CGIAR

RESEARCH PROGRAM ON
Dryland Systems

January 2016

Gender in Decision Making, Access to and Control over Labor and Extension Services

A Perception Survey in Burkina-Faso

Food security and better livelihoods
for rural dryland communities

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Executive Summary

The new knowledge, technologies, practices, institutions and policies developed by the CGIAR and partners change the social and economic returns to key productive resources for agriculture (e.g. biodiversity, land, water, forests, livestock and fish, seeds, fertilizers, and machinery). These changes in the returns to productive resources alter the balance of power in gender relations, causing change in the ways men and women control these resources and how they benefit from their use. Shifts in control over resources and their benefits contribute to and interact with changes in the accepted gender norms, rules and customs that regulate cooperation, conflict and the balance of power among men and women in farm households, communities and other institutions. Positive changes in women's empowerment will help all the other IDOs reach their objectives: changes in empowerment can affect whether men or women want to adopt CGIAR innovations and how they share the resultant increases in production, food or income. Conversely, technological and institutional innovations that do not take into account their potential influence on gender norms and differences between men's and women's control over resources and benefits can lead to unanticipated harmful outcomes.

Hence the present gender strategic study launched in the southern Burkina Faso to assess gender equity in decision making, access to and control over labor and extension services. Carried out on the CGIAR West African Sahel and Dry Savannas (WAS & DS) intervention site namely the villages of Samogohiri, Mahon and Diéri in the province of Kénédougou, Orodara, the study objective is two folded: (1) analyzing gender equity in decision making and in access to and control over agricultural resources, labor and related resources and (2) providing scientific evidence on strategies to improving women's access to and control over agricultural and veterinary extension services.

A mixt of quantitative and qualitative research methodology has been used. Thus, after the sampling of 498 men and women farmers based on the characteristics of the parent population, individual interview with the entire nine extension services agents has been conducted to assess their community related extension work. Moreover, questionnaires have been administrated to 87 women and 80 men in Samogohiri village, 89 women for 77 men in Mahon and 78 men against 87 women in Diéri to understand the intra households and individually based determinants of men and women access to and control of agricultural resources and extension service. To assess the gender relations within the overall community, a total of 6 FGD simultaneously made with men and women group at 2 per village have been carried out.

Data were entered with the software CSPRO, analyzed using SPSS and STATA for statistical logistic regression analysis.

The major findings are as follows:

Gender equity in access to and use of labour and related resources

Women provide 47 to 57% of agricultural work on their own fields as well as on the household farm. However, this labor does not have positive nor significant influence on their likelihood to participate in decision making. In addition, logistic regressions indicate that ethnicity, primary activities and annual income has positive and significant influence on men' labor; while in addition to ethnicity, women' decision making as well as the number of children and agricultural asset improves women' access to labor.

Specified by farmland type, the results show that only women' labor has a significant and positive influence on the labour provision in men' farmland. Likewise, in women' farming land, men's labor and annual income present significant and positive influence. Access to technology helps slightly reduce women's working time in opposite to their decision making and the number of children. In addition, annual income significantly improves the supply of labor on women's farm. Surprisingly, the number of children and annual income negatively influences the probability of labor provision in men farmland.

Moreover, agricultural and agroforestry paid labor is characterized by a domain specification based on gender and accordingly a differentiated daily wage charged to men, women and youth. Indeed, in overall terms, women do activities consistent with their gender identity and which require less physical strength such as weeding, harvesting and crops transportation. Mounding and animal traction plowing demanding physical strength and benefiting of highest rates of 2000FCFA[1] per day and 15000FCFA per/ day are the exclusive domain of men and youth.

In salary terms, for the same field of agriculture and agroforestry targeted, women and youth's labor is underpaid 500 to 1000FCFA lesser compared to men' labor.

Among the determinants of the gendered division of paid work in agriculture, social norms establishing male and female areas of work come in first place with 38.35% of frequency followed by lack of physical strength raised mostly by women (34.74%) and religion with 3.41%. Other reasons include poverty and increasingly higher living cost hustling gender boundaries occupy 12.05%.

The private sector accounts for 84% of the supply sources of agricultural, agroforestry and livestock technology, followed by government (8%) through its subsidized input, NGOs (1%) and SOFITEX (1%). Turn by gender, men and women use these sources almost evenly with slight dispersions from 1 to 4 points toward the private sector, government and NGOs. The significant difference of 9 points is observed at the SOFITEX receiving more women' resort of 52% against 43% for men. Youth have little use of these sources with a light preference of 7% to NGOs.

A relatively high level (73%) of access and use of technology, with however significant gender disparities by village. Indeed, 10 point gap separating men and women in the access to technology and 34 points in the non-access. This trend is observed in the villages of Dieri and Mahon in opposite to Samogohiri where women have a higher access rate by 4 points or 52% and 48% for men. Similarly, youth have 82% access to the technology.
Regarding the determinants, sex does not have a significant impact on access and use of technology as opposed to agricultural, property and livestock assets playing positive and significant influence. Shift by gender, the different assets and annual income significantly increases women's opportunities to access technology unlike the men' case where annual income exercise a non-significant negative impact.
Consequently, women and youth are facing major challenges such as higher inputs price, higher cost of agricultural equipment, unavailability of inputs, the inaccessibility of equipment and bad quality inputs.

[1] 1$US = 500 FCFA

Gender equity in decision making and control over labour and related resources,

As might be expected men, women and youth's decision making varies according to the agricultural sub areas and the type of farmland. Thus, men make decisions from 65% to 95% on the management of different work related to their farm activities. On this masculinized space, the high rate of women decision making is 33% and concern the management of household labor schedule. In the same logic, women also are the pioneers in the global decision-making regarding management of labor from 48% to 95% pertaining to their own farm. However,

However, in this women' farmland, the labor days, its starting time and duration as well as the management of domestic work schedule is decided at respectively 49% , 28% and 25% by men. The same trend is found within young girls and young boys where girls only decide on the choice of crop and the decision to sell crops on the women's farmland as boys do on men's farmland.

Surprisingly, the management of domestic work schedule typically considered female undergoes relatively great influence of men to 65% when considering the labor in men' farm and 25% if the woman farmland is targeted.

Unlike men, the number of domestic assets owned and controlled by women positively and significantly act on strengthening her decision making regarding labor management in her own farmland. Yet 93-95% across all categories of assets are under the control of the households headed by men. Moreover, If the number of children increase labor, it negatively influence women's probability of decision making while strengthen men' decision making pattern.

Other significant and positive determinants of this decision on the men's farm are sex, ethnicity, marital status and practice of income generating activity. But, the other variables as women' working time, household type and number of livestock assets have no significant influence.

Gender equity in access to and control of extension services.

In contrast to the supply of technology, the government provides 83% of the sources of veterinary agroforestry and agricultural extension followed by NGOs, CBOs and the private sector. No research institution operates in extension in the area.

A relatively low extension use of 7% over the entire sample has been found. These 7% who have used at least one extension services last year is composed of 72% men, 28 % women and no youth. Turn to village, Samogohiri observes, however 31% of use, 13% for Mahon and against 2.5% for Dieri.

Globally, age and annual income negatively and significantly determining the probability of using extension services. On the contrary, access to technology, marital status, agricultural assets and transportation assets significantly promote the use of extension services

By gender, increase in annual income negatively and significantly influence the probability of men' use of extension while access to technology, and transportation assets improves their use of these services. Similarly, the annual income and age does not positively impact the use of the extension by women as well. In contrast, access to technology, marital status, transport assets and agricultural assets positively and significantly impact the use of the extension by women.

Furthermore, extension agents do not have a clear idea of what gender is and how it can be taken into account in extension even if they easily guest its importance. Only 1/9 agent deployed in these villages has already participated in a gender workshop. As a result, he reported improvement in the way he henceforth work with men and women in agricultural extension.

Women and youth main constraints in access and use of agricultural extension and veterinary remain i) the lack of awareness, information and training pertaining to these services, ii) the high cost of agricultural and veterinary inputs, iii) the difficult accessibility conditions to agricultural extension followed by iv) conflict of extension agenda with women' namely daily and seasonal calendar.

Regarding veterinary services the lack of information and training and the higher cos of input and equipment fall at the top of the constraints. In addition, the lack of animal to breed come in third position and the difficulties related to accessibility of veterinary services.

In Financial services, the lack of financial institutions locally crystallizes has been ranked as the major difficulty followed by the binding access conditions, the lack of information on these services and the fear of contracting a loan and its implications in case of repayment difficulties.

Drawing on these evidence strategies can draw to support recommendation to enhancing women's access to and control of agricultural resources and extension services:

Gender equity in access to and use of labor and related resources

- Based on evidences regarding the greater influence of asset to access and use technology and as reported during the FGD, equipment support for women's self-help group may be of strategy to strengthen their income generating activities while enhancing their related assets ownership.
- Assets are important determinants for access to different agricultural technology. Therefore, increasing women's access to assets may lead to greatest access and use of technology and further increasing of their farm productivity and their annual income as agriculture is their flagship source of income.
- Reinforcing gender equity in the distribution of subsidized fertilizer and other input: The state and other NGO should built fair accountability mechanism to ensure that the agricultural subsidized input they grant for men and women effectively reach equally each of them.
- As women and youth have a strong participation, leadership and influence in the agricultural, tontine and agroforest product transformation organizations, these frameworks could be well suitable for fostering their decision making capacity and furthermore improve their access to and control over labor.
- Promote cooperation between men and women as their different labor has significant influence on overall labor allocation on both household farmland and women farmland.

Gender equity in decision making and control over labor and related resources

- As they hold relative decision making opportunity on their farmland, supporting women with diverse inputs facilitation can increase their decision making opportunity and authority.

