 or 45.15% in Nigeria. Its watercourse takes its source in Niger in the Tahoua region then Sokoto state and flows into the Rima River of Nigeria following a NE-SW then North-South direction. • The Maggia watershed mainly belongs to the South-Sahelian zone (300 to 600 mm). The climate is semi-arid Sahelian type (MAH, 2018). The basin is characterized by two (2) distinct seasons : A dry season from October to May and the rainy season from June to September-October. • The relief of the watershed is characterized by five distinct geomorphological units: the plateaus; the borders (dykes); the cones of koris droppings; alluvial terraces and floodplains (DRGR, 2018). • Inventories in the basin indicate the presence of regosols, hydromorphic vertisols, red-brown soils with mottling, unleached ferruginous soils, ferruginous soils leached with typical iron, tropical ferruginous soils leached with concretion and without consultation and at the end hydromorphic soils. • Mechanical activities (CES/DRS structures) and biological activities (planting of herbaceous species) which contribute significantly to protecting production basins by filling ravines, reducing runoff and runoff speed and promoting recharge of the water. water table and fertility of lowland soils. There are also mini dams, weirs, irrigated areas, construction of weirs and development of ponds, etc. • The Maggia is made up of a system of valleys cut into a gently undulating lateritic plateau by numerous tributaries with a steep slope (ORSTOM, 1966). The average interannual volume of the main river draining its plateau is around 71 million m3 at the Dogueraoua station (MHA, 2018). The main bed is very degraded downstream of Birni N'Konni and the Maggia is gradually lost in a succession of marshy depressions, the main one of which is that of Lake Kalmalo and nowadays no longer provides any flow to the Rima of Sokoto (ORSTOM , 1970). • Depending on the seasons, agriculture in the Maggia watershed comes in two (2) forms: rainfed and irrigated crops (DRGR, 2018). • Agriculture constitutes the main activity of the inhabitants of the basin. It is practiced in the winter season and in the cold season. The main rainfed crops grown are: millet, sorghum, cowpea, peanuts and okra. In the dry season, residents practice flood recession cultivation, mainly cowpeas in the valley and market gardening around the few dug in their gardens. • The inventory carried out in the Maggia watershed revealed fourteen (14) earthen dams. The general design of each dam depends on the results of geotechnical reconnaissance and the topographical conditions of the site; characteristics of the materials available as well as the modest size of the work. • Land restoration practices: assisted natural regeneration, agricultural and pastoral half-moon, over-digging of ponds, fight against invasive species, zai + improved seeds, half-moon + improved seeds, advisory support for producers, mulching, mulching, market gardening, composting, improving the home, keeping animals in the fields, etc.

Country	Watershed	Biophysical and Socio-Economic Details of the Watershed
		• The Nigerien part of the basin has an estimated population of 266,559 inhabitants, or a density of 86 inhabitants/km^2. The annual growth rate of this population between 2001 and 2012 is 4.02% compared to 4.6% for the Region and 3.9% for Niger (INS, 2012). The Nigerian part has approximately 1,182,316 inhabitants (Namadi et al., 2013). • The dams of the basin are subject to the effect of several factors favoring the phenomenon of erosion, namely the importance of the slopes, the low vegetation cover and the erodibility of the soil. The soil vulnerability map with the location of the dams indicates that these dams are subject to strong and medium erosion. Indeed, more than half of the dams (53.33%) are located in areas of high vulnerability and the rest are in areas of medium vulnerability. This alarming situation is the cause of the siltation of the dams and measures must be taken to limit the impact of erosion and runoff on the basin.

Annex 3. GESI-responsive activities by interventions area

Intervention Areas	Activities
Intervention Area 1 Bundling Develop ISFM bundled services and sustainable delivery channels for small-scale food producers.	▪ Assess the needs of marginalized and excluded groups, such as women, youth, pastoralists, migrants, internally displaced people and refugees, and people with disabilities, to tailor services in terms of location, content, and delivery to meet those needs (GESI analysis). ▪ Strengthen partners' skills and understanding in identifying and addressing GESI gaps and how they relate to the delivery and impact of IFDC extension packages and capacity building. ▪ Increase the number of women service providers and extension workers. ▪ Implement social behavior changes activities for men and women within communities to address the gender and social norms that block women's and youths' access to benefit from services.
Intervention Area 2 Integrating ISFM integrated community/watershed approaches	▪ Conduct a GESI analysis to understand the unique needs of men, women, and youth in their context as it relates to sustainable land management. ▪ Design GESI-responsive sustainable land management interventions that reach, benefit, and empower men, women, and youths. ▪ Leverage existing initiatives related to World Bank's FSRP farm and landscape/watershed approach and learn from existing GESI good practices related to such initiatives. ▪ Partner with women-led organizations as local service providers and leverage their contextual knowledge on women in sustainable land management.
Intervention Area 3 Convening Convening and the creation of coalitions.	▪ Leverage the experience, expertise, and networks of existing women's organizations by ensuring their participation in convening activities (target of at least 50/50 men/women and 30% youth) and further strengthen their organizational capacity through women's leadership training. ▪ Promote social and behavior change, sensitization, and creating a safe enabling environment for women and men within existing government, coalitions, regional economic communities, commodity boards, the fertilizer and agribusiness industry and other soil actors to address the gender and social norms that block women's access to meetings and participation. ▪ Promote inclusive policy development through quotas for farmers, and pastoralists, and women's participation in leadership positions in governance.
Intervention Area 4: Brokering soil fertility finance	▪ Implement social and behavior change activities to address the gender and social norms that block access to financing or undermines their customary property rights on land and livestock. ▪ Women friendly-financial literacy training ▪ Supporting financing institutions to provide women-friendly financial products Research activities on the issue of women's inability to afford male wage labor.

Annex 4. Example of a Form to Digitalize for an Activity, such as Training or Farm Field School

Country
Activity title
Date
Partner carrying out the activity
Watershed/landscape (Name if any)
Location
Number of female participants
Number of male participants
Number of participants with disabilities
Number of female participants <35 years
Number of female participants >35 years
Number of male participants <35 years
Number of male participants >35 years
Activity objectives
Topics covered
Achieved results
Annexures (images, participants list)