Markets and Other Social Factors of Agroforestry-Adoption

Market and Limiting Factors on Agroforestry Adoption Survey in the Context of Social Infrastructure and Social Processes

SustainSAHEL project

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On behalf of the team involved,

Gian Nicolay (main author) and Malamine Ouattara (WP2 leader)

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Introduction

Context and Rationale

The Sahel region faces mounting challenges: climate change, resource degradation, and persistent rural poverty threaten the resilience and productivity of smallholder farming systems. In response, the SustainSAHEL project was launched with the overarching objective to enhance the resilience and intensification potential of these systems through scalable innovations that integrate crops, shrubs, and livestock (CSL). Central to this approach is the recognition that robust market systems and social infrastructure are as vital as biophysical innovations for sustainable rural transformation.

Markets are therefore not merely places of exchange; they are an important backbone of value chain development, income generation, agrarian change and the sustainability of agricultural innovation. Yet, the success of agroforestry and CSL systems hinges on more than technical potential—it depends on the social, economic, and institutional realities of the communities involved. Recognizing this, the project set out to investigate not only the technical and agronomic aspects of innovation, but also the market conditions, social processes, and related limiting factors shaping adoption and impact.

The MLFS Survey: Purpose and Scope

In 2023, encouraged by project reviewers and building on earlier site diagnostics, the project team decided to deepen its understanding of market dynamics and adoption barriers by launching the "Market and Limiting Factors Survey" (MLFS). This survey was designed to capture both quantitative and qualitative insights from a diverse set of stakeholders across seven living laboratories in Senegal, Mali, and Burkina Faso: Ouarkhokh, Niakhar, Koussanar, Koulikoro, Kléla, Saria, and Yilou.

The MLFS aimed at:

- Assess the real and perceived market potential in each intervention site.

- Identify the main social, economic, and policy barriers to the adoption of agroforestry and CSL innovations.

- Gather recommendations and expectations from farmers, producer organizations, traders, extension agents, and researchers on how to improve market conditions and support adoption.

The survey was participatory and inclusive, involving site managers, local farmer organizations, and a range of value chain actors. While the number of responses was modest, the diversity of perspectives closely mirrors the real-life structure of rural economies in the region.

Methodological Approach

The MLFS combined structured questions on market knowledge, prices, and value chain participation with open-ended prompts about limiting factors and recommendations. This mixed-methods approach allowed for both statistical aggregation and rich qualitative interpretation.

Key features of the methodology included:

- Stakeholder diversity: Respondents included farmers, processors, traders, extension agents, researchers, and representatives of producer organizations, with a focus on gender and youth inclusion.

- Site-specific focus: Each of the seven sites was treated as a unique "living laboratory," enabling comparison and context-sensitive analysis.

- Participatory design: Survey questions were co-developed with local partners to ensure relevance and clarity.

- Qualitative depth: Open responses were analyzed using both traditional thematic analysis and AI-assisted tools to extract nuanced insights.

Theoretical and Practical Significance

The study is grounded in the understanding that agricultural innovation is shaped by both "hard" factors (technologies, inputs, infrastructure) and "soft" factors (social networks, institutions, power relations, knowledge politics). As such, the MLFS does not seek a single "objective truth," but instead aims to surface the multiple realities and knowledges that influence adoption and market participation.

The report also builds on previous and ongoing research within SustainSAHEL. It recognizes that sustainable intensification and the adoption of agroforestry are not just technical challenges, but are deeply embedded in local socio-cultural, economic, and political contexts.

Structure of the Report

This report is organized to provide:

- A synthesis of market conditions and value chain organization across the seven sites.

- An analysis of the main limiting factors to agroforestry and CSL adoption, as perceived by diverse stakeholders.

- A review of the roles and expectations placed on producer organizations, innovation platforms, and other key actors and institutions.

- Gender and country-specific perspectives on market participation and barriers.

- Practical recommendations for policy, practice, and future research, grounded in the lived experience of project participants.

The MLFS and this report are the result of a collaborative effort within the SustainSAHEL project, with special thanks to the site managers, enumerators, and all respondents who shared their insights and experiences. The analysis also benefited from the integration of AI-assisted qualitative tools, which enabled the team to process and interpret a complex dataset efficiently.

In summary, this introduction sets the stage for an in-depth exploration of how markets and social factors influence the adoption of agroforestry and climate-smart innovations in the Sahel, highlighting both the opportunities and the persistent barriers that must be addressed for sustainable rural development.

Context

The overall objective of the SustainSAHEL project is to improve the resilience and intensification potential of smallholder farming systems in the face of climate change through scalable innovations in crop, shrub, and livestock (CSL) integration. A central strategy is to develop CSL systems with innovation networks that involve farmers, value chain actors (including cereals, pulses, milk, meat, cotton, fruits, and others), extension services, and researchers at various scales to enhance agricultural production potential and improve farmers' incomes through capacity building. CSL systems integration can be applied systematically across different value chains and farmer and herder networks to transform the region's agricultural and food systems, making them less vulnerable to climate change, water shortages, resource degradation, and rural poverty. The objective of the project is to enhance existing and new value chains, key elements of innovation systems, through the integration of CSLs, thereby offering improved market opportunities. Markets are therefore central to addressing value chain improvement as a central factor in rural development.

We decided within the (SustainSAHEL) project in 2023, also encouraged by the reviewers, to shed more light on the market and business situation of the sites and integrate this knowledge into the project activities of the remaining year. It was then planned to employ an intern to conduct market studies at an elected site in April 2024. We adapted the scope of the survey after the unexpected withdrawal of the internship and included a second thematic area, which could easily be combined with the market data, to ask interviewees about their perceptions of the limiting factors of adoption and what they recommend the project do differently. This survey was designed in a participatory way and released on July 22, 2024. We called this survey “Market and Limiting Factors Survey” or MLFS.

The seven sites are all within the wider Sahel region in the 3 project countries Senegal, Mali and Burkina Faso (Fig. 1). The Tambacounda department with the Koussanar site is the only one south of the semi-arid agroecological zone. The description of these sites was reported in detail in Delivery 2.1 (31.10.2021).

Figure 1: The position of the 7 sites within the western Sahel

The "market potential" of the sites was defined in the baseline (see Fig.2; PRA in D2.1) amongst other as one of the key parameters of the intervention zones: "The markets, i.e. institutionalized buyer-producer relationships with well-defined products and prices in principle known, and going beyond the villages, but not requiring stable infrastructure ("weekly market"), potentially offer in relation to the current production of the "site" significant revenue opportunities for the actors of the site (primary production, processing, trade, transport), thus covering the different levels of the value chain. The potential targets the situation for the majority of (family) farms as producers with a period of 5 to 10 years (markets to be created before 2030)." This parameter was by far the most positive from all selected parameters (see Fig. 2).

Figure 2: Average Profile of all 7 areas/sites
(level 5 defined as the critical level on a Likert scale from 0 to 10)

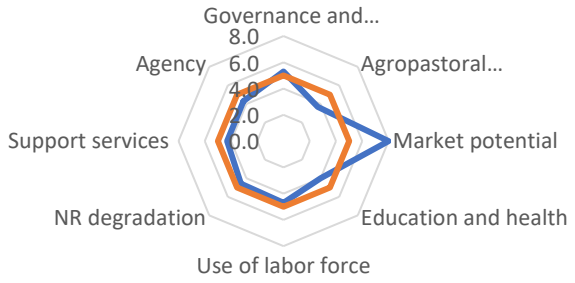


Figure 2: Average social profile with the eight selected parameters governance and security, agropastoral productivity, market potential, education and health, use of labor force, natural resource degradation, support services and agency.

We defined our approach in the following propositions (see proposal):

- Our approach is based on the investigators' experiences with different long-term agricultural farming systems (Fließbach, Oberholzer et al. 2007). The project proposes a comprehensive approach to enhance agricultural productivity and household income by simultaneously optimizing proven technologies, improving herder-farmer cooperation, addressing socio-economic constraints to adoption, and contributing to local economic revival. The research will be conducted in close cooperation with the involved farm organizations and actors in the milk, meat, grain, cotton, and other value chains (p. 2).
- However, no objective was set to intervene directly in the improvement of the value chains involved. Indirectly, the aim was to "… test long-term economic support to local communities in seven specific local economies and societies with close cooperation of research, farmers/herders and their value chain partners, including farmer organisations. The integration of shrubs in cropping areas directly affects primary production and carbon stocks, with increased crop yields as an additional benefit. The economic advantages of CSL integration include the stabilization of crop yields through improved soil quality, opportunities for livestock growth and health, and enhanced meat markets.
- All farming systems tested in cropping with a shrub component constitute a form of agroforestry. Farming systems will be tailored according to local capacities and opportunities. For instance, enhancing cotton systems with CSL integration and promoting organic certification will provide additional opportunities to work with the private and semi-private (ginning industry) sectors towards more resilient cotton-cereal value chains. Increasing the diversity of plants in the field also requires new concepts for crop protection, which mainly involve the knowledge and experiences of organic agriculture.
- The SustainSAHEL concept (see Fig.1 on the project plan) foresaw interventions in market access and VC actor integration (mainly through the Innovation platforms established in each site). It was left, however, to the choice and priority of the local stakeholders to decide on improving existing VC. The project logic was demand-driven and participatory. It is also worth noting that the national farmer organization in each country had complete control over deciding to use the resources (human, financial, and technological).

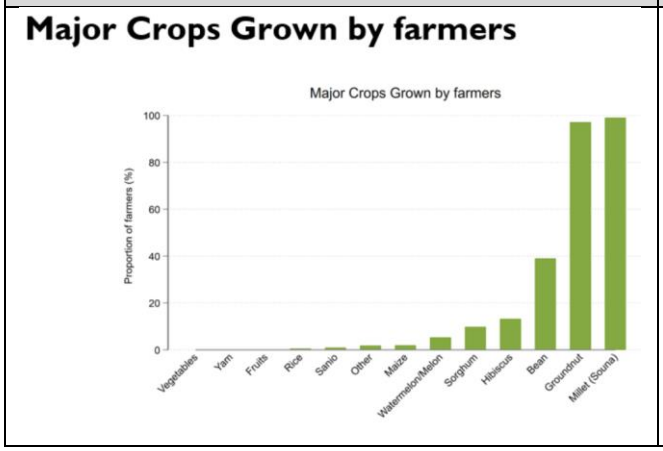
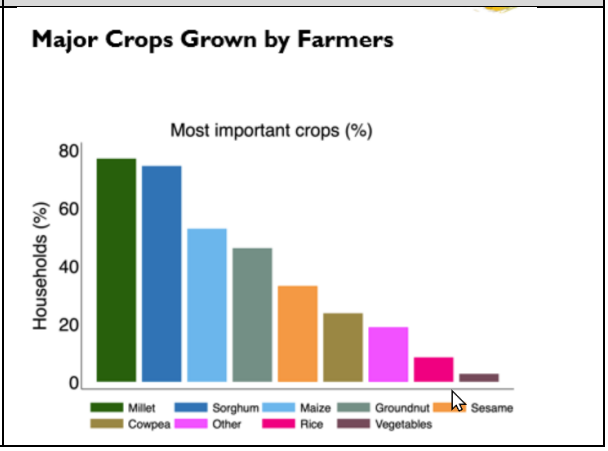
It was within work package 2 (WP2 – Participatory innovation design and capacity development) to deal with market development and unveiling limiting factors of agroforestry adoption to contribute to economic development; the plan stated it as follows: "All biophysical

research, demonstration and piloting activities of SustainSAHEL will depend on the dynamics and outputs of WP2 coordinated situational analysis and IPs installed at the seven sites. Farmers, farmer organizations active in their respective value chains (and member organizations of the leading national umbrella producer federations), as well as project researchers, extension, and advisory services, will be the key stakeholders. **WP2 will a) identify existing CSL integrated systems and value chains in the study sites**, b) identify the preliminary constraints for SI and consequences for productivity and soil quality, c) facilitate the co-development of strategies to intensify the integration of CSL systems, and d) strengthen capacities of advisory services and farmers organizations for efficient promotion of CSL systems. "

This was the intention. After almost five years, we must admit that not all our intentions could be realized. The time was too short to realize the full potential.