- Specific marketing trainings for women may be helpful for them to better manage their income generating activities for a greater market bargaining and opportunity (namely in Mahon regarding the nutsedge, in Dieri the cashew).

Gender equity in access to and control of extension services

- ✓ Large campaign of information, sensitization and training involving all the relevant stakeholders could help increasing awareness in extension services and agricultural and livestock innovation adoption.
- ✓ Traditional communication channels for the overall extension need to be strengthen and improved to be gender sensitive. For that purpose, gender sensitive trainings could be organized for the extension agents regarding basic gender principles and its relevance in agriculture, agroforestry and livestock and how it can be taken into account in overall extension.
- ✓ As the State is engaged in private sector promotion in extension, and to solve the problem of physical distance raised as difficulty, opportunity can be used to promote community based extension agents to who will be first trained by the state agents available.

Because of weak intra household gender relations constraints and the suggestion of women and youth livestock for breeding coulb be provided under various form such as gift or aid specifically in Mahon and Samogohiri.

Acronyms and abbreviations

CVD:	Village Development Council - Conseil Villageois de Développement
CGIAR:	Consultative Group on International Agricultural Research
FAARF:	Fund for women's economical activities –Fonds d'appuis aux activités génératrices des femmes
FAO:	Food and Agriculture Organization of the United Nations
ICRAF:	Worls Agroforestry Centre
MAHRH:	Ministry of Agriculture- Ministère de l'Agriculture de 'Hydraulique et des Ressources Halieutiques.
PNSR:	Rural sector development program- Programme du Secteur Rural
SCADD:	Accelerated growth strategy for sustainable development- Strategies de croissance accelerée de développement durable.
SOFITEX:	Societé des fibres et textiles du Burkina Faso
UNDP:	United Nations Development Program

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I. Introduction

Located in the heart of West Africa, Burkina Faso is one of the poorest country in the world, ranked in 2014 at the 181st out of 187 countries according to the UNDP human development assessment 2014. The country has 14 017 262 inhabitants including 51.7 % of women. With an increasing growth from 2.4 % in 1996 to 3.1% in 2006, the population is also characterized by its youth under 20 representing 59.1 %. (Population general census 2006).

The country's livelihoods is mainly based on the primary sector including agriculture, livestock, forestry and fishery occupying 86 % of the population (74.34% from rural area) for a contribution of 40% to the national economy.(Burkina Faso 2013). This sector because of its low machinery and innovation, is highly dependent on climate conditions. Thus, rural development is considered by the government as the basis for sustainable economic development, hence the importance of natural resources such as land, water and forest as well as their related tenure and management system determining people's access right, ownership and decision making opportunity.

These natural resources in the country is governed by customary tenure system and the State modern law. The State governance system is rooted in the overall development framework of the Millennium Development Goals, the SCADD (accelerated growth strategy for Sustainable development) the Politcal decentralization reforms and the PNSR (National program for rural sector) federating development efforts in agricultural, livestock and forestry. Accordingly, politics and legal instruments have been adopted to support this rural sector while promoting food security, economic growth and land tenure security. Land and agrarian reform (in 1984, 1991 and 1996) is part of this overall objective aiming at guaranteeing equal land rights for both men, women and other vulnerable social category. The last rural land's tenure and regulations in date called "Loi n° 034-2009/an portant régime foncier rural" was specifically designed to meet inclusion of the entire actors in rural land governance and issue of food security. But in practice, this land reform encourage the engagement of urban agricultural "businessmen" in rural arena. These new actors empowered by their professional and financial position buy large plots of lands legally and sometime illegally without doing the expected investment. Over time, rural lands decrease leading to worsen the already insecure land rights for vulnerable groups like women, youth and migrants because of their indirect access to this resource (Zongo 2010). Yet, family farming to date remain the fruitful means of meeting these overall objectives as provided in the country's global vision for agriculture development (Burkina Faso 2011, FAO 2014).

Despite, these State land law reforms, in practice, customary tenure system embedded in highly engendered social characteristics such as sex, age, marital and residence status, gender, etc is the main land management system enforced in rural area. Therefore, across gender and other social characteristics, women and young people don not benefit from

equal access to agricultural resources. Indeed, although women represent 51.1% of active population in agriculture and livestock activities, they hold only 20% of the country's land (Burkina Faso 2011). In fact, individually, women have access to agricultural land through their husbands or other male figure (Droy 1990) limiting their investment opportunities or long-term development. Similarly, they collectively access and manage arable land according to specific procedures but remain dependent on the willingness of landowners who can remove the land at any time and often without any real consideration of the investment that they (women) have made (Uoba et al. 2003).

This usufruct rights usually contribute to women' practical needs and hardly the fulfilment of their strategic interests. To transcend these usufruct rights and go forwards to control right, women in Burkina Faso are more invested in self-help groups and associations. Governing by Law No. 014/99/AN regulating cooperative societies and groups in Burkina Faso as well as Law N° 10/92/ADP on freedom of creating group, association is defined by law as a voluntary organization of persons with social and economic character whose members have common interests. From a sociological point of view and from the perspective of Crozier (1981) it can be considered as a social construct that helps to addressing collective action challenges for common goals. Indeed, the association for women raise as a powerful strategy to build a new socio-political identity or to get a new social recognition without the seal of the marital context and lineage barriers. From Moity (1991), It constitute for women a unique opportunity for them to start a process of access to land in their regions, to transform their socio-economic status and to reach external donors.

Because of their concentration in low added value or non-merchant activities (care economy and volunteer work) and their status of dependents, women's contribution as laborers to national wealth remains under estimated and somehow invisible. (Charmes 2005). Yet, they are in front line of productive (agriculture, livestock, craft and trade) and reproductive activities (birth giving, children caring, housekeeping and related work) within households and at community level. (Godfrey et al. 2014). This various and simultaneously executed work burdens made women's contribution higher to overhead work in households and community (IRD 2006).

Although Burkina Faso has reduced its overall gender gaps score from 0,585 in 2006 to 0,650 in 2014, gender inequities remain critical in the areas of empowerment and education. (World Economic Forum 2014). In agriculture and livestock, women, youth and other vulnerable category experience double limitation in access to and control of productive resources despite their important role in agriculture as laborers (MAHRH 2010).

From the foregoing, gender equity as stated by the National gender politics, become central in policies, development programs and projects in Burkina Faso. Thus, the national agriculture strategy and extension system set gender equity in term of improving equal access of men and women as one of their objective. However, beyond the diversity of criticisms addressed, is the insufficient consideration of the peasantry realities as well as empirical evidence on daily gendered relation to agricultural production. Hence the present

study to assess what and how gender relations contribute to men and women differentiated access to and control over productive means and extension services in the specific context of Western region Burkina Faso?

Research objectives

The objectives are two folded: (1) analyzing gender equity in decision making and in access to and control over agricultural resources, labor and related resources and (2) providing scientific evidence on strategies to improving women's access to and control over agricultural and veterinary extension services.

Research questions

1. What are the gendered patterns of men and women's access to agricultural resources, labor and extension services?
   - Is there a difference between women and men in the access to means of production? Do women participate in decision making as well as men?
   - Does participation or not of women in decision-making affect access and control of resources and labor?
2. What are the gendered schemes in men and women control of and decision making over agricultural production means and extension services?
   - How do men and women Is there a difference between men and women in access and control of extension services?
   - Do extension services take into account gender aspect in their activities?
3. What difference of representation in decision-making organization/structure exist between women and men?
   - Women participate and / or do they influence decision-making?
   - Are there strategies that enhance access and control of women's agricultural and veterinary extension services?

General hypotheses

1. Gender equity in decision making enables women to have access and control over resources and labor
2. Men and women do not have the same level of access and control of agricultural extension services and veterinary
3. Strategies can be used to enhance access and control of women's agricultural and veterinary extension services.

II. Methods

1. Presentation of study sites

The study has been carried out in three villages spread in three different municipality located in the kénédougou province, capital Orodara, part of the Region of Haut-Bassin (Bobo Dioulasso) Western Burkina Faso. Indeed, Dieri, Samogohiri and Mahon villages are respectively located in the commune of Orodara, Samogohiri and Kangala.(Fig. 1).

Figure 1: Location of the study sites (Mahon, Dieri and Samogohiri)

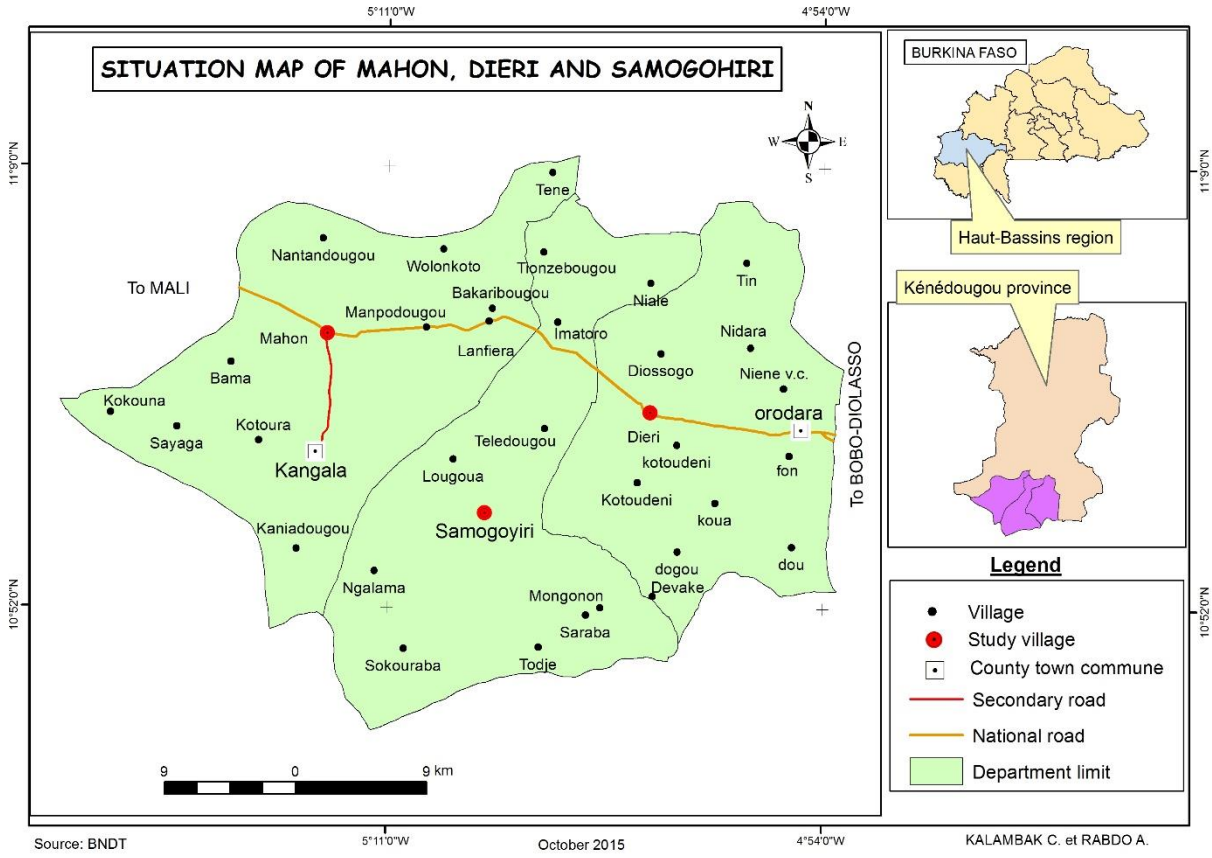
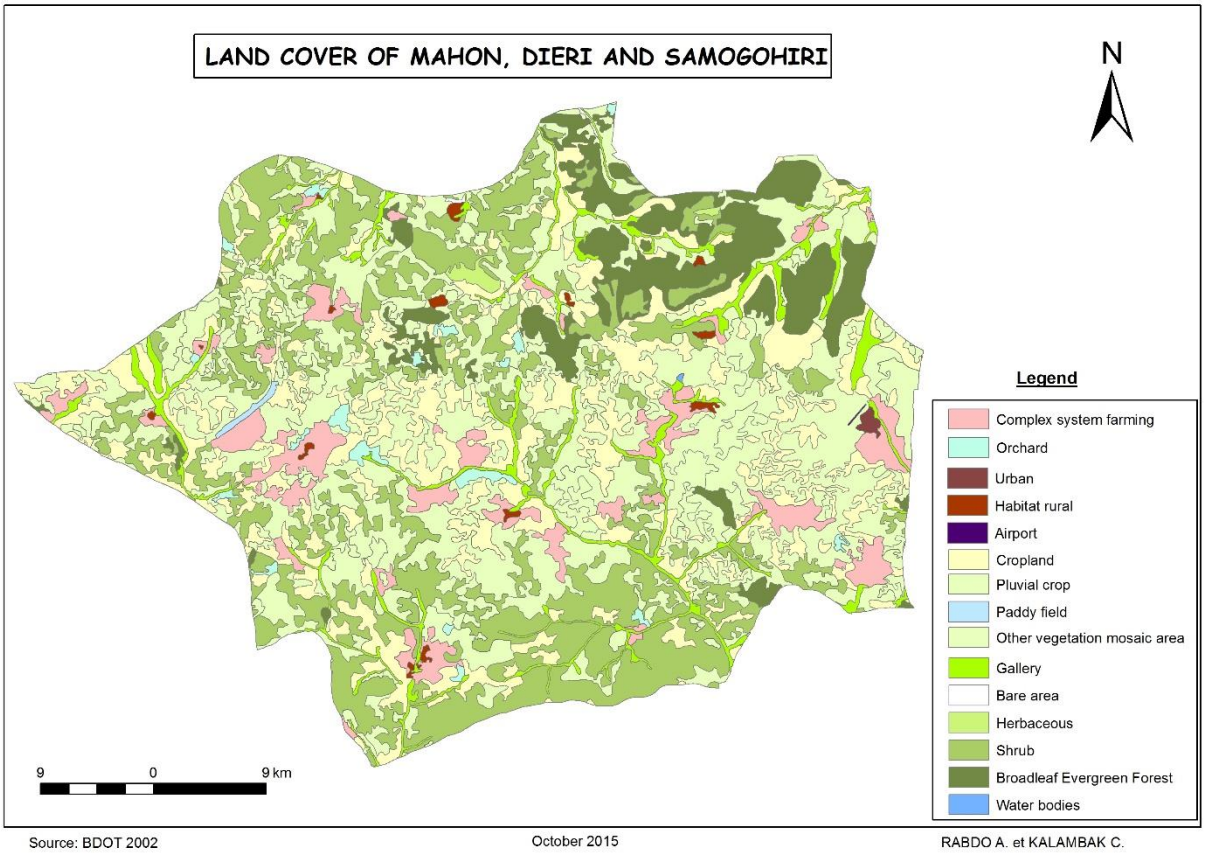


Figure 2: Study sites (Dieri, Mahon and Samogohiri) land cover



- **Samogohiri village:**

Physical characteristics

Samogohiri rural commune of 483.64 km², is located in south province of Kénédougou (Orodara) in the Hauts-Bassins (Bobo Dioulasso) region. Distant 25 KM from Orodara and 100 Km from Bobo Dioulasso, Samogohiri is bounded to the north and the West by the rural commune of Djigouèra and Kankalaba; to the east, and the south by the urban commune of Orodara and Moussodougou.

The commune physical characteristics regarding soil, relief, temperature and rainfall make Samogohiri highly suitable for agriculture and agroforestry. Indeed, Samogohiri is built on three soil types: gravelly, silty clay loam and sandy soils covering respectively 75 km2, 120 km2 and 193 km2. The relief is mainly made of plateau whose altitude varies between 480 and 600 meters with a sub-Sudanese tropical climate. The village is crossed by a permanent stream named Denfou and two temporary watercourses scheme.

The rainy season lasts from May to November with maximum precipitation in August while harmattan blows from December to March. During cold period, temperatures range from 17 ° C to 35 ° C, while in warm period, it varies between 24 ° C and 37 ° C. Rainfalls are abundant and vary generally between 1000 and 1100 mm per year. Specifically, from 2004 to 2012 rainfalls have fluctuated between 835.7 mm and 1411.4 mm with an increasing 71 to 85 days of rain. Thus, vegetation is dense and various. It consists of savannah on the trays and gallery forests along the rivers. Wild trees such as Parkia biglobosa, Pleleopsis suberosa, Butyrospermum

parkii, Terminalia avicinioides, Afzelia africana, Danielia oliveri and mango plantation, cashew, palmyra palms, lemon, orange are encountered
However there is a decline in soil fertility as a result of subsequent heavy rains to water erosion and archaic farming practices as well as trees productivity.

Demography information and population characteristics
Estimated at 4186 inhabitants and 721 households for a density of 17 inhabitants per km2, the 2006 general population census of Samogohiri indicates a predominance of women over men (52.46% against 47.54%). Like the overall country, age structure analysis reveals the predominance of young people the 0-14, the 15-64 and the over 65 representing respectively 1946, 2092 and 139. The average annual growth of the area is 2,38%. The commune is shared by different ethnic group, but the Samoghiri village is mainly inhabit by Samogo ethnic group. Religiously, Muslims, Animists, Catholics and Protestants represent respectively 73,19%, 19,87%, 5,20% and 0,65% of the population.
Samogohiri experiences two (02) types of migration which mainly affect 18 and 35 years old people. First, the rural exodus to urban centers of Orodara and Bobo Dioulasso in search of odd jobs. This internal migration is seasonal and short term resulting in the return of these young people during the raining season. There is also a long-term external migration to neighboring countries such as Côte d'Ivoire and Mali. Moreover, the area is home to many immigrants in search of arable land, pasture and water points for livestock.

Social and political organization
Social and political institutions are organized around customary patterns enforced by the village chief and the chief of land and modern regulations provided by the decentralized and deconcentrated authorities.
According the commune development document, Samogohiri village was founded in 1663 by a marabout coming from Sikasso Region (Mali) in alliance with a hunter from Siamou ethnic group and Samogo lineages. It derives from « Samogo-Dgidi » means prosperity. The social space, made of the households and concessions based on the patrilineage, surrounded by Biéton, Sangaon and Doution quarters is mainly govern by male figures. Polygamy is developed in the village as well as early marriage. The major customary authorities are the village chief in charge of people's administration and the chief of land supervising the village land assets and related rites and sacrifices. These authorities are assisted by a council of elders. The chieftaincy is exerted by the Traoré lineage and transmitted by inheritance from father to son or brother. Land is acquired by inheritance according to patriarchy and lending under tutorial relations with migrants. Nowadays, there are land depletion because of the population growth and increasing migration causing land conflicts between autochthons and migrants farmers.
Regarding the modern administration, the village was erected as department in 1984 and became rural commune in 2004 by the decentralization Law 055-2004 / AN of the 21st December 2004 concerning the General Code of Local Authority. Thus, the administrative district is govern by the Prefect representing the State at the local level and technical services of agriculture and food security, livestock, environment and sustainable development, education and health.
As for the local authority, it is organized around the town mayor and his democratically elected councilors. Other decentralized structures such as Village Development Council (CVD) support the municipal board in its activities. Moreover, there are community based organizations operating in various domains of agriculture, livestock and agroforestry, health and education.

Economic characteristics

Agriculture, agroforesty and livestock are the major livelihood and economic activities.