However, almost at the end of the 5-year project phase, we are confident that the overall expectations can be met. We stated them in the following words (p.10): "SustainSAHEL's successful implementation will provide opportunities for start-up enterprises (e.g., nurseries for shrub and tree seedlings), increased quantities and qualities of products for local markets (e.g., fodder, wood) and for more efficient value chains with a strong position of the farmer organizations. The systemic cooperation between leading farmer unions and research institutes across the three countries represents a novel approach and holds promising prospects for success. This is because it is supported by specialists from Africa and Europe in the critical areas (soil sciences, livestock, modelling, agro-ecology, various strategic value chains (e.g., sustainable cotton), innovation, institution building, economics, sociology), working on four interrelated levels—field, farm, village, landscape/district."

We include in this introduction, as well, some first results from the impact assessment made by WP3[1], as they help in understanding the context of the changed yields by applying new technologies and innovations, and the relative importance of climate change as a risk factor to be addressed by farmers (Fig. 3).

Niakhar (Senegal)	**Koulikoro (Mali)**
	

[1] Presented in May 13 2025 at the last project yearly meeting in Dakar.

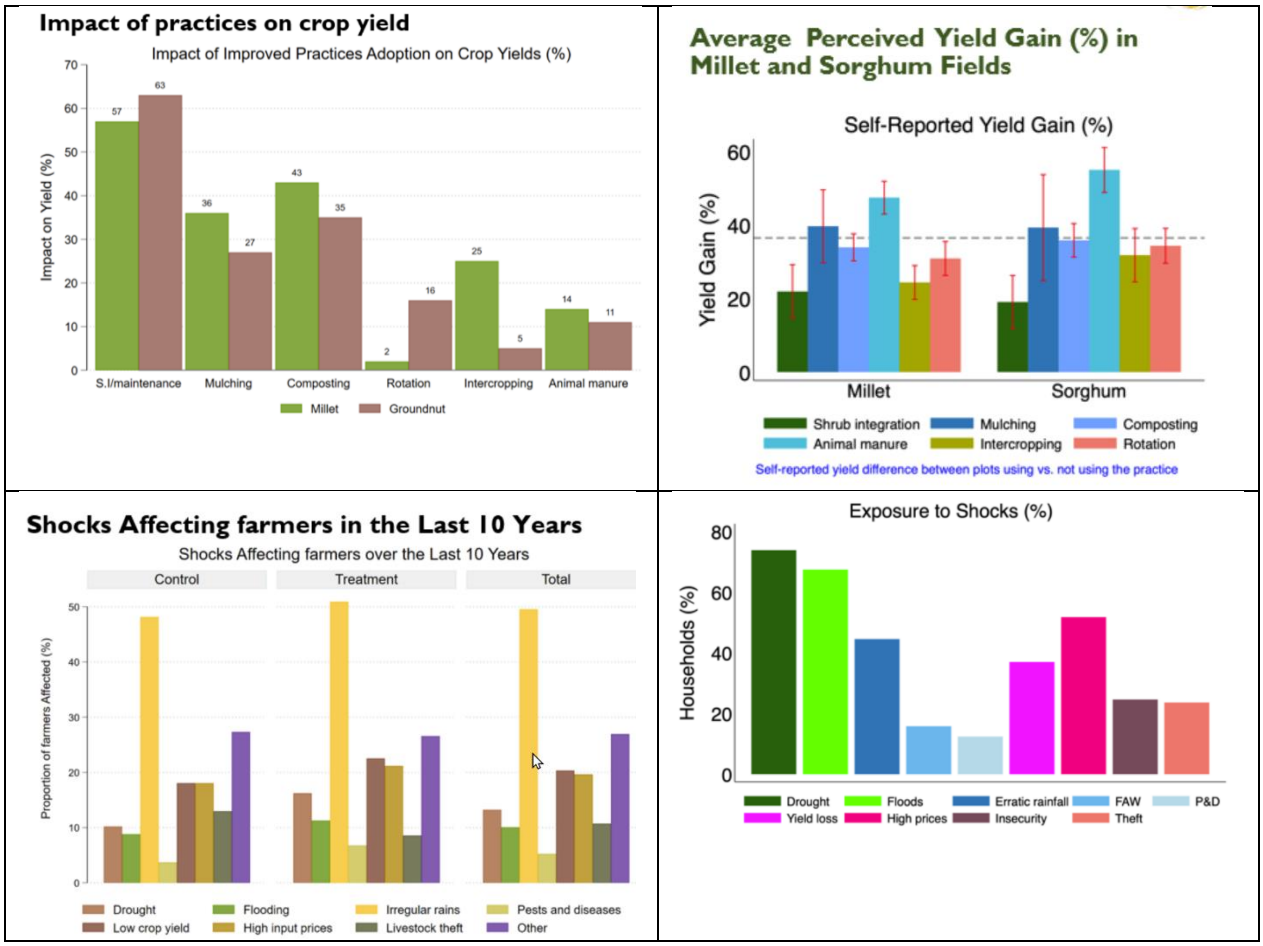


Figure 3: Selected results from the impact assessment done in Niakhar and Koulikoro. (i) Millet, groundnut and bean dominate in Niakhar, millet, sorghum and maize in Koulikoro. (ii) Yield increases from 20- to 60% were reported by farmers by the tested innovations. (iii) Wheater events (droughts, floods) were the main natural shocks reported by the farmers.

Finally, a related Delivery D2.2 needs to be recalled, understanding our perception on adoption constraints for agroforestry (or the integration of crops, shrubs, and livestock). This study, which we will refer to as SEC2A (Socioeconomic Constraints to Adoption), was conducted in 2022. “The ability of integrated crop-livestock-shrub systems (CLSP) to effectively contribute to the improvement of agricultural resilience in the Sahelian zone depends on their effective adoption by producers in a context where adoption of farming technologies and innovations are reputed to be generally very low. Based on data collected through interviews with a variety of producers (youth, women, adults, herders, and crop farmers) and other agricultural development professionals, as well as a literature review, the main constraints to CSLP adoption were highlighted and analyzed. The analysis was conducted according to the specific components of the CSLP system, as well as in a general manner on the system as a whole.

Our market study and limiting Factors (MLFS) can be viewed as a complementary survey and study to the D2.2 study, which examined the main socio-economic constraints to the adoption of CSLP (SEC2A). Table 1 provides a comparison of the two studies.

Tab.1: Comparison of the two studies done within WP2 related to limiting factors and markets

	SEC2A	**MLFS**
Year of the study	2022	2024/25
scales	Farm, villages, supply chain, policy	Individual and farm (micro), villages and supply chain (meso), policy and governance (macro)
Producer category and addressees	• Crop farmer adding livestock and shrubs (50) • Livestock farmer adding shrubs (20) • Agroforester adding crops and animals (20)	No distinction of farmer categories. Almost all participants were project insiders (research- or lead farmers, technicians, IP members, researchers. Inclusion also of non-producers, like traders, technicians, experts, researchers (generally knowledgeable people of the given site)
Involved sites	Niakhar and Saria	All 7 sites
Farmer social profile	yes	no
Gender perspective	yes	yes
List of constraints	See Tab 5 of D2.2. (p.15)	Various variables and lists (limiting factors, explanation of LF, being women, etc.)
Methods a) Collection of data b) Analyses of data	Individual interviews (f2f, by enumerators), FGD manually	Individual interviews (mainly virtual, filled out through mobile phones) (people without an Android get it done by the respective site manager) genAI (Perplexity chatbot)
Special topics covered, like specifications of VC	none	Key VC and market information, prices, number of buyers per product and site, role of FO, performance of IP, economic impact of the SS project, and suggestions for the past year.
n observations	90	93

A note on the notion of social facts and phenomena as distinct from physical phenomena

Humans are the visible part of social facts. For analytical purposes, the sciences distinguish between body and mind, as seen in the work of Descartes[2] (17th century). Out of this distinction, in Western societies, natural and social sciences have been differentiated since the

[2] Descartes however failed to see the relation of the (individual) mind with the other "minds", resp the inter-dependences created in time by the social interactions. Elias (2004) considers this as an undesirable development or accident ("wissenschaftliche Fehlentwicklung") inside sciences, which led to the split in natural and social sciences (p. XV).

17th century. Humans interact in and by nature, as they cannot survive as individuals. Interactions lead to increasingly stable and complex social patterns, ultimately giving rise to formations such as more stable settlements, clans, cities, and nations, which have emerged over the last 10,000 years and developed in conjunction with technological advancements and evolving concepts (like calendar, bonds, spirits, gods) and ideologies. But all social formations are relations. They are not material (and hence not part of the material space) but symbolic, embedded in human language. The human mind, as "me", transforms to "us", "them", and vice versa. This all occurs in a concrete physical environment (nature) and is linked to it (which we call, by tradition, "nature"), as the human mind is always bound to the human body. Therefore, we can envision social or symbolic spaces that are embedded or linked to physical and material spaces, co-evolving with them over time. These worlds – the material and the symbolic - interact. Farms, agriculture and calendar time, i.e. the social time identified by the given community or society in order to allow its members to orient inside the stream of time and so better address the threads of life, all these three concepts are social constructions and located in specific domains like production, reproduction, family and community, institutional and regulatory setups (Hebinck and van der Ploeg 1997).

Within this **social time-space**, we can identify social factors that explain the adoption of agroforestry using scientific methods. The bio-physical resp. ecological facts are the (material) base (like soils, weather/climate, landscape, natural resources, infrastructure built by humans or machines) for any human existence and hence a precondition for interactions of people, leading to sociological patterns or figurations. Already, farming practices are social. A scientific aim can be to understand and explain why farmers invest in their farms, specifically in measures that enhance soil fertility or promote agroforestry, or why they do not. The "why" questions are common in the social and human sciences, as social constructions— made out of many interactions —are often and typically purpose-made, in such a way that they can be mentally reconstructed. As sociological observers, we understand that farmers are not just individuals with a "me", but also members of groups with a "us" and a history or time-line. They are therefore not to be seen as pure and isolated individuals (as a chemist looks on an individual molecule or an agronomist on an individual cotton field), but always as humans-figurations with concrete and conscious social connections and interdependencies, forming groups or social systems in a preexisting pattern of interaction and socio-ecologic context of permanent transformation. We can call these groups or systems according to Elias (1978) "Figurations". Therefore, asking about and researching farmer behavior is, at the same time, looking for societal structures within a flow of social evolution and an open-ended approach towards the future. In this report and paper, we concentrate on markets as a form of social structure and hence social facts and phenomena.

Commodities are the key objects of markets in modern times. Following the above characterization of the social space, we can easily understand that marketed commodities are not just goods, but products of human labor, reflecting human relations between the creators of these goods and the owners of the means of production and/or the buyers as well as the

down-stream actors of the given value chain. This sociological perspective on commodities and markets allows us to uncover power relations and new insights into barriers and drivers of production- including the production of agroforestry-related commodities and practices.

Some design elements in project planning with a social dimension often go unnoticed, as they serve merely to the intended ends. Two elements need to be mentioned here in the context of SustainSAHEL: the concepts of Innovation platforms (IP) and the site managers. Both concepts were placed- theoretically informed[3]- locally in the heart of each site and implemented systematically over the 5-year duration. The principal or conceptual nature of the IP is, in the meantime, well known (Nicolay 2016) or uncontested (Fatunbi 2016). Both concepts function as institutions and are integral to the socio-ecological dynamics induced by the project. The IP served as the communication center at the site level, regrouping the involved stakeholders, including project researchers and officials. The site managers were both facilitators of the respective site and representatives of the country farm organization (CNCR in Senegal, AOPP in Mali, and CPF in Burkina Faso). With this project structure, the project could improve the probability of integrating biophysical and social/political/economic/cultural features and address a "holistic" approach towards addressing the potential of agroforestry at the site level. It was this structure that enabled the organization of the MLSF survey as an almost internal or expert-based endeavor, providing high-quality data and information.

The site managers were also key players in mobilizing the survey respondents. They, like other non-farmers, participated in the survey and, therefore, contributed to the findings of this research. This led to a relatively representative sample of respondents in relation to the involved SustainSAHEL stakeholders at the site level (Table 1b). The 14 declared female respondents against the 38 male respondents are underrepresented, reflecting the usual unrepresentativeness due to practical reasons (women are less involved in most dominant networks and social interactions)[4].

The stakeholder structure of the respondents is very similar to the real-life structure found in our seven sites. We estimate, therefore, that about 1/4 to 1/6 of the potential insiders of SustainSAHEL have participated in the survey, which is quite good considering the unfavorable season for such a survey.

[3] Just to mention Nicolay 2019 (see references)

[4] 12 respondents did not specify their gender category and not all indicated their social category.

Tab 1b: Breakdown by stakeholder type (based on self-description and institutional affiliation in the MLFS 2024)

Stakeholder Group	Approximate Number of Respondents	Example Roles/Institutions
Producers/Farmers	~24	Smallholder crop/livestock farmers, cooperative members
Traders/Market Actors	~6	Local traders, market association members
Processors (including women's groups)	~8	Shea butter makers, cereal processors, women's cooperatives
Producer Organizations/ Cooperatives	~10	Leaders/members of farmer/youth/women's organizations
Extension Agents/Advisors	~7	ANCAR (Senegal), project field facilitators
Researchers/Academics	~10	ISRA, INERA, IPR/IFRA, university staff
Development Project Staff	~7	Project coordinators, WP leaders, field agents
Government/Technical Services	~4	Local government, technical advisors
Financial Institutions/ Microfinance	~2	Microfinance, rural bank representatives
Youth/Women's Associations	~5	Young farmers, women's group leaders
Other Value Chain Actors	~4	Input suppliers, transporters, consumers

So, we retain in relation to social structure:

Most social interactions are based on time-bound and symbolic relations.

Our constructions made (IPs, processes built on the presence of the farmer organisations (FO) in the respective sites are part of the wider nature, here described as social reality shaping the actions and structures related to rural development, including agroforestry adoption.

This is why we call them infrastructure, as they build the (invisible) base of the local society and the invisible part of human nature- the mind.

Methodology

There is a need to focus on the interplay between principles and place-based practice, with the critical point being the concept of 'place'. This implies not only an agroecological setting (soil, water, climate, etc.), but also the social, i.e., interactional, institutional, economic, political, historical, and cultural contexts within which crops are grown and farming is

performed (Sumberg 2017)(p.156). All this can be seen as “nature” or at least as a positive (social) fact to be analyzed and interpreted (see previous chapter). This can be partially achieved through a social agronomy approach, which considers socio-economic, political, and cultural factors. Giller (2015) proposes a systems agronomy approach to address the complexities of the farming environment, such as the economy and other potential key limiting factors. Agroforestry and silvopastoral systems (AFSP) often involve integrating shrubs and trees into cropping and pastoral systems. The challenge addressed here is to assess the factors of adoption: do markets count if the knowledge of them is only rudimentary? What is the most promising VC in a given site, and how do the producers and buyers value them? What differences can be observed between men and women? These are all relevant questions that this relatively small and non-representative survey aims to address using qualitative methods.

With less unity of purpose, and in the more crowded, competitive, short-term, and impact-oriented funding context, development-oriented agronomy has become an altogether more contested and contentious space: the politics around agronomic knowledge is now less controlled and much more public. This new knowledge of politics around development-oriented agronomy is having important impacts on the discipline itself and on its ability to address the challenge of sustainably enhancing agricultural productivity. We propose here to go beyond the social agronomy, systems agronomy and development agronomy approaches, to better capture the social factors inside the social space.

In the social sciences, the idea that knowledge and evidence are inextricably linked to power and politics is now widely accepted. Robert Chambers’ simple question, ‘Whose knowledge?’ (Chambers 1983) reminds us of the existence of different “knowledges”, and the inherent limitations of thinking in terms of a single objective truth or reality. The political angle comes into play as individuals and groups selectively generate and/or use knowledge to establish, maintain or enhance their vested interests. The common and logical presumption in much of the literature on knowledge politics is that powerful actors are best placed to do this successfully.

A survey (MLFS) was done between June and October 2024 to “measure” the social factors of agroforestry adoption and the knowledge and features of the food and fiber markets inside the project sites. As of September 4, we had collected approximately 32 practical survey observations and stored them in a LimeSurvey cloud. Senegal had not yet started, and we expected another 30 replies. However, draft summaries of the most relevant variables were made available and shared on SharePoint (the project’s intranet). By October, 93 were completed, and 154 partially completed answers were received from all 7 sites, thanks to additional motivation campaigns. The site managers were the main catalysts in mobilizing participation in the survey. They served as facilitators for all respondents who required assistance with entering the data.

site

		Frequency	Percent
Valid	Kléla	25	26.9
	Koulikoro	5	5.4
	Koussanar	4	4.3
	Niakhar	23	24.7
	Ouarkhokh	8	8.6
	Saria	21	22.6
	Yilou	7	7.5
	Total	93	100.0

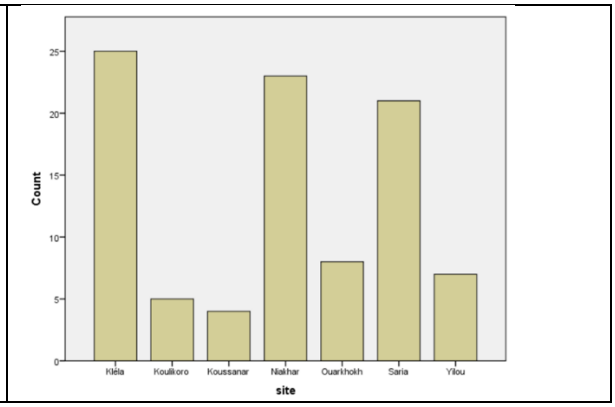


Fig.4: Unequal distribution of answers per site, where 4 sites provide less than 10 answers, but 3 sites (Kléla, Niakhar, Saria) outperform in mobilizing interviewees.

In the next step, after finishing with the MLFS survey, we tried to integrate at the project level some findings of the surveys (incl. the one done under WP3) and forward the recommendations made to project management over the last years. To note that most of the respondents were farmers involved in the project, as well as technicians, some researchers, and selected value chain actors from SustainSAHEL.

The survey data, including the codes, is accessible through this link. The over 50 core variables (see Annex 0) provide a rich data set with over 100 observations[5] from all 7 distinct sites across the 3 countries. In the first step, a familiarization with the data and initial interpretations was undertaken. The low number of observations did not qualify for quantitative and statistical interpretation. Therefore, in a second round, and after incorporating more contextual knowledge and insights provided by the last project's annual meeting this year in Dakar (May 13-16), most of the results were generated by applying a Deep Learning model-based GPT (Perplexity) to the survey data. The AI chatbot of Perplexity[6] was used as a "co-worker" and assistant to interpret selected relations of the relevant variables and provide readable outputs.

The use of AI in qualitative research in social sciences dates back over 40 years (Gerson 1984, Denzin and Lincoln 2017), but still encounters resistance in research. Particularly, the use of AI in qualitative research needs an active involvement of the researcher and critical use of the generated AI outputs (Christou 2023). We consider this tool (AI) as an additional tool to facilitate research tasks (Hamilton, Elliott et al. 2023), such as interpreting complex Excel-based survey data with primarily qualitative components, which requires qualitative research methods, as seen in our MLFS 2024.

[5] Only 95 complete sets of observations (see also Tab.5)

[6] We asked the ChatGPT chatbot (27.6.25) if Perplexity would be better than him/her self. The answer was (summarized): "Perplexity gives concise, cited explanations with lower hallucination risk [than ChatGPT]. A strong point is its source discovery and researching facts." Its final advice: "**Use Perplexity** to **find sources, recent papers, and facts.** Then **use ChatGPT** to **read, explain, summarize, and write** based on those."

Results

Results on the market situation and market knowledge

The value chains and markets are not a primary concern, as can be inferred from the expressed needs in Year 1 (Table 2; source: D2.1). Underlying issues, such as low soil fertility or cross-cutting social challenges (e.g., conflicts, lack of institutions or regulations), dominate expectations.

Table 2: Requested innovations by the farmers/producers in the 7 areas in year 1 (2020/21)

Niakhar	Ouarkhokh	Koussanar	Koulikoro	Kléla (Sikasso)	Saria	Yilou
Feed Forrage production Spacial distribution of shrubs Nurseries Conflict management Artificial insemination (for milk)	Restablish the pasture (couloir) Sensitation against abusive tree cutting Fight agains Diodia scandens (weed) Training on compost Forrage production	Optimize shrubs on fields ; Alternative ways to burn waste; Make compost; Fencing of fields for protection and biomass; Integration of legumes in the rotations (fields); Application of the local GRN convention ; Iimproved fallow Achieve organic cotton yields of 1.0 t/ha (instead of 0.3)	Shrub fodder; soil fertilization with shrubs (gliricidia, 0thers); Livestock feeding; Better crop rotations (Niebe-cereals; others); Village forests; Better protection of shrubs in the field and in the bush; Production of good compost /manure and its application; Conventions on good NR managt	Shrub fodder; Soil fertilization with shrubs (gliricidia, oths); Livestock feeding better crop rotations (cowpea-millet etc); Better protection of shrubs in area; Production of good compost/ manure and its application; Combine water conservation with livestock watering; NRM conventions	Spacial distribution of shrubs Forrage production; ISFM and soil conservation Nurseries; Use certain crops as feed; Pruning composting	Conflict management farmers/herders Against abusive tree cutting Management common pasture Find leguminous for cereal rotation; Enclosure with shrubs; Better use of Pilostigma for ISFM Support for women on ISFM

At every site, we have at least four relevant value chains (VCs) with significant gender differences related to producer priorities (Tab.3).

Table 3: Overview of the value chains in the seven sites.

Site and VC expectations in 2021	Priority VC (Priority 1; P2)	Preferences for women-farmers
Niakhar **Chaines de valeurs à appuyer:** 1 farine de mil 2 niébé 3 embouche	P1: Mil, arachide, niébé P2: pastèque, lait	Mil Maraichage
Ouarkhokh **Chaines de valeurs à appuyer:** 1 lait (et/ou ev. embouche) 2 mil 3 ev. Niébé, pastec	P1: viande, arachide P2: lait, (gomme arabica; pour les investisseurs étranger)	Lait / viande [viande de poule] Arachide
Koussanar	P1: mil, maïs P2: élevage, maïs, coton	Fonio, riz, mil,

Chaines de valeurs à appuyer: 1 coton (bio) et arachide 2 céréales (Fonio (bio?), sorghum, Petit mil, . Ev aussi arachide bio? 3 embouche? Lait?		Céréales, arachide, sesame [Produits bio (fonio, textiles-coton)]
Koulikoro Chaines de valeurs à appuyer: 1 élevage/embouche 2 Sésame/céréales (So, Mi, Ma)	P1: Mil, maïs, arachide P2: viande, sorgho	[Maraichage] Mil, arachide, maïs
Kléla Chaines de valeurs à appuyer: 1 coton durable 2 mil-niébé 3 embouche?	P1: coton, maïs, riz P2: riz, viande, pomme de terre	Riz (au lieu de coton) [seulement le coton bio est produit par les femmes ; actuellement faible niveau]
Saria Chaines de valeurs à appuyer: 1 embouche (petit-ruminants, bovins, porc, poulet/volaille) 2 sorgho (balnc et rouge) ?	P1 : Sorgho, niébé, viande porcine P2: niébé, mil	[embauche bovine], sorgho, arachide Volaille, niébé
Yilou Chaines de valeurs à appuyer: 1 embouche bovine et ovine 2 céreale (sorgho, mil, maïs) 3 arachide et sésame; niébé	P1: Sorgho, viande porcine P2: mil, maïs	Sorgho, viande porcine Niébé, arachide

The reported prices are as follows (Tab. 4):

Tab.4: Mentioned prices by the respondents (in FCFA). Please note that prices may vary by site, season, and market structure.