Thus, millet, maize, sorghum, fonio and rice are the main food crops with respectively 400, 3600, 1679, 497 and 90 ton produced in 2013 in the commune. In addition cotton, peanut and sesame constituted the cash crops with a production of 300, 240 and 120 ton in 2013. Yams, potatoes and vegetables (small irrigation) are also grown as part of the cash crops. Agroforestry including mango plantations, orange and cashew and wild trees such as karité, néré.

Livestock mainly made of cattle, goats, sheep, donkeys and poultry with respectively 2910, 5720, 1450, 1170 and 12209 cattle in 2012, remains extensive and use rudimentary methods. Agroforestry also uses tedious pickings means causing falls and accidents to the pesticide. The area is self-sufficient because of the abundance of rainfall, the presence of favorable land for agriculture and new agricultural technics (plows, tractors, fertilizers, pesticides) adoptions although bad stock management cause sometimes food insecurity. The weak bargaining power to access a high value market is the crosscutting issues to these activities.

Trade and crafts also are sources of income for the villagers. No financial institution operates in the village, but there banks and credit union operating in the city of Orodara. NGOs such as OCADES, SNV and FAARF are involved in the commune development working in the fields of social infrastructure, training, agricultural equipment and credit for women's activities. Road infrastructures are degraded. There is no organized sanitation system but modern water points and wells of large diameter covers the populations' drinking water needs. Urbanization is at its lower level with quite viable means of communication such as mobile telephony and a local radio based in Orodara.

Households and gender relations

As a patriarchy society, man is the head of the family exercising the attached authority in the household and in the community while woman is responsible for the good performance of the household and the community. She must be obedient and respectful vis-à- vis the man. For that purpose, she takes care of household chores (cooking, water and firewood supply, etc.), children and elders and their education. However, illiteracy, difficult access to credit, poverty and certain harmful socio cultural practices (early marriage, etc.) are factors which hinder the progress of women and their participation in the joint development process. Youth also face similar poverty, unemployment and illiteracy encouraging their migration. Elders

Women access to agricultural land by their husband or son and therefore do not benefit from land ownership but the usufruct right for small crops such as groundnuts and sesame. Agricultural labour division follows a specific arrangement in the community with the market day as the rotation point. Indeed, every five days stands the village market. Thus women work 2 days in the household's farm and the two other days in their own farm keeping the market day free.

Like their male counter parts, women are organized in associations and undertake income-generating activities through agriculture, small trade and crafts (soap and shea butter processing).

- Mahon village

Physical characteristics

Mahon village is located in the rural commune of Kangala at 40 km from Orodara. Kangala the head of the commune is bounded to the east by the commune of Samogohiri and Djigouèra, to the

north and west by Koloko and to the south by Leraba. The area is embedded in the south Sudanese climatic zone characterized by a dry season from December to April and a rainy season from May to November. Rainfall is abundant with an average of 1146.28 mm per year for 66 days of rain. Thereby, hydrographic network offers potential for the development of reservoirs and the promotion of vegetable crops. Plains and plateaus dominate the relief. Four major types of soils such as gravelly, clay, sandy and clay loam soils as well as three vegetation types composed of wooded grassland, shrub and woodland are found.
These favorable factors make the soils fertile for the cultivation of cereals (millet, sorghum, sesame, rice, nutsedge) and tubers (yam, potato) and vegetables. However, a general degradation of these soils and forest resources is observed these last years.

Demography information and population characteristics
Mahon village is mainly populated by Senoufo ethnic group. In 2006 its population was 3 013 inhabitants composed of 1 364 men and 1 649 women living in 430 households. This population structure shows a predominance of youth. Thus, the 0-14 year old represent 1472 people and those of 15 to 64 are 1384. The over 65 years are poorly represented with 137 people in 2006. Two migration flows are observed in the area: the departure of young people to the Ivory Coast in search of paid work and migration of farmers in search of fertile land to the village. The first dynamic is the most important relative to the latter because of land scarcity which discourage farmers' migration to the village.

Social and political organization
Social and political organization is characterized by customary and modern governance system. Customarily, the village chief and the land chief stand security for people well-being and the safety of their goods. The latter coming from the village founder lineage perform rituals related to the sacrifices to ancestors for the village prosperity. In addition to animism, Islam and Christianity are religions practiced in the village.Bundles of land use rights and ownership are exercised by the heads of lineage and land chief. Thus, according to patriarchy, land and related resources is acquired by inheritance within the lineage which holds a collective ownership. The migrants meanwhile access to land usufruct rights by borrowing from allied lineages or from the chief of land. In this case, procedures are followed by the newcomer to snatch the agreement and blessing of the ancestors. He also submits to respect the rituals of the village while observing the tenure rights of existing trees on his new field. Private land ownership is emerging du to land sale which remain prohibited.
Beside this customary organization, there is the modern authority exercised in one hand by the deconcentrated authorities and on the other hand by those decentralized. Thus, the decentralized authorities include the Prefect who is the representative of the central government in the commune, the technical agent of Agriculture, Livestock and Environment. Decentralized authorities are composed of the mayor, his councilors and the Village Development Board (CVD).

Economic characteristics
The village economy is largely agropastoral and strongly dependent on climatic conditions. Thus, agriculture include cereal production for food security purpose and cash crops. In 2013 the commune of Kangala overall cereal production was estimated to 17580 tons for a total cultivated area of 12,707 ha. Specifically, 2570 tons were produced for millet, 18040 for maize, 7690 for sorghum, 995 for fonio and 455 for rice. Cash crops are also produced and are important sources of income for producers. It include cotton 1020 tons harvested, 640 tons of peanut, 1005 of

sesame, 3750 of ginger and 1725 tons of nutsedge. Specifically in the village of Mahon men grow maize, millet, sorghum, sesame and tubers while women cultivate groundnut, fonio, nutsedge, ground pea and cowpea. In addition to these cultures, a timid production of vegetable crops practiced only by men is observed. Agroforestry including both wild trees like shea and néré as well as mango plantations, orange and cashew also contribute to income generation. These plantations are the exclusive property of men as women traditionally do not own orchards.Family and extensive livestock type is practiced. It consists of cattle, sheep, goats, donkeys, pigs and poultry. The cattle fattening is also practiced. In 2012 the commune livestock population was estimated at 134 020 head of cattle including 36 500 poultry heads. Because of the lack of livestock market, farmers are selling their cattle production mainly in urban centers of and Bobo and Orodara. Agricultural equipment and animal health care as well as pastoral infrastructure remains major challenges.

Craft and trade also contributes to the economic body. Although the village is crossed by the national road No. 8 to the border with Mali, internal roads are degraded and difficult to use. The phone coverage is good whereas the road transport system is not developed as well as the provision of savings and credit system.

Households and gender relations

The Senufo society if Mahon is based on patriarchy with a gender division of labor and roles. Thus, the male figure is at the center of decision making at household and community level. They are also in charge of the feeding the household through the crop family field cultivation. Female is responsible for household care and well-being. In the village, although the importance of woman in the animism rituals, gender relations in disfavor of women are very visible and inked in everyday life.

- Dieri village :

Physic characteristics

Located at 12 Km from Orodara on National road to Mali, Diéri is limited to the south-west by Samogohiri, south-east by Kotoudemi; North-west and North by Diolé Diossogo. The climate is of Sudanese type for an average of 1037 mm per year. Clay loam soils under a vegetation of trees and shrub savannah with woody species such as néré, karité and palmyra palms and palm trees. Hydrography is rich with Siakoro, Kotoudemi, Kotoroni and Kodjalé rivers.

Demography information and population characteristics

Diéri village population is estimated at 2989 inhabitants including 1525 men and 1564 women distributed in 489 households in 2006. The population is constituted by 1390 inhabitants of 0-14 and 1494 of 15-64 and 99 of over 65.

Social and political organization

The village's name come from the Dioula local language and means "prosperity". It was founded in 1880 by a hunter "Dozo" coming from Mande (Mali).it inhabited by Siamou and Dioula ethnic group. The village is organized in six main quarters corresponding to dougoutigiso, daoudaso, banakoroso, siamouso, djeliso and karamogoso. The Muslim religion is deeply rooted in the practices and in daily life. The village chief from the founder of the village lineage is assisted in his tasks by representatives of each neighborhood men and women. Chieftainship is hereditary and is transmitted from father to son or from brother to brother.

Like the two other villages, state is represented in the local level by the Prefect and technical advisors of agriculture, livestock and environment. Moreover, people represented by the major and the municipal councilor is in charge of the commune development. Thus, the village participated to local government through their 02 councilors and the village development board (CVD). .

Economic characteristics

The village economy is dominated by agriculture, livestock, agroforestry, crafts and petty trade. Agriculture concerns mostly men and very few women due to religion pattern. Thus, men produce maize, sorghum, and millet, groundnuts while women grow ground pea, groundnuts, sorrel and cowpea. Cattle, sheep, goats and poultry are the main animal species bred. Agroforestry is very developed with mango orchards, orange and cashew. If the resource belongs mostly to men, the processing is the domain of women organized in associations. There are 06 women's associations operating in the collection, processing and marketing of cashews.

2. Sampling

- **Site selection**

Province of Kénédougou (Orodara) is part of the West African Sahel and Dry Savannas (WAS & DS) area identified for the implementation of the CGIAR research program on Integrated Agricultural Systems for the Poor and Vulnerable. Considered as a cross cutting theme, gender related issue raised as a critical issue for the overall research program objectives. Therefore, this strategic gender research on equity in decision making, access to and control over labor and extension services in Burkina Faso has chosen three villages- Samogohiri Mahon and Dieri in this area following specific criteria. Thus, the diversity of agriculture, livestock and agroforestry production contexts as well as the social labour distribution patterns and the differentiated market opportunity have been considered. Indeed, while Diéri village is distinguished by women's large investment in cashew nuts processing Mahon and Samogohiri offer a diversified picture of women in agriculture and livestock. Pertaining to their accessibility for market assessment, Diéri and Mahon are located on the national road to Mali whereas Samogohiri stands in depth on a dirt road.