Product	Typical Price (FCFA)	Unit	Notes on Seasonality/Context
Sorghum	200 – 300	per kg	Higher during lean season (June–September), lower after harvest
Millet	250 – 400	per kg	Peaks June–September, lower after harvest
Maize	125 – 300	per kg	July–August, often used for animal feed
Groundnut	200 – 300	per kg	June–July, varies by region
Shea nut	250 – 300	per kg	August–September, processed into shea butter
Meat (small ruminants)	1,500 – 2,000	per kg	Higher during religious festivals, lower otherwise
Milk	300 – 400	per liter	Local, some seasonal variation
Onion	300	per kg	August–September, price fluctuates
Potato	250 – 500	per kg	August–September, strong regional variation
Tree seedlings	500 – 1,000	per seedling	Highest during dry season (April–May)
Cotton	210 – 375	per kg	Price often set by state company
Rize	400	per Kg	
Gum (arabica)	Spray-dried Senegal gum arabica (higher grade): US $2.00–2.50 per kg FOB Europe		

The following remarks are based on the provided information on the commodity prices of relevance:

- Prices are indicative and can fluctuate significantly depending on site, season, and market organization.
- The "lean season" (June–September) sees the highest prices for staple grains like sorghum and millet; prices drop after the harvest.
- Meat and milk prices peak during festive periods and may be higher in urban markets.
- National authorities or state companies usually fix cotton prices. (CMDT in Mali)
- Seedling prices are highest in the dry season due to increased demand for planting.

Few products are processed. Shea butter is an exception, as it is a very common, traditionally produced commodity that is often made by women in the Sahel region. Most products are sold immediately after harvest to meet financial needs, when prices are at their lowest.

We find, therefore, diversified sets of produce markets, with significant differentiation according to gender and with relatively low levels of local processing. The producers do not accept the fact that "markets find their prices", but rather expect price interventions by the state or support in negotiations by the farmer organizations.

From whom do you expect most in developing market potential?

This question[7] aims to determine whether expectations are more internal (farmers, cooperatives, FO) or external (traders, investors, government). The answers are clear. Respondents identify the actors they believe are most responsible or have the most significant potential to drive improvements in local market development[8]. The main patterns in the answers are:

1. Producer Organizations and Cooperatives

- Many respondents **expect the most from local producer organizations, cooperatives, and farmers' groups**. They see these as crucial for organizing collective sales, improving bargaining power, and facilitating access to market information and credit.
- Example: "Les OP doivent mieux s'organiser surtout au moment des ventes de leurs produits."

2. Government and Local Authorities

- A significant number of respondents mention government agencies (national and local), technical services, and local authorities as key actors. They are expected to provide infrastructure, regulate markets, support market access, and ensure fair pricing.
- Example: "Les autorités locales doivent faciliter l'accès aux marchés et soutenir la création d'infrastructures."

3. Traders and Buyers

- Some expect traders, buyers, and market intermediaries to play a more constructive role, especially in setting fair prices and ensuring transparent transactions.
- Example: "Les commerçants doivent fixer des prix justes et respecter les accords avec les producteurs."

[7] The variable **C3** (attent_acteurs) asks: "De quels acteurs attendez-vous le plus pour améliorer le développement du marché local ?" ("Which actors do you expect the most from to improve local market development?").

[8] Source: MLFS_allResponses_raw_annonym_clean1.xlsx, sheet "Les marchés des sites de Susta", variable C3 (attent_acteurs)[1] MLFS_allResponses_raw_annonym_clean1.xlsx

4. NGOs and Development Projects

- Several respondents highlight the role of NGOs and development projects (like SustainSahel) in providing training, supporting innovation, and facilitating market linkages.
- Example: “Les projets doivent continuer à renforcer les capacités des producteurs et faciliter la mise en relation avec les acheteurs.”

5. Financial Institutions

- A few mention microfinance institutions and rural banks as important for providing access to credit, which is essential for market participation and investment.

6. Extension and Technical Services

- Agricultural extension services are expected to provide technical support, market information, and training on commercialization strategies.

The buyers are seen as key actors and often as the main hurdle in market development (see more below and Tab.5). The farmers regret the lack of market and price control.

Summary Table: Main Actors Expected to Improve Local Market Development

Actor Group	Typical Expectations/Role
Producer organizations/coops	Organize sales, improve negotiation, share information
Government/local authorities	Provide infrastructure, regulate, support market access
Traders/buyers	Ensure fair prices, transparent transactions
NGOs/development projects	Training, innovation, market linkages
Financial institutions	Provide credit and financial services
Extension/technical services	Technical support, market information, training

Overall Interpretation

Respondents see market improvement as a shared responsibility but expect the strongest leadership from producer organizations and local authorities, with important supporting roles for traders, NGOs, and technical services. The emphasis is on better organization, infrastructure, fair pricing, and capacity building. Particularly, the farmers expect more from their organisations (FO, cooperatives).

Summary Table: Main Actors Expected by Country

Country	Most Expected Actors for Market Development
Mali	Producer organizations/cooperatives, banks/microfinance, government
Burkina Faso	Producer organizations/cooperatives, government/technical services, NGOs/projects
Senegal	Multi-actor collaboration: producer organizations, technical services, traders, local authorities

All three countries view producer organizations as crucial to further developing their markets, but Mali emphasizes the importance of credit and collective action, Burkina Faso stresses the roles of government and NGOs, and Senegal highlights the need for multi-actor collaboration and the value of dialogue between producers, traders, and technical services.

Organizing sales, intervening in price negotiations with buyers, sharing market information, promoting market infrastructure, and supporting market access are the most frequently mentioned activities required to improve market conditions.

What is concretely proposed to the farmer organizations, and based on what expectations?

Based on the responses to variable **A5 (rôle_OP)** in the dataset (column "rôle_OP"), here is an interpretation of how respondents assess the current role of Farmers' Organizations (FOs, or OPs – Organisations Paysannes) in value chain (VC) development, along with their leading suggestions for improvement[9]:

Current Role of Farmers' Organizations in Value Chain Development

1. Structuring and Organizing Producers

- FOs are widely recognized for organizing producers into groups or cooperatives, which facilitates collective action, group sales, and better negotiation with buyers.
- They help coordinate production, storage, and sometimes processing, making it easier for members to access markets.

2. Access to Inputs and Credit

- Many respondents highlight the FO's role in facilitating access to agricultural inputs (seeds, fertilizers) and sometimes credit, either directly or by acting as guarantors with microfinance institutions.

3. Training and Capacity Building

[9] Source: MLFS_allResponses_raw_annonym_clean1.xlsx, sheet "Les marchés des sites de Susta", variable A5 (rôle_OP)

- FOs provide or coordinate training on technical production, post-harvest handling, and sometimes business skills, helping members improve productivity and product quality.

4. Advocacy and Representation

- FOs are seen as important in representing producers' interests to government, projects, and buyers, and in advocating for better prices, supportive policies, and infrastructure.

5. Market Linkages and Price Negotiation

- They play a key role in linking producers to buyers, organizing collective sales, and sometimes negotiating prices on behalf of members.
- Some respondents mention that FOs help reduce the influence of intermediaries and improve market transparency.

According to our observations, most FO lack both financial and human resources to meet the critical expectations, mainly points 1, 2, and 5

Main Suggestions for Improving the FO Role

- Strengthen Internal Organization and Leadership

- Respondents suggest FOs need better internal management, clearer leadership, and more transparent governance to be more effective.

- Improve Market Information and Communication

- FOs should play a stronger role in gathering and sharing market information (prices, demand trends) with members.

- Expand Training and Support

- There is a call for more training on negotiation, marketing, and value addition, as well as technical innovation and digital tools.

- Foster Collective Sales and Standardize Pricing

- Suggestions include organizing more group sales points, standardizing prices, and facilitating contractual relationships with buyers.

- Enhance Access to Credit and Inputs

- FOs should negotiate better terms with input suppliers and financial institutions and help members access credit more easily.

- Increase Inclusion of Women and Youth

- Several responses call for greater involvement and empowerment of women and young people in FO activities and leadership.

Illustrative Quotes from Respondents

- "Les OP doivent mieux s'organiser surtout au moment des ventes de leurs produits. Il faut trouver des lieux de vente groupés afin d'avoir un prix de vente standard."
- "Le rôle de l'OP est d'accompagner les producteurs sur tous les processus de production, de la fourniture d'intrants jusqu'à la consommation."
- "Les OP doivent davantage former leurs membres, faciliter leur accès aux intrants, travailler à la maîtrise des prix..."
- "Renforcer les capacités des coopératives pour qu'elles deviennent de véritables relais d'information et de négociation."

Summary Table: Role and Suggestions for FOs in VC Development

Current Roles of FOs	Suggestions for Improvement
Organizing producers	Strengthen internal management
Facilitating input/credit access	Improve market information sharing
Training/capacity building	Expand training (marketing, negotiation)
Advocacy and representation	Foster collective sales, standardize pricing
Market linkages/price negotiation	Enhance access to credit and inputs
	Increase inclusion of women and youth

In summary:

Farmers' Organizations are seen as central to value chain development, but respondents urge improvements in organization, training, information sharing, and inclusivity to maximize their impact.

The gap between expectations and delivery related to market development sheds light on a critical structural weakness which may be generable for the Sahel region: the weak financial and human resource base of farmer organisations and their associated cooperatives and associations.

Policy recommendations made by the respondents on improving market conditions.

The survey participants made a range of policy recommendations[10] to address agricultural and market challenges in Mali, Burkina Faso, and Senegal. These recommendations are grounded in their direct experiences and reflect both structural and practical needs.

Main Policy Recommendations

1. Strengthen Producer Organization and Market Structure

- Support the organization of producers, especially for collective sales and negotiation, to improve their bargaining power and reduce the influence of intermediaries.
- Facilitate the creation of cooperatives and innovation platforms at local and regional levels to enable knowledge sharing, collective action, and improved access to markets.

2. Improve Access to Credit and Inputs

- Develop policies that make credit and financial services more accessible, especially for women and youth, by reducing collateral requirements and supporting rural microfinance.
- Ensure better access to quality seeds, fertilizers, and other agricultural inputs through subsidies or targeted distribution programs.

3. Enhance Market Information Systems

- Establish or strengthen market information systems (MIS) that provide producers with timely and accurate data on prices, demand, and market trends.
- Use accessible communication channels (radio, mobile phones, community networks) and train producers to use and interpret market information.

4. Invest in Infrastructure

- Invest in rural infrastructure, such as roads, storage facilities, and processing units, to reduce post-harvest losses and enhance market access.
- Support the construction and rehabilitation of collective storage and market centers.

5. Promote Value Addition and Local Processing

- Encourage the development of local agro-processing industries to add value to raw products, create jobs, and increase rural incomes, especially for women's groups.

[10] Answer generated by Perplexity on the question "what was suggested to stimulate market development (see variable" suggest_nouvellesActivité_stimMarché")

- Provide training and support for quality control, certification, and product standardization.

6. Address Gender Inequalities

- Implement policies that facilitate women's access to land, credit, and decision-making roles in producer organizations.
- Recognize and support the entrepreneurial capacity of women, especially in processing and retail, by addressing structural barriers and providing targeted empowerment programs.

7. Facilitate Dialogue and Advocacy

- Foster regular dialogue between producers, traders, policymakers, and technical services to ensure that policies reflect local realities and needs.
- Strengthen the advocacy capacity of producer organizations to influence policy at local and national levels.

8. Support Climate-Resilient and Sustainable Practices

- Promote the adoption of climate-resilient agricultural techniques, agroecology, and agroforestry through policy incentives and training.
- Support research and extension services to disseminate innovations that enhance productivity and sustainability.

9. Secure Land Tenure and Resource Rights

- Clarify and secure land tenure, particularly for women and marginalized groups, to encourage investment and promote sustainable land management.

10. Encourage Market Diversification and Export

- Develop strategies to diversify markets, including the promotion of local and organic products, and facilitate access to regional and international markets.

These recommendations reflect a consensus among survey respondents that policy should be more inclusive, better targeted to local realities, and supportive of both production and commercialization. Special emphasis is placed on empowering women and youth, improving infrastructure, and ensuring that producers have the organization and information needed to compete in dynamic markets.

Now let's move on to the second topic of the survey, the limiting factors of adoption.

Results on Limiting factors for Agroforestry adoption

The refined analyses of social factors by SustainSAHEL

The RAMSESII project [11], a predecessor of SustainSAHEL, sees the leading causes of the current situation "as interlinked: with current population growth rates, food requirements are increasing rapidly, yields are insufficient and fallow periods are declining, while soil fertility and arable land are also declining, and tree regeneration reduces due to animal traction, drought and diseases, and excessive tree pruning and exploitation for forage and fuelwood" put stress on the agro-ecological systems. The objectives of the RAMSES II project try to counteract these trends by documenting conditions of sustainable changes in agroforestry practices that lead to the protection, regeneration, and densification of the woody cover in the annual crop-based agroforestry parklands of West Africa" (Seghieri, Brouwers et al. 2021).

Our survey has revealed more detailed information on limiting factors and, compared with RAMSES, has focused more on structural change (economic, institutional, and political), extending beyond the farming sector. The Perplexity outcome of the survey reports the following:

"The main limiting factors to the adoption of agroforestry, as identified by survey participants across Mali, Burkina Faso, and Senegal, are economic, technical, institutional, and environmental. These factors are consistently highlighted in the dataset and reflect the realities faced by producers and stakeholders."

Key Limiting Factors to Agroforestry Adoption

Limiting Factor	Description/Examples	Source/Location Example
Economic Constraints	- High initial costs for seedlings, equipment, and labor - Limited access to credit or subsidies - Producers often lack financial resources to invest, especially for long-term returns	Saria, Yilou (Burkina Faso); Kléla, Koulikoro (Mali)[1]
Delayed Return on Investment	- Benefits from agroforestry (e.g., increased soil fertility, wood, fruit) take years to materialize - Producers prefer quick returns for immediate needs	Saria (Burkina Faso); Koulikoro (Mali)[1]

[11] Roles of Agroforestry in sustainable intensification of small farMs and food SEcurity for SocIetIes in West Africa. Features: This project (i) Catalyzed community-led land and resource management, essential for durable rural development; (ii) Encouraged the integration of traditional knowledge with scientific insights, making innovations more culturally acceptable and scalable, and (iii) Reinforced the idea that sustainable intensification is not only about yield but also about empowering people, improving social equity, and preserving the environment.

Technical Knowledge and Training Gaps	- Lack of awareness or understanding of agroforestry techniques - Insufficient training on planting, maintenance, and integration with crops/livestock	Saria, Yilou (Burkina Faso); Kléla (Mali)[1]
Access to Quality Inputs	- Limited availability of high-quality seedlings, seeds, and planting material - Difficulties in sourcing or affording necessary inputs	Saria, Yilou (Burkina Faso)[1]
Land Tenure and Resource Rights	- Insecure land tenure discourages long-term investments like tree planting - Women and youth especially face barriers to land access	Saria, Yilou (Burkina Faso); Koulikoro (Mali)[1]
Labor and Time Constraints	- Agroforestry establishment and maintenance require significant labor and time - Competing demands (household, other crops) limit adoption	Kléla, Koulikoro (Mali)[1]
Cultural and Social Factors	- Preference for traditional farming systems - Reluctance to change established practices - Need for community and family buy-in	Multiple sites[1]
Institutional and Policy Barriers	- Weak extension services and lack of technical support - Limited government incentives or policy support for agroforestry - Poor organization among producers	Saria, Yilou (Burkina Faso); Kléla (Mali)[1]
Market Uncertainty	- Uncertain or underdeveloped markets for agroforestry products (timber, fruit, fodder) - Lack of guaranteed buyers or price information	Kléla, Koulikoro (Mali)[1]
Environmental and Climatic Risks	- Drought, poor soils, and unpredictable rainfall can threaten young trees - Climate variability increases perceived risk	Saria, Yilou (Burkina Faso); Kléla (Mali)[1]

Illustrative Quotes and Details from the Survey

- "Producers evaluate mainly the short- and medium-term economic profitability of agroforestry techniques before adopting them. Techniques that significantly increase yields, income, or resilience to climate shocks are adopted more easily."
- "Access to quality inputs (seeds, seedlings, equipment) is a key factor. Local availability at affordable prices is also crucial."

- "Land tenure security and access to natural resources are essential for encouraging investment in agroforestry."
- "Adequate training and support are necessary, as well as financial incentives (subsidies, credits)."
- "The involvement of women and youth, and the mobilization of community organizations, are important for collective adoption."

Summary

"The adoption of agroforestry is limited by a combination of economic barriers (costs, delayed benefits, credit access), technical gaps (knowledge, training, input access), insecure land tenure, labor constraints, weak institutional support, cultural preferences, market uncertainty, and environmental risks. Addressing these factors through targeted training, improved access to inputs, secure land rights, financial incentives, and stronger extension services is critical for wider adoption of agroforestry in the region." Annex 3 provides a similar output but is ordered according to economic and social factors.

In one question (A4[12]), we asked to rate twelve options[13] of limiting factors from 10 (very important) to 2 (not important at all) or even 1 (no factor at all). The main finding:

- "Buyers who set prices," "National policy," and "Lack of access to credit" are top barriers for both genders.
- Women mention "Discrimination against women" and "Lack of access to credit" more frequently than men.
- Other relevant differences between women and men (however, to note that we have no statistical relevance here, the results have to be taken with caution and are just indicative): women mention almost every factor more than men.

We see that the respondents have very detailed and precise perceptions of the various social factors influencing AF adoption. They also appreciate being asked openly and allowed to express themselves. These factors constitute patterns that should be taken seriously and addressed through follow-up actions and subsequent projects. We can already see a clear differentiation in perception between women and men. The separation between economic and social factors appears somewhat academic to the respondents.

[12] « Quels sont les facteurs limitants d'après vous qui empêchent le développement rural et économique du site? Regarder ici au-delà des filière. ». See more details in the survey data under « codes ».
[13] These 12 options were developed in a participative way by the responsible team of WP2 and based on our socioeconomic knowledge and assumptions of the sites and Sahel countries.

Tab.5: gendered rating of 12 given limiting factors by the respondents

men			women		
Rank	Factor (English)	% Mentions (Men)	Rank	Factor (English)	% Mentions (Women)
1	Buyers who set prices	83%	1	Buyers who set prices	91%
2	National policy	80%	2	Lack of access to credit	88%
3	Lack of access to credit	77%	3	National policy	85%
4	National economy	72%	4	National economy	80%
5	Local policy	66%	5	Local policy	76%
6	Lack of info on national policy	60%	6	Lack of info on national policy	73%
7	Lack of info on local policy	58%	7	Lack of info on local policy	70%
8	Lack of attractiveness for youth	53%	8	Lack of attractiveness for youth	67%
9	Education	50%	9	Discrimination against women	65%
10	Discrimination against women	38%	10	Education	62%
11	Other discrimination	33%	11	Other discrimination	47%
12	Other	28%	12	Other	34%

More information with citations on this issue is found on annex 4.

Key factors determining producers' decisions to adopt agrosilvo-pastoral techniques

Based on your dataset and the codebook (variable A8 / fact_décisionProdAdop),[14] respondents were asked: "In your opinion, what are the key factors determining producers' (agricultural) decisions to adopt agrosilvopastoral (agroforestry) techniques?"

[14] Source: MLFS_allResponses_raw_annonym_clean1.xlsx, sheet "Les marchés des sites de Susta", variable A8 (fact_décisionProdAdop) and code_Frage sheet.

Interpretation of the Responses

The open responses in A8 reveal several recurring themes and factors that producers consider most important when deciding whether to adopt agroforestry or agrosilvopastoral techniques:

1. Economic Profitability

- Producers prioritize whether the technique will increase their income or yield, especially in the short and medium term.
- If the perceived or demonstrated economic return is low or delayed, adoption is less likely.

2. Access to Inputs and Resources

- Availability and affordability of quality inputs (seeds, seedlings, fertilizers, equipment) are crucial.
- Producers are more willing to adopt when inputs are easily accessible and reasonably priced.

3. Compatibility with Existing Practices

- Techniques that fit well with traditional knowledge, existing cropping systems, and local farming practices are more readily adopted.
- If a new technique requires drastic changes or is seen as too complex, adoption rates drop.

4. Land Tenure Security

- Secure access to land and natural resources strongly influences willingness to invest in long-term agroforestry practices.
- Uncertain land rights or risk of losing land discourages adoption.

5. Technical Support and Training

- Access to extension services, training, and ongoing technical support is seen as essential for successful adoption.
- Producers want to understand how to implement and maintain new techniques.

6. Social Dynamics and Peer Influence

- Seeing positive results from neighbors or local "champions" encourages adoption ("demonstration effect").
- Community organization and peer support can facilitate collective uptake.

7. Risk Perception and Climate Factors

- If a technique is perceived as risky (e.g., due to climate variability or lack of proven results), producers are hesitant.
- Techniques that improve resilience to climate shocks are more attractive.

8. Credit and Financial Incentives

- Access to credit or subsidies can tip the balance in favor of adoption, especially for resource-poor producers.

9. Gender and Youth Considerations

- Some responses note that women and youth face additional barriers (land, credit, information), so these constraints shape their adoption decisions.

Summary Table: Main Factors Determining Adoption Decisions (A8)

Factor	Typical Rationale from Respondents
Economic profitability	Will it increase income/yield quickly?
Access to inputs/resources	Are seeds, seedlings, equipment available and affordable?
Compatibility with practices	Does it fit with what I already do?
Land tenure security	Is my investment safe on this land?
Technical support/training	Will I get help to learn and maintain the technique?
Social/peer influence	Have I seen others succeed with it?
Risk/climate factors	Is it risky? Does it help with drought or poor soils?
Credit/financial incentives	Can I get a loan or subsidy to start?
Gender/youth constraints	Are there extra barriers for women or young people?

In summary:
Producers' adoption decisions are primarily driven by economic incentives, access to resources, compatibility with local practices, and support systems. Social proof and risk perception also play significant roles, and special attention is needed for gender and youth barriers. Women and youth are recognized as the most prominent groups or categories that require additional support.

To exemplify the nuanced answer to this pertinent question, below are 10 replies in both French and translated into English (answers 7-10 were reformulated).

1. **“Les producteurs évaluent principalement la rentabilité économique à court et moyen terme des techniques agrosylvopastorales avant de les adopter. Les techniques qui permettent d'accroître significativement les rendements, les revenus ou la résilience face aux aléas climatiques seront plus facilement adoptées.”**

   Producers mainly evaluate the short- and medium-term economic profitability of agrosilvopastoral techniques before adopting them. Techniques that significantly increase yields, income, or resilience to climate shocks are more easily adopted.

2. **“L'accès facilité aux intrants nécessaires (semences, plants, équipements, etc.) est un facteur clé pour l'adoption des techniques. La disponibilité locale de ces intrants à des prix abordables est également déterminante.”**

   Easy access to necessary inputs (seeds, seedlings, equipment, etc.) is a key factor for adoption. Local availability of these inputs at affordable prices is also decisive.

3. **“Les producteurs sont plus enclins à adopter des techniques qui s'intègrent bien dans leurs systèmes de production existants. La compatibilité avec leurs savoirs et savoir-faire traditionnels facilite l'appropriation des nouvelles techniques.”**

   Producers are more likely to adopt techniques that fit well into their existing production systems. Compatibility with their traditional knowledge and practices facilitates the uptake of new techniques.

4. **“La sécurité d'accès et d'exploitation des terres, des pâturages et des autres ressources naturelles est primordiale pour inciter les producteurs à investir dans des techniques agrosylvopastorales. Les conflits fonciers et d'usage des ressources freinent l'adoption de ces techniques.”**

   Secure access to land, pastures, and other natural resources is essential for encouraging producers to invest in agrosilvopastoral techniques. Land and resource use conflicts hinder adoption.