- **Data collection unit selection**

Household is the data collection unit targeted as it constitutes the ultimate expression place of gender relations in agricultural, livestock and agroforestry production. Indeed, due to the family farming practiced, housework is where tied and untied the arrangements for access and control of land, crops and inputs including different assets and extension. Within households, we have interviewed either the man or the woman or both together where everyone intervene on its gender related issue. Value chain development approach was used to guide the reasoned choice of these stakeholder men and women.

Thus, the interviewees was composed of producers of cash crops, vegetables, livestock and agroforestry as well as collectors of agriculture and forest products, processors and laborers categories.

In addition, the community level was also considered through the Focus Group Discussion

FGD) to observe in situ gender relations within both women's group and men. Finally, the technical services of agriculture, livestock and environment were also taken into account.

- **Sample size by local and gender: men wen youth**

To ensure representativeness, a sample of 501 interviewees was instituted on the three villages at the rate of 167 per village. Thus, the structure of the population provided by the general census of population and housing (RGPH) 2006 shows 52% of women and 48% of men in Diéri and Samogohiri and 55% of women and 45% of men in Mahon. Based on this structure, a sample composed of 87 women and 80 men was carried out in Samogohiri and Diéri and 91 women and 76 men in Mahon. These numbers were assigned to the value chain agricultural, livestock and agroforestry categories previously identified. However, the presence in sufficient or reduces numbers or certain categories of actors have influenced the final sample size of men and women previously instituted. But, the number of women interviewed remains higher than those of men except Diéri where women in their majority do not farm. Hence, the final sample is made of 87 women and 80 men individually interviewed in Samogohiri, 89 women for 78 men in Mahon and 79 men and 88 women in Dieri.In addition, the entire technical staff of the Agriculture, livestock and environment composed of 09 stakeholders were also involved. Similarly, 12 to 15 men and women leaders, members of association or not, farming, breeding livestock and running agroforestry were also part of active participants to FGD. In each village 2 FGD was conducted with women and men separately.

The following tables 1, 2 and 3 and figure 3 below show the details of the sample by category of actors.

Table 1:Study sample in Samogohiri by value chain actors

Value chain actors in Samogohiri	Sub- acteurs	Men		Women	
		Projected	Performed	Projected	Performed
Producer	Cash crops	25	29	30	39
	Irrigation	10	10	10	7
	Agroforestry	10	15	10	5
	Livestock	10	6	5	4
Collectors	Agroforestry	5	5	5	5
Processor	Agriculture	5	0	5	0
	Agroforestry	5	0	5	16
Trader	Agroforestry	5	10	5	4
Laborer	All laborer category	5	5	6	7
Sub total		**80**	**80**	**87**	**87**
Total		**167**			

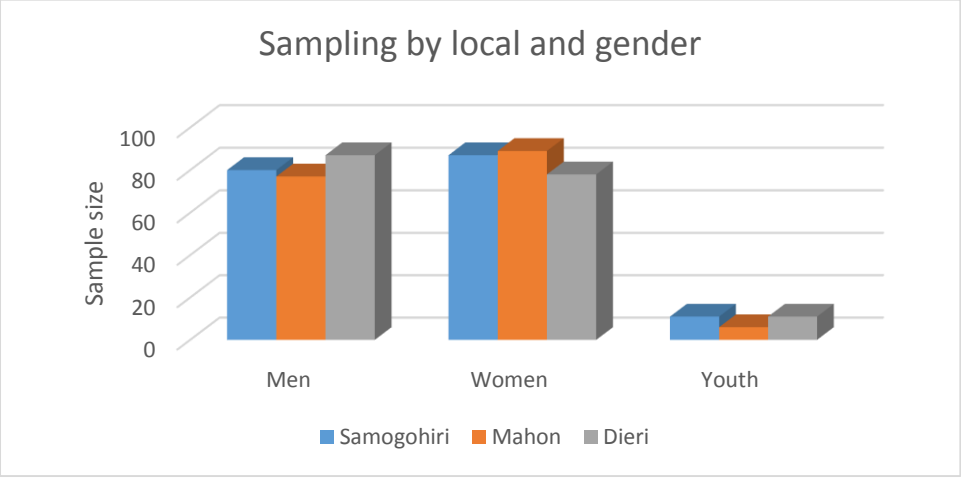
Table 2: Study sample in Mahon by value chain actors

Value chain actors in Mahon	Sub- acteurs	Men		Women	
		Projected	Performed	Projected	Performed
Producer	Cash crops	21	27	30	33
	Irrigation	10	8	10	6
	Agroforestry	15	20	5	5
	Livestock	5	5	5	4
Collectors	Agroforestry	5	5	5	0
Processor	Agriculture	5	0	10	5
	Agroforestry	5	2	10	15
Trader	Agroforestry	5	5	10	15
Laborer	All laborer category	5	5	6	6
Sub total		**76**	**77**	**91**	**89**
Total		**166**			

Table 3: Study sample in Dieri by value chain actors

Value chain actors in Dieri	Sub- acteurs	Men		Women	
		Projected	Performed	Projected	Performed
Producer	Cash crops	21	37	30	09
	Irrigation	10	16	10	02
	Agroforestry	10	5	10	0
	Livestock	10	7	6	0
Collectors	Agroforestry	9	6	5	7
Processor	Agriculture	5	0	5	0
	Agroforestry	5	0	5	48
Trader	Agroforestry	5	6	10	10
Laborer	All laborer category	5	10	6	2
Sub total		**80**	**87**	**87**	**78**
Total		**165**			

Figure 3: Sampling by local and gender



3. Instruments and data collection

Quantitative and qualitative data collection instruments were used individually and collectively to collect gender desegregated data. Thus, individual questionnaire was administered to men and women at household level to assess their access to and control of agricultural and related resources and extension services. Interview guide was also carried out with the technical staff of agriculture, livestock and agroforestry to understand their advisory and supporting services and relationships with the population. Finally, another interview guide led the FGD with the community. Data collection with the targeted population lasted 14 days in the villages. It has been led by the participants' free prior and informed consent. Thus, the interviews were mainly held inside households or other places in the villages depending on the participants' availability and suitability. Likewise, interviews with technical officers took place in their based location either in the village or the commune capital: Kangala for agents involved in Mahon village, Orodara for those intervening in Dieri and Samogohiri on site. As for the FGD, it take place simultaneously with the group of women and men. The women's group was facilitated by a woman while the men's group by men.

4. Data analysis

Data collected were entered with software CSPRO 61, afterwards transferred to Excel 2013, SPSS 20 and Stata 10.0 for statistical analysis. Where possible, analysis were presented by men, women and youth (15-24 year according to the International Labor Organization) and by male and female farmland type where relevant. Content analysis was used for qualitative data assessment and descriptive statistical analysis for the frequencies. The linear and logistic regression were also used to analyse the determinants of access and use of technology, labor, decision making and extension.

To assess the relationship between this set of variables, "multivariate" technics have been developed. Thus, a function where Y a dependent variable to be assess by independent or explanatory variables has been considered. In fact, the proposed regression analysis is a statistical technic providing potential to establish a relationship between the dependent variables-- "access to and use of labor", "access and use of technology", "access and control of decision making " and " access and control of extension " and the explanatory variables related to social economic and demographic characteristics in force to finally examine the associations and make predictions.

To effectively analyse this relationship, it is important to know the nature of Y the dependent variables. For that purpose, the variable access and use of labor and technology was built on binary categorical variable with 0 = no access and 1 = access and use of various agricultural and veterinary technologies the last 12 months. In addition, the variable access to labor was created with the labor duration in hour per year by farmland type and sex prior translated into counter variable.

Similarly, the variable decision making was made of the frequency of decisions by type of agricultural and livestock flagship activities by sex and type of farmland. In addition, the variable access and control of the extension has been built on a binary variable 0 = no 1 = use of at least one extension service last year. Furthermore, the independent variables as the number of household, transportation and property assets was obtained from the summation of the number of assets per household. However, the number of livestock assets was obtained from the conversion of the number of cattle to Tropical Livestock Unit (TLU) considering bovine as 0.8 TLU, sheep or goat as 0.15 UBT, equine as 1 TLU and asine as 0.5. (JGRC 2001). Poultry is not reflected in this count.

Thus, a linear regression model was used to assess the determinants: $y = F(X, \beta) + \varepsilon$ where y is a continuous variable, X a set of explanatory variables, β the measurement parameters and ε the error term. As the vector β parameters are unknown, the goal is to reach its best estimator. In the linear model F is a continuous and linear function. Therefore, we rely on the Ordinary Least Squares (OLS) method.
In addition, when the dependent variable is qualitative as access to and use and control over technology, decision making and extension, it don't admit natural measuring scale. It's likelihood is then modelled to take the suitable attribute.
In that case, *n* is taken the same logistic regression form like the linear regression model: $y = F(X, \beta) + \varepsilon$. By adopting the previously established coding 0/1, we obtain:

$$y_i = \begin{cases} 1 \ if \ the individual \ use \ the \ techno \log y \\ 0 \ if \ not \end{cases}$$

This relation justify the use of logistic regression.

From this quantitative coding, we establish a link between the conditional expected value of *y* to *x* and the probability of *y:*

$$y_i = \begin{cases} 1 & if \ i \ use \ the \ techno \log y \ \ with \ the \ probability \ P = F(X, \beta) = P(y = 1) \\ 0 & if \ i \ do not use the techno \log y \ \ with \ the \ probability \ 1 - P = 1 - F(X, \beta) = P(y = 0) \end{cases}$$

However, in that case, the model is non-linear and the residue ε cannot be distributed according to a Normal distribution. Indeed, the model can only take two values: $y = F(X, \beta) + \varepsilon \Leftrightarrow \varepsilon = y - F(X, \beta)$.