5. **“Un encadrement et une formation adéquats des producteurs sur les techniques agrosylvopastorales sont essentiels. L'accès à des incitations financières (subventions, crédits) peut également favoriser l'adoption de ces techniques.”**

   Proper guidance and training for producers on agrosilvopastoral techniques are essential. Access to financial incentives (subsidies, credits) can also promote adoption.

6. **“L'implication et la prise en compte des besoins spécifiques des femmes et des jeunes dans la diffusion des techniques agrosylvopastorales sont déterminantes. La**

mobilisation et l'engagement des organisations communautaires facilitent l'adoption collective de ces techniques."

Involving and considering the specific needs of women and youth in the dissemination of techniques is crucial. Mobilization and engagement of community organizations facilitate collective adoption.

7. **"Le suivi technique des producteurs leur permet de mieux comprendre les avantages des activités et de les adopter. Le faible pouvoir financier des producteurs peut les amener à ne pas adopter une technologie même s'ils sont conscients des avantages."**

   Technical follow-up allows producers to better understand the advantages of activities and adopt them. Low financial capacity can prevent adoption even if benefits are recognized.

8. **"La méconnaissance de la technique, l'accès au foncier, l'appréciation de la technique par l'exploitation familiale, le degré de réponse de la technique à l'aspiration du producteur, la faible implication des producteurs au processus de mise au point de la technique, le coût de la technique, l'accès à la technique, l'intégration sociale de la technique."**

   Lack of knowledge, land access, family appreciation, the degree to which the technique meets producers' needs, low involvement in development, cost, access, and social integration all play a role.

9. **"La performance de l'innovation, la disponibilité du personnel pour la diffusion de la technique, la pression des pairs."**

   The performance of the innovation, the availability of personnel for dissemination, and peer pressure.

10. **"Le temps de travail, plus le temps de travail est élevé, plus la technique demande plus de main d'œuvre et moins la technique est adoptée."**

    The required labor: the more labor-intensive a technique is, the less likely it is to be adopted.

These answers capture the diversity and nuance of producer perspectives on adoption, highlighting the economic, technical, social, and institutional factors at play.

Gender issues and women more affected by structural and social barriers

There are clear gender-related differences in how men and women participate in agricultural markets and commercialize products in Mali, Burkina Faso, and Senegal, as expressed in the survey responses.

Gender Differences in Market Roles and Challenges and Women's Role in Commercialization and Transformation

Women are described as a crucial link in the food value chain, particularly dominating the processing sector. They are often involved in transforming raw agricultural products into value-added goods (e.g., processing shea nuts into butter, making local drinks or snacks from cereals).

In Senegal, for example, women are noted to be dominant in processing but face disadvantages in market commercialization due to heavy domestic workloads and family roles, which can limit their ability to engage fully in market activities.

Advantages for Women

Women often have strong social and family networks, which can help in accessing suppliers and customers.

They are recognized for their adaptability, flexibility, and effective management of small-scale retail trade.

Their reputation for reliability and honesty sometimes makes it easier for them to obtain supplier credit

Challenges and Disadvantages for Women

- Women generally face more difficulty accessing credit and financing compared to men, which restricts their ability to expand their businesses.
- They often have limited access to infrastructure and land, making it harder to establish themselves in favorable conditions.
- Family and domestic responsibilities fall mainly on women, restricting their mobility and time available for commercial activities.
- Gender-based discrimination and stereotypes can limit recognition of women's skills and contributions

Market Segmentation by Gender

- In Senegal, women are particularly important in the sale of horticultural products but are mostly involved in retail, not wholesale or livestock trading. For example, in the small ruminant sector, women are largely absent from commercialization.

In Burkina Faso and Mali, women are more likely to be engaged in small-scale trade, local processing, and retail sales, while men are more often involved in large-scale trading and livestock markets.

Summary Table: Gender Differences in Market Participation

Aspect	Women	Men
Primary roles	Processing, retail sales, small-scale trade	Wholesale, livestock, large-scale trade
Access to credit/finance	More limited	Generally better
Access to land/infrastructure	More limited	Generally better
Time/mobility	Restricted by domestic/family duties	Fewer restrictions
Market sectors	Horticulture, cereals (retail), processing	Livestock, wholesale, cereals (bulk)
Noted advantages	Social networks, reliability, adaptability	Market power, mobility
Noted disadvantages	Discrimination, heavy domestic workload	Fewer barriers

Conclusion

While women play a vital role in agricultural value chains—especially in processing and retail—they face significant structural barriers compared to men in accessing credit, land, and market opportunities. Their participation is often limited to small-scale or retail activities, and they are less present in larger-scale trading and livestock markets. Addressing these gender-based constraints could unlock greater economic potential for women in these regions.

Gender significantly shapes how agricultural challenges are perceived and prioritized in Mali, Burkina Faso, and Senegal, as reflected in the survey data and qualitative responses.

How Gender Influences Perceptions of Agricultural Challenges

Women's Perspectives:

- **Access Barriers:** Women frequently highlight limited access to land, credit, and infrastructure as major obstacles. Traditional and legal restrictions often make it harder for women to own land or secure financing for agricultural activities[15].

[15] 1 refers to the MLFS data source

- **Workload and Mobility:** The dual burden of domestic work and farming is a central challenge for women. Many report that family and social responsibilities restrict their time and mobility, limiting their ability to engage in commercial agriculture or market activities.
- **Recognition and Discrimination:** Women often experience discrimination and a lack of recognition for their skills, which diminishes their influence in decision-making and market negotiations.
- **Capacity and Information Needs:** Women emphasize the need for training, better access to market information, and stronger positions in value chains. They see these as crucial to overcoming their unique challenges.

Men's Perspectives:

- **Technical and Economic Focus:** Men are more likely to focus on technical and economic issues such as soil fertility, access to inputs, market organization, and climate risks.
- **Resource Access:** Men rarely mention barriers to land or credit, reflecting their generally easier access to these resources due to cultural norms.
- **Market Structure and Innovation:** Men often call for better organization among producers, improved market structures, and technical innovation to address productivity and profitability.

Perceived Advantages and Disadvantages

- **Women** see strengths in their social networks, adaptability, and roles in local processing and retail. However, they are often limited to small-scale trade and local markets, while men dominate wholesale and livestock trade.
- **Men** benefit from greater mobility and resource access, but also recognize challenges related to market prices, climate change, and investment opportunities.

Implications for Solutions

- **Women** advocate for targeted measures: improved access to credit and land, training, and greater political representation.
- **Men** prioritize technical and economic improvements: better production methods, access to inputs, and more efficient market systems.

Summary Table: Gendered Perceptions

• **Aspect**	• **Women's Perception**	• **Men's Perception**
• Main challenges	• Access to land, credit, infrastructure; domestic workload	• Soil fertility, inputs, markets, climate risks
• Key barriers	• Discrimination, limited mobility, lack of recognition	• Market structure, technical
• Constraints		
Prioritized solutions	Training, information, empowerment	Technical innovation, organization
Market roles	Processing, retail, small-scale trade	Wholesale, livestock, large-scale trade

Gender strongly influences how agricultural challenges are experienced and perceived. Women are more affected by structural and social barriers, while men focus on technical and economic issues. Addressing these gender-specific perceptions and needs is essential for effective agricultural development and inclusive rural transformation in West Africa.

Farmer recommendations on the continuation of the project

This question aims to find out how the last months of the project and/or eventual success projects – like GALILEO in Senegal- should put emphasis on. They indicate some weak points (for them) of the project scope indirectly. This result excludes all answers from the non-farmers.

Key Activities Farmers Want to Deepen (C2)

Activity Theme	Example Farmer Statements
Better market organization & price setting	"Organiser des marchés, fixer des prix à chaque produit, création des coopératives pour chaque filière."
Strengthening cooperatives & group sales	"La création des coopératives pour chaque filière, la formation, et encadrement."
Capacity building & technical training	"Les formations, les parcelles de démonstration." "Renforcement des capacités commerciales."
Improved access to credit & inputs	"Avoir accès au crédit dans les caisses ou à la banque, et entre les OP eux même."
Support for processing/value addition	"La création des unités de transformation des produits agricoles, dotation en matériel, renforcement des capacités en marketing et en gestion financière."

Environmental restoration & tree planting	"La redynamisation du reboisement pour la production des plants et des arboretums pour les variétés en voie de disparition."
Strengthening the innovation platform	"La continuité des activités de la plateforme d'innovation, le suivi des producteurs, et les relais."

Summary:

Farmers most frequently call for:

- Better market organization (including price setting and group sales)
- Stronger cooperatives
- More technical and commercial training
- Easier access to credit and inputs
- Support for local processing/value addition
- Environmental restoration (especially tree planting)
- Continued support for innovation platforms

These priorities reflect a desire for both technical and organizational strengthening to ensure more reliable, profitable, and sustainable livelihoods.

Interesting is the difference of priorities between farmers and the other stakeholders (from VC actors to researchers) in Table 5:

Tab.6: Institutional priorities by farmers and non-farmers

Mentioned only by farmers	Ranking farmers	Mentioned by both social groups	Ranking non-farmers	Mentioned only by all (but not by the farmers)
Strengthening cooperatives and group sales	2		-	
	1	**Better market organization and price setting**	3	
		CB and training	2	
	3	Improved access to credit		
	4			
	5	Support for processing and value addition	4	
		Environmental restauration and tree planting	6	

	6 7 - -	**Strengthen the IP**	1 7 8	 Support women and youth Strengthening FO and producer organizations

We can interpret that the non-farmer prioritizes more societal issues (supporting women and youth, dialogue through the IP). Noteworthy is the low priority or lack of mention of strengthening farmer organizations. The farmer's priorities are more direct and more economic than “social”: they want (first?) stronger cooperatives (and then also dealing with sales).

Our data suggests that non-farmers do not fully understand the economic needs of farmers, including aspects related to cooperatives and farmer organizations.

What are the main contributions of the project?

The main contributions of the project, as reported by participants from Mali, Burkina Faso, and Senegal, are both practical and organizational, with a strong focus on sustainable agriculture, improved access to resources, and strengthening local capacities.

Main Contributions by the Project

1. Introduction and Dissemination of Innovative Agricultural Techniques

- The project introduced and promoted new, climate-resilient crop varieties, composting methods (using both animal and plant waste), agroecology, and agroforestry practices.
- These innovations helped restore soil fertility, increase crop yields, and improve animal productivity, leading to higher incomes and better food security for households [1].

2. Capacity Building and Training

- Farmers and local actors received training on good agricultural practices, soil fertility management, animal feeding, and the use of bio-pesticides and bio-fertilizers.
- The project organized field days, demonstration plots, and regular technical support, which improved the practical skills and knowledge of producers [1].

3. Establishment and Strengthening of Innovation Platforms

- The project facilitated the creation of multi-actor innovation platforms at local sites. These platforms brought together producers, researchers, extension agents, traders, and local authorities.
- The platforms enabled better exchange of knowledge, collective problem-solving, and the co-design of locally adapted solutions. They also fostered social cohesion and improved relationships between different value chain actors [1].

4. Improved Access to Inputs and Credit

- Through the project, farmers gained improved access to seeds, fertilizers, and tree seedlings, often through direct distribution or facilitated linkages with suppliers.
- Some participants highlighted the project's role in helping producers access credit (through guarantees or support with microfinance institutions), which was especially important for women and young people [1].

5. Support for Women's and Youth Groups

- The project placed special emphasis on supporting women's and youth cooperatives, particularly in processing, value addition, and marketing of agricultural products.
- Women's groups benefited from training, improved access to resources, and opportunities to engage in small-scale trade and processing, which contributed to their economic empowerment [1].

6. Market Linkages and Organization

- The project supported the organization of collective sales, improved market information, and the establishment of better relationships between producers and buyers.
- It also encouraged the creation of local market structures and cooperatives, which increased producers' bargaining power and improved price negotiation [1].

7. Environmental Restoration and Agroforestry

- Activities included reforestation, the distribution of tree seedlings, and the integration of trees into farming systems.
- These efforts contributed to improved soil fertility, reduced erosion, and the availability of fodder for livestock, with positive impacts on both crop and animal production [1].

8. Social and Economic Impacts

- The project's interventions led to increased yields, higher incomes, improved food security, and reduced workloads for women (e.g., less time spent collecting firewood due to more trees on farms).
- There was also a reported increase in social cohesion and collective action within communities, thanks to the innovation platforms and cooperative activities [1].

Summary Table: Project Contributions

Contribution Area	Key Impacts
Agricultural innovation	New techniques, improved yields, soil fertility restoration
Capacity building	Training, field demonstrations, technical support
Innovation platforms	Knowledge exchange, local problem-solving, social cohesion
Access to inputs/credit	Better access to seeds, fertilizers, credit (esp. for women/youth)
Women/youth empowerment	Support for cooperatives, processing, value addition
Market organization	Collective sales, improved market info, stronger producer-buyer linkages
Environmental restoration	Reforestation, agroforestry, improved fodder and erosion control
Social/economic outcomes	Higher incomes, food security, reduced workloads, increased community action

Project participants have widely recognized these contributions as significant for the sustainable development of their agricultural systems and rural livelihoods.[16]

The main contributions of the project in reducing the limiting factors were the introduction of new techniques, based on agroecology and agroforestry, capacity building, and the establishment of the IPs. Other recognized contributions, although with less impact, include support for women and youth, encouragement of market linkages, and environmental restoration.

Conclusions

So, how do the survey respondents perceive the role of markets, and what limiting factors do they perceive as hindering the adoption of agroforestry?

The results show that respondents perceive markets as central to rural development, but also as a major bottleneck due to persistent and structural limiting factors.

Role of Markets

Markets are essential for generating income, developing value chains, and sustaining agricultural innovations. Respondents consistently note that without well-functioning

[16] Answer by Perplexity based on the MLF survey

markets, improvements in production and productivity do not translate into improved livelihoods. Markets are the primary channel for commercialization and value addition, particularly for women and youth, who often rely on local sales and processing for their income. Well-organized markets facilitate collective bargaining, improved price negotiation, and access to inputs and credit, all of which are considered crucial for scaling up agroecological and agroforestry practices.

Perception of Limiting Factors

Respondents identify several key limiting factors that restrict the positive role of markets:

Poor market organization: Many observers note that local markets are informal, fragmented, and dominated by buyers who set prices, leaving producers with limited bargaining power.

Lack of collective action: The absence or weakness of cooperatives and producer organizations means that individual farmers must negotiate alone, often selling at low prices dictated by traders.

Limited access to credit and input: Without financial resources or a reliable input supply, producers cannot capitalize on market opportunities or invest in value-added activities.

Infrastructure deficits, including poor roads, inadequate storage facilities, and limited market access, increase post-harvest losses and restrict market access, particularly for remote communities.

Information asymmetry: Producers often lack timely and accurate market information, which makes them vulnerable to price volatility and exploitation by intermediaries.

Gender and social barriers: Women face extra obstacles—such as discrimination, limited mobility, and exclusion from decision-making—that restrict their full participation in markets.

Policy and institutional weaknesses: Inconsistent or unsupportive national and local policies, along with a lack of effective extension and market support services, further hinder market development.

How Respondents Express These Views

Respondents frequently cite the need for better market organization, collective sales, and price setting as top priorities for development. Many directly link the lack of market structure to poverty, vulnerability, and the inability to reap the benefits of agricultural innovation.

There is a strong call for strengthening producer organizations, improving infrastructure, facilitating access to credit, and ensuring that women and youth are included in market activities.

Markets are seen as both the engine and the weak link of rural development. Respondents are acutely aware that unless the structural and social limiting factors are addressed, especially those related to organization, credit, infrastructure, and gender equity, market opportunities

will remain out of reach for many producers, and the benefits of agricultural innovation will be limited.

The project has successfully introduced and disseminated improved agricultural, agroecological, and agroforestry techniques, resulting in increased yields, improved soil fertility, and higher incomes for producers. Innovation platforms (IPs) are widely valued, mainly by the non-farmers, for fostering collaboration, knowledge exchange, and collective problem-solving among producers, researchers, extension agents, and local authorities.

Significant barriers to adoption and market participation remain, including: (i) Poor market organization and lack of collective sales, resulting in buyers setting prices and producers having weak bargaining power; (ii) Limited access to credit, quality inputs, and infrastructure (storage, roads); (iii) Gender inequalities and youth disengagement, with women and young people facing particular challenges in land access, credit, and decision-making and finally (iv) Insecure land tenure and delayed economic returns, especially for agroforestry investments.

The Central Role of Producer Organizations

Farmer organizations (FOs/OPs) are recognized as key for structuring value chains, organizing collective sales, facilitating access to inputs and credit, and representing the interests of producers. However, FOs need further strengthening in internal management, transparency, training, and inclusivity (especially for women and youth).

Gender and Country Differences

Women are more likely to cite discrimination, lack of access to credit, and social barriers, while men focus more on market structure and policy. Country differences exist: Mali emphasizes economic and technical support, Burkina Faso highlights organization and capacity building, and Senegal values multi-actor collaboration and dialogue.

Clear Priorities for Further Action

Respondents—especially farmers—call for:

- Better market organization (price setting, group sales, cooperatives).
- Enhanced technical and commercial training.
- Improved access to credit and quality input.
- Support for local processing and value addition.
- Strengthened innovation platforms and continued capacity building.
- Environmental restoration through tree planting and sustainable practices.

Recommendations for Policy and Practice

- Strengthen producer organizations and market structures.
- Invest in rural infrastructure and market information systems.
- Facilitate access to credit, especially for women and youth.

- Promote value addition, local processing, and diversification.
- Address land tenure security and gender inequality.
- Foster ongoing collaboration between all value chain actors.

The project has laid a strong foundation for sustainable agricultural and market development, but lasting impact depends on addressing persistent economic, social, and institutional barriers—especially for women and youth—while deepening support for collective action, innovation, and inclusive value chain organization across all sites and countries.

Annex 0: List of main variables

code	question de l'enqute	variable
id	ID de la réponse	ID
X1	Quel est votre ..	nom
X2	Lieu de résiden..	Lieu_résidence
X2b	Pays de résidence	Pays
X3	Quel est votre ..	genre
X4[A0031]	Votre age [Moins de 25]	age_Moins de 25
X4[A0032]	Votre age [Entre 25 et 35]	age_Entre25e35
X4[A003303]	Votre age [Entre 36 et 50]	ageEntre3et50
X4[A003404]	Votre age [Entre 51 et 65]	ageEntre51e 65
X4[A00355]	Votre age [Plus agé que 65]	agePlus65
X5	Vous représenté..	quelleOrg
X6[X0051]	Quel et votre role au projet [Un role formel ..]	position_projet
X6[X0052]	Quel et votre role dans votre organisation [Aucun role (ext..]	position_org
X7	Mon role est le..	role
A1[1]	Quelle est la 1ière CV [Quelle filière]	CV1
A1[2]	Quelle est la p.. [Quels acteurs v..]	CV1_acteursCon
A1[3]	Quelle est la p.. [Quels sont les facteurs limitants]	CV1_facLim
A1[4]	Quelle est la p.. [Ou voyez-vous des potentialités..]	CV1_pot
A2[1]	Quelle est la 2ième CV [quelle est la f..]	CV2
A2[2]	Quelle est la d.. [Quels acteurs v..]	CV2_actConnue
A2[3]	Quelle est la d.. [Quels sont les ..]	CV2factLim
A2[4]	Quelle est la d.. [Ou voyez-vous d..]	CV2pot
A3[3]	Si vous connais.. [Quels sont les ..]	CV3factLim
A3[4]	Si vous connais.. [Ou voyez-vous d..]	CV3pot
A4[1]	Quels sont les .. [Politique natio..]	FL_politNat
A4[2]	Quels sont les .. [Politique locale]	FL_PolitLoc
A4[3]	Quels sont les .. [Economie nationale]	FL_EcoNat
A4[4]	Quels sont les .. [Education]	FL_educ
A4[5]	Quels sont les .. [Manque d'accès ..]	FL_accCred
A4[6]	Quels sont les .. [manque d'inform..]	FL_manqInfoMedia
A4[7]	Quels sont les .. [manque d'inform..]	FL_manqInfoTech
A4[8]	Quels sont les .. [manque d'attrac..]	FL_manquAttractAgri
A4[9]	Quels sont les .. [discrimination ..]	FL_discrimFemme
A4[10]	Quels sont les .. [discrimination ..]	FL_autGroupe
A4[11]	Quels sont les .. [les acheteurs q..]	FL_acheteurs
A4[12]	Quels sont les .. [autre]	FL_autre
A4b	Merci d'expliqu..	expliq_FL
A5	Quel est actuel..	rôle_OP
A6	Avez-vous conna..	conn_Etude
A7[1]	Comment estimez.. []	comp_eco
A8	D'après vous, q..	fact_décisionProdAdop
AA1[1_SQ001]	1ière- Question.. [Nom de la filiè..][]	filiere1
AA1[2_SQ001]	1ière- Question.. [Combien coûte u..][]	1_prix_kg
AA1[3_SQ001]	1ière- Question.. [Dans quels deux..][]	1_m_prixHaut
AA1[4_SQ001]	1ière- Question.. [Quelle est la p..][]	1_consLoc
AA1[5_SQ001]	1ière- Question.. [Combien des ach..][]	1_conn_achet
AA1[6_SQ001]	1ière- Question.. [Quelle est la p..][]	1_ventHorsLoc
AA1[7_SQ001]	1ière- Question.. [Le produit brut..][]	1_transform
AA1[8_SQ001]	1ière- Question.. [Stratégies de v..][]	2_strat_vente
AA2[1_SQ001]	2ième- Question.. [Nom de la filiè..][]	filière2
AA4	Quelles sont les principales contraintes à la commercialisation	cont_commerce
AA5	Quels sont les desavntages d'etre une femmes	etre_femme
B1	Voyez-vous une contribution du projet dans l'augmenetation des r	contrib_SS
B2	Quelle est la contribution de la PI	contr_PI
B3	Jusque maintenants, quels sont les résulatas les plus pertinants	resSS_pert
C1	Avez-vous des suggestions pour des nouvelles activités	suggest_nouvellesActivi
C2	Quelle activité courante à approfondir	sug_actApprof
C3	De quels acteurs attendez vous le plus	attent_acteurs

Annex 1: Introduction sheet for enumerators to conduct the survey (in French)

Conseil pour les énumérateurs exécutant l'enquête « Les marchés des sites de SustainSahel et les facteurs à considérer pour leur développement »

L'objectif est de faire au moins 15 interviews par site avec des personnes qui ne sont pas en mesure de remplir les informations eux même, due au manque de maitrise du Français, soit au manque d'Androïde ou ordinateur.

Vous êtes encouragé de partager le lien de l'enquête et de promouvoir son utilisation.

L'enquête sera ouverte jusqu'en septembre 2024.

Le rapport sera partagé début 2025 pour tous les intéressés comme promis.

1. Remplissez-vous-même l'enquête avant de fonctionner comme » énumérateur ». Vous êtes dans le rôle de gestionnaire de site et donc assez familial avec le contexte. Ainsi vous pouvez mieux naviguer les questions et anticiper celles qui ne sont pas à appliquer. A vous de choisir la méthode : a) directement dans le logiciel ou b) sur papier.
2. Mieux d'approfondir les questions ou l'intérêt de l'interviewé est grand et passer ou vous observez peu d'intérêt.
3. Si possible posez les questions en langues vernaculaire (local, familier à l'interviewé) pour faciliter la compréhension
4. Posez d'abord la question pour savoir combien de temps l'interviewé met à disposition. Dite qu'en moyen l'interview prends entre une ½ et un heur. Une personne très intéressée au sujet peu facilement passer 2 hrs avec l'interview.
5. Soyez- vous-même aussi motivant pour stimuler la curiosité et l'engagement. Faite comprendre que l'information n'est pas pour un projet, mais pour le développement de la région (le « site »). Le projet n'est que médiateur.
6. Si vous voyez que le contexte n'est pas clair – pour des personnes qui ne connaissent pas le projet et ne sont pas impliqué comme les membres de la plateforme d'innovation ou comme producteur relai, alors aider les de comprendre le contexte.
7. Aussi pour ces personnes- nommé dans l'enquête des externes- sauter les questions dans C et D qui concernent le projet SustainSahel.