- If y=1, then we will have $\varepsilon = 1 - F(X, \beta)$
- If y=0, then we will have $\varepsilon = -F(X, \beta)$

An intuitive choice for modeling a probability is to use a distribution function. Two cases are generally considered: i) when this distribution function derives from Logistics law it results in the logit regression model or simply the logit model.

The cumulative function of an average logistic μ and variance σ^2

$$F(t) = \frac{\exp\left(\frac{\pi}{\sqrt{3}}\frac{t-\mu}{\sigma}\right)}{1+\exp\left(\frac{\pi}{\sqrt{3}}\frac{t-\mu}{\sigma}\right)}$$

For that purpose, the logit model is: $P(y=1) = F(X,\beta) = \frac{\exp(X\beta)}{1+\exp(X\beta)}$ =

ii) However, when this distribution function is from the normal distribution we get the probit regression model or simply the probit model. The cumulative function of an average logistic μ and variance σ^2 i.e. $N(\mu,\sigma^2)$ is : $F(x) = \int_{-\infty}^{x} \frac{1}{\sigma\sqrt{2\pi}} \exp\left[-\frac{1}{2}(\frac{t-\mu}{\sigma})^2\right] dt$

Then, the model is: $$P(y=1) = F(X,\beta) = \int_{-\infty}^{X\beta} \frac{1}{\sigma\sqrt{2\pi}} \exp\left[-\frac{1}{2}(\frac{t-\mu}{\sigma})^2\right] dt$$

In addition, the logistic regression model estimation is based on the method of maximum likelihood applied to the sample. When individual observations *yi*, i = 1, ... n, are assumed to be independent, the likelihood is written as the product of probability:

$$L(\beta/X) = \prod_{i=1}^{n} [P(y=1/X\beta)]^{y_i} [1-P(y=1/X\beta)]^{1-y_i}$$

The log-likelihood is $\ell(\beta/X) = Log(L(\beta/X)$.

The program to be solved is $\underset{\beta}{Max}\, \ell(\beta/X)$

The first order condition is: $$S = O \; avec \; S = (S_j), \; j = 0,1...p \; et \; S_j = \frac{\partial \ell(\beta/X)}{\partial \beta_j}$$

The second order condition is: H définie négative avec $H = (h_{j,k})$ et $h_{j,k} = \frac{\partial^2 \ell(\beta/X)}{\partial \beta_j \partial \beta_k}$

The resolution Condition of the First Order (CPO) equation requires the use of digital calculation. The estimator which satisfies this equation is $\hat{\beta}_{MLE}$.

The properties of the estimator are as follows:

- $\hat{\beta}_{MLE}$ is convergent : the difference between $\hat{\beta}_{MLE}$ and the true value β can be made as small as we want.
- $\hat{\beta}_{MLE}$ is effective: its variance is more smaller than the variance of any other estimator of β.

Finally, after estimating the model by the method of maximum likelihood, the Hausman test allowed us to discriminate between the logit model and the probit model. In these cases, the results of this test lead to the choice of the probit regression model with an error margin of 5% where Prob> chi2 0000 denotes the significance of the model, Pseudo

R2: the proportion of the variation in the probability of occurrence of the dependent variable due to changes in the explanatory variables.
The coefficient (Coef.) refers to the effect or extent of the explanatory variables' probability of influence. The sign (- or.) that accompanies the coefficient determines the negative or positive direction of the observed influence while the P> expresses the significance of the influence. Therefore, the more P> is below 5% significant is the influence of targeted variable.

III. Results

1. General characteristics of interviewed actors

This section presents the interviewees' general characteristics including social demographic, cultural, economic characteristics and belonging to social organizations (table 4)
Thus, the average age of the population is 42 surrounding by a minimum of 16 and a maximum of 80. Youth referring to the 15 to 24 according to the International Labor organization are 6%. Muslim are the majority with 86% followed by Christian representing 8% and Animist (5%). Education patterns is reveal a high unschooled level of 64%. 17% of the interviewees has a primary school level for 4% of secondary school and 2% for literacy school. 40% of women are unschooled against 23 % for men and 4% for youth. Senoufo ethnic group is the biggest with 35% followed by Dioula 26% and Samogho 16%. According to the marital status 89% of the targeted population is married, 6% widowed and 3% single. Men head of household with one or more than one spouse is the major households type encounter in 90% of the cases followed by women divorces/widowed head of household in 4% and single men in 2% and youth head of household in 0,4% of the cases.

Agriculture is the primary occupation for 68% of the interviewed actors. Afterwards, private trade of agricultural, livestock and agroforestry product occupy 24%, livestock for 4% formal employment for 2% and labourer for 1%. In addition, 70% run income generating activities against 30% who do not.

The average number of children and dependants per household is 5 and 4. The interviewees have an average of 35 years in the villages. The average annual income is 955 662 FCFA. However, Samogohiri is the wealthier with an average of 1 796 227 per year followed by Mahon and finally Dieri. Shift by generation and sex, income distribution reveals that 67% of youth, 60% of men and 48% of women hold a monthly income of 30 000FCFA to over 120 000FCFA. Women's monthly income is concentrated at 51% in the up to 30 000 FCFA range. (Table 5).

Table 4: Social demographic characteristics of the studied population

Social demographic variables		Dieri	Mahon	Samogihiri	Total
Sex	Male	87	77	80	244
	Female	78	89	87	254
	Total	**165**	**166**	**167**	**498**
Generation	Adult	154	160	156	470
	Youth (14-25)	11	6	11	28
	Total	**165**	**166**	**167**	**498**
Education	Unschooled	91	103	124	318
	Koranic school	47	3	9	76
	Primary	19	40	26	85
	Secondary	4	11	6	21
	Post secondary	2	0	2	4
	Literacy school	2	9	0	11
	Total	**165**	**166**	**167**	**498**
Religion	Christian	3	36	3	42
	Muslim	162	105	163	430
	Animist	0	24	1	25
	Other	0	1	0	1
	Total	**165**	**166**	**167**	**498**
Ethnicity	Senoufo	5	159	8	172
	Bobo	1	3	0	4
	Marka	0	1	0	1
	Peulh	49	0	4	53
	Dioula	54	3	77	134
	Samogho	3	0	77	80
	Goin	1	0	0	1
	Mossi	2	0	1	3
	Siamou	49	0	0	49
	Other	1	0	0	1
	Total	**165**	**166**	**167**	**498**
Marital status	Married	143	144	159	446
	Single	4	7	5	16
	Divorced	1	1	1	3
	Widowed	17	14	2	33
	Total	**165**	**166**	**167**	**498**
Households type	Men head with one or more than on spouse	149	140	161	450
	Men single/ divorced/widowed head	3	3	4	10
	Women divorced/widowed head	13	21	2	36
	Youth head	0	2	0	2
	Total	**165**	**166**	**167**	**498**
Primary activity	Agriculture	77	119	145	341
	Livestock	6	6	9	21
	Personal commerce	74	39	8	121
	Formal wage employment	8	1	1	10
	laborer	0	0	1	1
	unemployed	0	1	2	3
	Total	**165**	**166**	**167**	**498**

Source: Field survey, November 2015.

Table 5: Social economic characteristics of the studied population

Social economic variables	Dieri	Mahon	Samogihiri	Total
	Average			
Age	42	44	41	42
Number of children	5	5	5	5
Number of dependants	3	5	4	4
Number of years in the village	36	33	34	35
Total annual income	270 000,00	791 566,27	1 796 227,54	955 662,65

Source: Field surveys, November 2015

Table 6: Income distribution by generation and sex

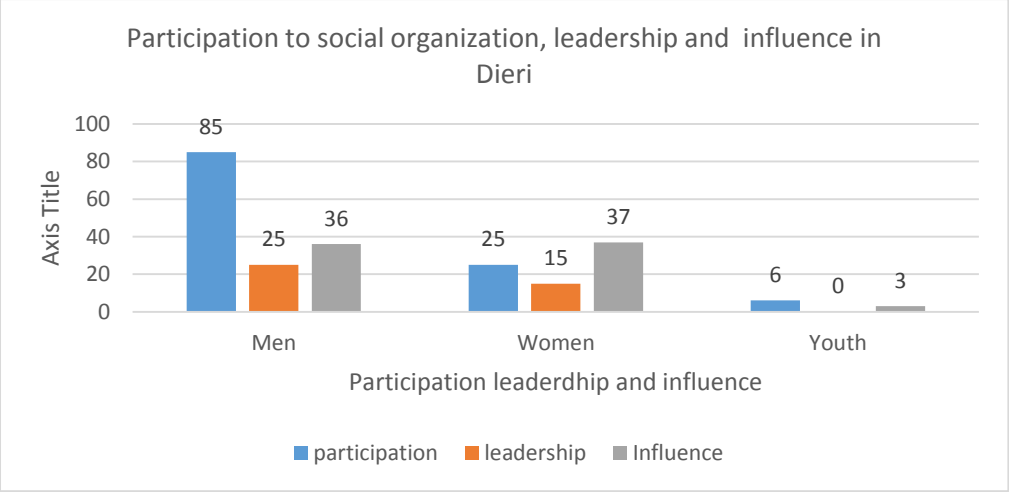
	Average monthly income in FCFA					Total
	<15.000	15.000 to 30.000	30.000 to 60.000	60.000 to 120.000	Over 120.000	
Generation						
Youth	5	4	4	7	8	28
Adult	108	109	50	53	150	470
Sex						
Men	43	53	29	20	99	244
Women	70	60	25	40	59	254
Total	113	113	54	60	158	498

Source: Field surveys, November 2015

Participation to local social organization in the three communities was assessed through the referent participation membership in social organizations as a water management committee, agricultural organization, processors association, land management committee, village development council (CVD), self-help tontine group and other organization. Leadership refers to the participation as leader in these organization's management and agenda while influence concerns the acting authority to impact the decision making schemes within the organizations.