L'équipe de l'enquête (FiBL et RESCAR-AO), Juillet 2024

Annex 2: Site specific recommendations to promote market conditions

Below is a summary table with key recommendations from several main project sites in Mali, Burkina Faso, and Senegal, reflecting the diversity of local priorities and ideas for stimulating market development1.

Site (Country)	Main Recommendations to Stimulate Market Development
Niakhar (Senegal)	- Promote local and organic products with dedicated markets - Strengthen producer organizations for better price negotiation - Facilitate access to credit for women and youth
Koussanar (Senegal)	- Develop processing of groundnut into paste - Improve storage infrastructure - Organize weekly markets for better producer-buyer links
Saria (Burkina Faso)	- Strengthen collective sales and group selling points - Improve access to inputs and credit - Train producers in negotiation and marketing - Support innovation platforms for knowledge exchange
Yilou (Burkina Faso)	- Develop market information systems - Build or rehabilitate storage and transport infrastructure - Support producer organizations in collective marketing
Koudougou (Burkina Faso)	- Facilitate access to quality seeds and fertilizers - Support microfinance for producers - Organize group sales to standardize prices
Kléla (Mali)	- Establish agro-ecological and organic markets - Organize producers into cooperatives for price setting - Sensitize producers on market prices and collective action
Koulikoro/Katibougou (Mali)	- Operationalize innovation platforms for linking actors - Facilitate access to credit and inputs - Promote value addition and local processing - Support training in campaign planning and marketing
Sikasso (Mali)	- Strengthen producer organizations for collective sales and credit - Support dissemination of improved production techniques - Encourage contract farming and market linkages

Notes:

- Across all sites, common themes include the need for better organization of producers, improved access to credit and inputs, infrastructure development (storage, roads), capacity building, and the creation of dedicated markets for local and value-added products.
- Women and youth are frequently mentioned as priority groups for targeted support in market development activities.

These recommendations reflect both the local context and broader regional challenges, aiming to build stronger, more inclusive, and better-organized agricultural markets.

Annex 3 : What are the main economic and social barriers to agroforestry adoption

The main economic and social barriers to the adoption of agroforestry, as reported by survey participants from Mali, Burkina Faso, and Senegal, are summarized below. These barriers are consistently cited across sites and stakeholder groups in the dataset[1].

Main Economic Barriers

- **High Initial Costs:** The purchase of seedlings, equipment, and labor for establishing agroforestry systems requires upfront investment that many producers cannot afford.
- **Limited Access to Credit:** Many farmers, especially women and youth, lack access to credit or financial services that would allow them to invest in agroforestry.
- **Delayed Returns:** Agroforestry yields economic benefits only after several years, while most producers need quick returns to meet immediate household needs.
- **Limited Access to Quality Inputs:** There is often a shortage of affordable, high-quality seedlings and planting materials locally.
- **Market Uncertainty:** Unclear or underdeveloped markets for agroforestry products (timber, fruit, fodder) make producers hesitant to invest.
- **Land Tenure Insecurity:** Insecure land rights discourage long-term investments like tree planting, especially for women and youth.

Main Social Barriers

- **Lack of Technical Knowledge:** Many producers are not familiar with agroforestry techniques or lack training on how to integrate trees with crops and livestock.
- **Cultural Preferences:** There is a strong preference for traditional farming practices, and some communities are reluctant to change established systems.
- **Labor and Time Constraints:** Establishing and maintaining agroforestry systems is labor-intensive, and producers (especially women) face competing demands from household and farm work.
- **Weak Producer Organization:** Poor organization among producers limits knowledge sharing, collective action, and bargaining power for inputs and markets.
- **Gender Inequality:** Women often face additional barriers, such as exclusion from land ownership, limited mobility, and lack of involvement in decision-making bodies.
- **Low Social Recognition:** Agroforestry is sometimes not seen as a prestigious or valuable activity, which can discourage adoption.

Illustrative Quotes from Respondents

- "Producers mainly evaluate short- and medium-term economic profitability before adopting agroforestry techniques. Techniques that increase yields or income quickly are more easily adopted."
- "Access to quality inputs (seeds, seedlings, equipment) is a key factor. Local availability at affordable prices is also crucial."
- "Land tenure security and access to natural resources are essential for encouraging investment in agroforestry."
- "Adequate training and support are necessary, as well as financial incentives (subsidies, credits)."
- "The involvement of women and youth, and the mobilization of community organizations, are important for collective adoption."

Summary Table: Economic and Social Barriers to Agroforestry Adoption

Economic Barriers	Social Barriers
High initial investment costs	Lack of technical knowledge/training
Limited access to credit	Cultural resistance to change
Delayed financial returns	Labor and time constraints
Limited access to quality inputs	Weak producer organization
Market uncertainty	Gender inequality
Land tenure insecurity	Low social recognition

These barriers highlight the need for integrated interventions—combining financial support, training, secure land rights, input supply, and social mobilization—to foster broader adoption of agroforestry in the region.

Annex 4: Interpretation and statements to Limiting factors (A4b variable)

The A4b variable in our dataset ("expliq_FL") contains respondents' open explanations about why they consider certain limiting factors (from the A4[1]–A4[2] list) to be very important or not important for rural and economic development in their site. Here's an interpretation of the main themes and illustrative content from these statements:

Key Themes in A4b Explanations

1. National and Local Policy

- Respondents often mention that national and local policies play a decisive role in market regulation, access to inputs, and price setting. When policies are not supportive or are inconsistent, they create uncertainty and hinder investment and innovation.
    - *Example:* "National policy does not limit onion imports, creating unfair competition with local production."

2. National Economy and Credit

- Many highlight the fragility of the national economy and the lack of access to credit as major barriers. Without credit, producers cannot invest in better inputs or technology, and economic instability makes planning difficult.
    - *Example:* "The fragility of the country's economy does not allow the state to effectively subsidize agricultural products for producers. The lack of access to credit limits production capacity."

3. Education and Information

- Low education levels and lack of access to information (both technical and via media) are frequently cited. These factors limit producers' ability to adopt innovations, understand market dynamics, or improve their practices.
    - *Example:* "Illiteracy among producers does not facilitate the dissemination and adoption of new agricultural practices."

4. Market Structure and Price Setting

- A recurring complaint is that buyers (traders) set prices, leaving producers with little bargaining power. Poor market organization and lack of collective action mean producers must accept whatever price is offered.
    - *Example:* "The markets are poorly organized, there is no fixed price, and each farmer sells their product as they can."

5. Discrimination and Social Barriers

- Gender discrimination and other forms of social exclusion (against women, youth, or certain groups) are noted as significant. These barriers restrict access to land, credit, and decision-making, especially for women.
    - *Example:* "Women have less access to land and infrastructure, and family responsibilities limit their ability to participate in commerce."

6. Attractiveness for Youth

- Some respondents note that agriculture is not attractive to young people, due to low profitability, lack of support, and social perceptions. This threatens the sustainability of rural economies.
    - *Example:* "Lack of attractiveness for youth means fewer young people are interested in agriculture, which is a problem for the future."

7. Importance of Producer Organizations

- Several explanations stress the need for better organization among producers, such as cooperatives or platforms, to strengthen negotiation power, facilitate access to inputs, and improve market information.
    - *Example:* "Producer organizations must better organize, especially at the time of sales, to get a standard sale price."

Conclusion

The (A4b) statements show that respondents see the interplay of policy, economic conditions, education, market structure, discrimination, and organization as central to rural development. They emphasize that overcoming these barriers requires not just technical solutions, but also institutional change, collective action, and targeted support for marginalized groups—especially women and youth.

Source: MLFS_allResponses_raw_annonym_clean1.xlsx, sheet "Les marchés des sites de SustainSAHEL", variable "A4b" (expliq_FL)

Annex 5: The role and contribution of the innovation platforms

The variable **B2** ("contr_PI") in your dataset asks respondents to describe the role and contribution of the Innovation Platform (IP) in their site. Here is an interpretation of the statements provided, summarizing the main themes and typical responses:

Role and Contribution of the Innovation Platform (IP) – Interpretation of B2

1. Facilitating Collaboration and Knowledge Exchange

- Respondents frequently highlight that the IP brings together diverse actors—producers, traders, researchers, extension agents, and sometimes local authorities—for regular meetings and exchanges.
- This multi-actor setting enables the sharing of experiences, best practices, and technical knowledge, which helps solve local challenges more efficiently.

- Example: “The platform is a framework for exchange between different actors, very beneficial for the socio-cultural development of the region. The meetings bring producers and technical services closer together.”

2. Strengthening Producer Organization and Collective Action

- The IP is seen as a driver for organizing producers, supporting the formation or strengthening of cooperatives and groups.
- Through collective action, producers are better able to negotiate prices, access inputs, and organize group sales.
- Example: “The platform helps producers to better organize, especially at the time of sales, to get a standard sale price.”

3. Improving Access to Inputs, Credit, and Markets

- Many respondents note that the IP facilitates access to agricultural inputs (seeds, fertilizers), credit, and sometimes links to microfinance institutions.
- The platform also helps producers access market information and connect with buyers, improving their bargaining power.
- Example: “The operationalization of the IP (linking actors, facilitating access to credit and inputs, ensuring food security) is an economic advantage.”

4. Supporting Training, Capacity Building, and Innovation Adoption

- The IP organizes training sessions, demonstrations, and technical support, helping producers adopt new techniques (e.g., composting, agroecology, improved varieties).
- This contributes to better yields, improved livelihoods, and greater resilience to climate shocks.
- Example: “The IP supports producers in all production processes, from input supply to consumption.”

5. Enhancing Social Cohesion and Community Empowerment

- Several responses mention that the IP fosters social cohesion, strengthens relationships among community members, and creates a sense of collective purpose.
- It also empowers marginalized groups, such as women and youth, by involving them in decision-making and innovation processes.

6. Advocacy and Policy Influence

- Some respondents note that the IP serves as a platform for advocacy, allowing producers and local actors to voice their needs and influence local or regional policies.

Summary Table: Main Roles of the Innovation Platform (IP) According to Respondents

Main Role/Contribution	Typical Statement/Example
Collaboration & knowledge exchange	“Framework for exchange between actors, sharing experiences and solutions.”

Strengthening organization & collective action	"Helps organize producers for group sales and better price negotiation."
Access to inputs, credit, and markets	"Facilitates access to credit, inputs, and links to buyers."
Training & capacity building	"Provides training and supports adoption of new techniques."
Social cohesion & empowerment	"Reinforces social ties and empowers community members, including women/youth."
Advocacy & policy influence	"Allows local actors to voice needs and influence policies."

Respondents view the Innovation Platform as a central mechanism for building collaboration, strengthening producer organization, improving access to resources, supporting training and innovation, and fostering social cohesion and empowerment in their communities. The IP is widely seen as a key driver for local agricultural and market development.

Summary Table: Country Differences in IP Assessment

Country	Main Perceived Contributions of IP
Mali	Technical training, access to credit/inputs, economic linkages, improved organization, food security
Burkina Faso	Strengthening producer organizations, collective sales, capacity building, adoption of innovations, social cohesion
Senegal	Multi-actor exchange, information sharing, social cohesion, advocacy, organizing collective action

In summary: **Mali** emphasizes economic and technical benefits, **Burkina Faso** focuses on organization, capacity building, and innovation and **Senegal** highlights exchange, cohesion, and advocacy.

These differences reflect both the context and priorities of each country's agricultural sector and the way the IP has been implemented locally.

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