Thus, as shown in the figures 4, 5 and 6 below, in the entire villages, agricultural organizations constitute the peak of men and women participation except Dieri where women instead focus on self-help tontine group and processors associations. In addition, women and youth are not involved in the land management organizations unless in Mahon where women slightly participate. In the same logic, men and youth are excluded from the tontine organizations in Samogohiri in opposite to Mahon and Dieri. Specifically, in Dieri men excel in agricultural organizations and water management committee whereas youth are exclusively involved in tontine groups for 36.4%, processors association and water management committees for 9.1%.

Figure 4: Participation to social organization, leadership and influence in Dieri

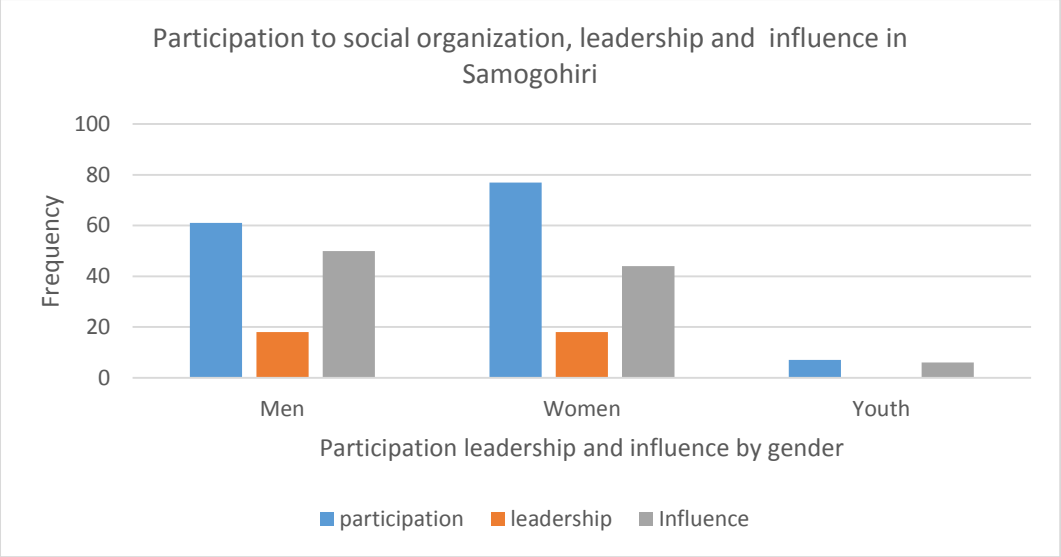


Source: Field surveys, November 2015

Figure 5: Participation to social organization, leadership and influence in Mahon

Source: Field surveys, November 2015

Figure 6: Participation to social organization, leadership and influence in Samogohiri



Source: Field surveys, November 2015

As participation, leadership changes depending on the village, the sex, the activity and the generation. Thus, in Dieri and Samogohiri, youth don't exercise any leadership in the targeted organizations while in Mahon they do mainly in the agricultural organizations. Moreover, in Dieri and Samogohiri, women and youth do not have any leadership in nor influence over the land management committees. However, in Mahon, women has relative weak leadership in and influence over decision making in land management committees while youth are powerless. Nevertheless, although women has general weaker leadership, they do exert higher influence in the decision making within the organizations they participate in. Specifically, their strongest leadership and influence are located in the self-help tontine and processors groups in Diéri whereas it's found in the agricultural and tontine groups in Mahon and Samogohiri. (Annex 1).

2. Gender equity in access to and use of labour and related resources

2.1 Labor ownership in the household.

Within the household there is a sexual division of labor and roles. Thus, men are largely assigned task of production such as the agriculture and agroforestry to feed the family, provide funds for children's schooling, cloths for the family member, building house to shelter the family and wells dug for water supply. Men has very few assigned role regarding social and reproduction area. These include their physiological contribution and support for child care. In contrast, most of the roles assigned to their female counterpart concern the reproduction: giving birth, housekeeping, and kitchen to fetch water, manage the household when the man is outside, and take care of the rearing of children. Their production role revolves around agriculture, the collection and processing of cashews, shea and néré nut, provide the condiments costs and run income generating activity.

Yet, regarding agriculture, women provide 57.43% of the labor on male farmland against 15.06% for men, 24% for other household members and 3.41% for paid labor. (Table 7). Similarly, on the fields of female farmland, men perform 5.62% of labor against 47.19% for women themselves. The other members in or outside the household shares 42.37% and 4.82% of paid work. (Table 8).

Table 7: Gendered agricultural and related labor distribution on Male/household farm

Labor on male farm	Freq.	Percent	Cum.
Men	75	15.06	15.06
Women	286	57.43	72.49
Paid labor	17	3.41	75.90
Other laborers	120	24.10	100.00
Total	498	100	

Source: Field surveys, November 2015

Table 8: Gendered agricultural and related labor distribution on Female farm

Labor on female farm	Freq.	Percent	Cum.
Men	28	5.62	5.62
Women	235	47.19	52.81
Paid labor	24	4.82	57.63
Other laborers	211	42.37	100.00
Total	498	100	

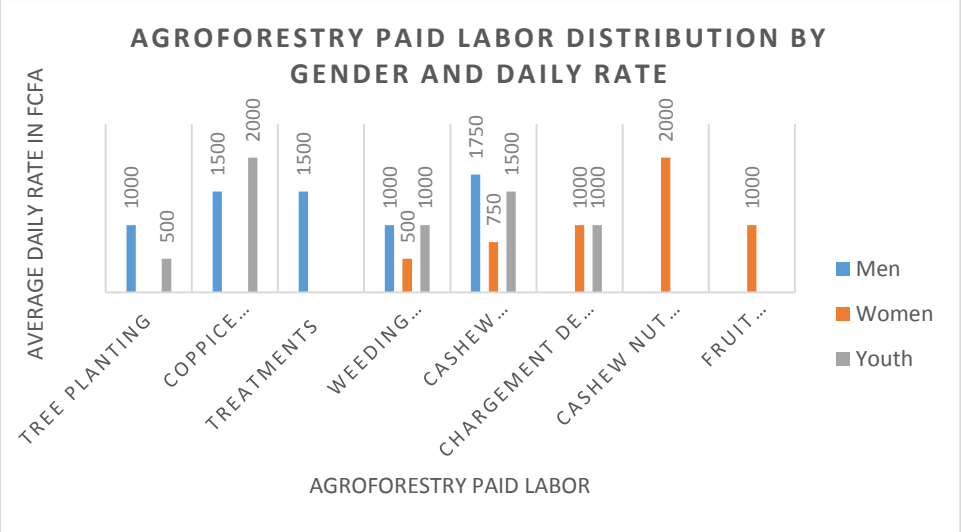
Source: Field surveys, November 2015

2.2 Paid agriculture and agroforestry labor assessment

As shown on the figure 7 below, paid agroforestry labor is distributed by gender as well as the daily rates charged. Thus, men do not operate in in loading fruits in vehicles nor processing cashews or transport fruits to the village while women do. Similarly, women are not engaged in tree planting, coppicing and trees caring whereas men do. However, all of them including youth work in the weeding of plantations. Specifically, aside from the treatment of plants, the cashews processing and the fruits transportation, youth offer labor in other agroforestry activities.

The daily rate assessment show a negative tight barrier between the remuneration paid to men and those paid to women and youth. For example, while men are paid for weeding plantations at 1000FCFA / day and 1750FCFA / day the collection of plantation' fruits, youth for the same labor respectively receive 1000FCFA and 1500FCFA and women 750FCFA and 500FCFA.

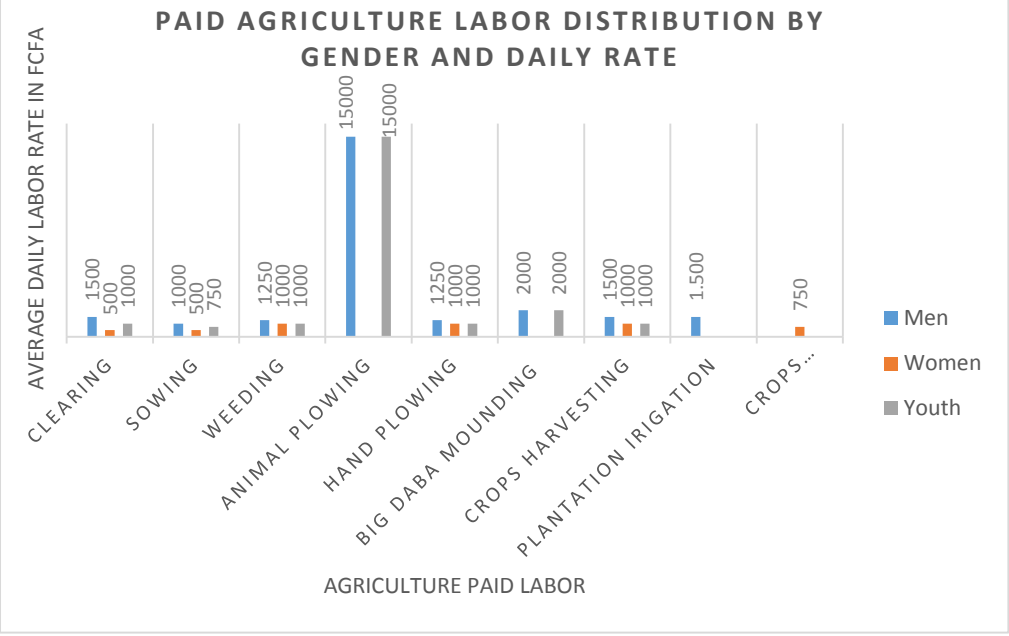
Figure 7: Agroforestry paid labor distribution by gender and daily rate



Source: Field surveys, November 2015

Likewise, agriculture (figure 8) also reveals engendered division of task followed by differentiated rates charged by gender. Thus, animal plowing and mounding with big daba for tuber crop (yam, potato and cassava) is exclusively male and youth domain. Similarly, the crops transportation is exclusively assigned to women. In addition, the rates charged for women and youth are relatively lower than those paid to men for the same labor. Thus, while men receive a daily rate of 1500 FCFA for farm clearing, youth are paid 1000FCFA and women 500 FCFA for the same labor.

Figure 8: Agriculture paid labor distribution by gender and daily rate



Source: Field surveys, November 2015

Determinants of sexual division of paid agricultural and related labor

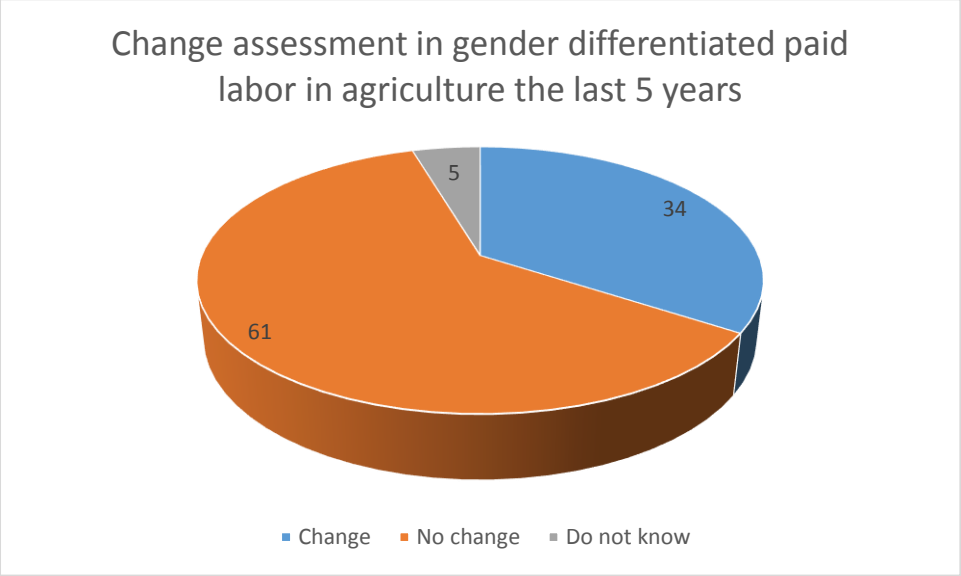
Among the determinants of this paid labor division in agriculture, social norms establishing the male and female areas of loabor fall in the first place with 38.35% followed by the lack of physical strength raised mostly by women (34.74%) and religion with 3.41%. Other reasons including poverty occupy 12.05 %.(Table 9).
Regarding the dynamics pertaining to this paid labor (figure 9), a majority of 61.24% think that there is no significant change in these social norms the last five years because of gender differences. In opposite, 34.14% think that modernity and especially the high cost of living induced flexibility of these gender norms. The same trend is in vogue in agroforestry where 29% of our respondents think that there is no change in these gender norms against 63.45% who notes a change.

Table 9: Determinants of sexual division of paid agricultural and related labor

Determinants of sexual division of paid labor	Freq.	Percent	Cum.
Religion	17	3.41	3041
Ethnicity	6	1.20	4.62
Social norms	191	38.35	42.97
Modernity	28	5.62	48.59
Physical strength constraint	173	34.74	83.33
Poverty and other	60	12.05	95.38
Not applicable	23	4.62	100.00
Total	498	100	

Source: Field surveys, November 2015

Figure 9: Change assessment in gender differentiated paid labor in agriculture



Source: Field surveys, November 2015

2.3 Determinants of access to and use of labour and related resources

This section presents first the determinants of men and women labor. Afterwards it turns these determinants assessment by gender and type of farmland.

Determinants of labor by gender

Determinants of men agricultural and related labor

Determinants of labor vary according to gender and farmland type. Thus, by gender, sex, total annual income and access to technology negatively and significantly affect the supply of labor by men. Similarly, household type, education and extension use frequency are also negative but not significant determinants. However, ethnicity, primary activity has a positive and significant influence on men labor. .

Table 10: Determinants of men agricultural and related labor

Number of obs	= 493
F(9, 483)	= 19.83
Prob > F	= 0.0000
R-squared	= 0.2698
Adj R-squared	= 0.2562
Root MSE	= .86841

Determinants of men agricultural and related labor	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
Sex	-.3058231	.0875334	-3.49	**0.001**	-.4778164	-.1338298
Ethnicity	.095334	.0133742	7.13	**0.000**	.0690552	.1216129
Household type	-.067548	.0616606	-1.10	0.274	-.1887043	.0536082
Education	-.0484638	.0326945	-1.48	0.139	-.1127048	.0157773
Primary activity	.0542215	.0160676	3.37	**0.001**	.0226505	.0857924
Income generating activity	.0906238	.0890532	1.02	0.309	-.0843556	.2656032
Total_annual income	-3.49e-07	4.94e-08	-7.07	**0.000**	-4.46e-07	-2.52e-07
Access to_technology	-.2069066	.0989636	-2.09	**0.037**	-.4013589	-.0124543
Extension use frequency	-.4351492	.3368023	-1.29	0.197	-1.096928	.2266295
_cons	2.771052	.2459216	11.27	0.000	2.287844	3.254261

Source: Field surveys, November 2015

Determinants of female agricultural and related labor

Unlike determinants of men' labor, sex, annual income, access to technology does not significantly affect women's labor. Moreover, the decision of men has no significant influence on the labor provided by women. However, women' decision making improves their access to labor on their own farmland. The number of children is also impact positively and significantly women's labor as well as the number of agricultural assets and ethnicity. The number of dependents and the frequency of extension use have negative but not significant influence. (Table 11)

Table 11: Determinants of women agricultural and related labor

Number of obs	=	496	
F(10, 485)	=	45.12	
Prob > F	=	0.0000	
R-squared	=	0.4819	
Adj R-squared	=	0.4713	
Root MSE	=	.7612	

Determinants of women agricultural and related labor	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
Sex	.0536175	.0771384	0.70	0.487	-.0979493	.2051843
Ethnicity	.0632377	.0130482	4.85	**0.000**	.0375997	.0888757
Number of children	.0311987	.0101892	3.06	**0.002**	.0111782	.0512192
Number of dependants	-.0070648	.0059574	-1.19	0.236	-.0187703	.0046408
Men's decision making	.0660355	.0706471	0.93	0.350	-.0727767	.2048477
Women's decision making	1.215623	.0802344	15.15	**0.000**	1.057973	1.373273
Access to technology	.0294861	.088334	0.33	0.739	-.1440786	.2030508
Total annual income	2.72e-08	5.22e-08	0.52	0.603	-7.55e-08	1.30e-07
Extension use frequency	-.214856	.2957664	-0.73	0.468	-.7959976	.3662856
Agricultural assets	.0433129	.0201763	2.15	**0.032**	.0036692	.0829566
_cons	-.5355752	.2794006	-1.92	0.056	-1.08456	.0134098

Source: Field surveys, November 2015

Determinants of agricultural and related labor by gender and farm land type

Depending on the type of household farmland or the one operate by women, the determinants of labor vary. Thus on men's or household farmland of men, only women's labor reveal a significant positive impact on the overall labor deployed in this type of space. Other significant determinants composed of sex, religion, ethnicity, number of children and annual income negatively affect the probability of delivery of the labor. (Table 12).

On the women's farmland, there is not much significant determinants of labor. Only men's labor and annual income increases the probability of labor delivery on women's farmland. Interestingly, while the annual income reduces the labor on men's farmland it however significantly improves labor on women's farmland (table12).

Table 12: Determinants of agricultural and related labor on men/household farm land

Number of obs = 339
F(13, 325) = 6.09
Prob > F = 0.0000
R-squared = 0.1959
Adj R-squared = 0.1637
Root MSE = 480.11

Determinants of labor on men farm land	Coef.	Std. Err.	t	P>|t|	[95% Conf. Interval]	
Women' labor time	.6352131	.0920395	6.90	**0.000**	.4541446	.8162815
Youth	-95.91643	128.0897	-0.75	0.455	-347.906	156.0731
Age	2.463414	2.40089	1.03	0.306	-2.259833	7.186662
Sex	-184.6402	60.07852	-3.07	**0.002**	-302.832	-66.44827
Religion	-151.3274	60.6537	-2.49	**0.013**	-270.6508	-32.00394
Ethnicity	-33.61184	14.48222	-2.32	**0.021**	-62.10257	-5.121115
Marital status	28.40829	42.05591	0.68	0.500	-54.32788	111.1445
Number of children	-18.42931	8.212374	-2.24	**0.025**	-34.58543	-2.273184
Number of dependant	2.869946	4.071228	0.70	0.481	-5.13934	10.87923
Total annual income	-.000073	.000038	-1.92	**0.056**	-.0001478	1.86e-06
Men decision making	-32.18373	70.59783	-0.46	0.649	-171.0701	106.7027
Agricultural asset	30.11013	16.04835	1.88	0.062	-1.461629	61.6819
Access to technology	78.36332	75.28765	1.04	0.299	-69.74933	226.476
_cons	1151.085	232.1807	4.96	0.000	694.3183	1607.852

Source: Field surveys, November 2015

Table 13: Determinants of agricultural and related labor on women farm

Number of obs = 339
F(13, 325) = 5.31
Prob > F = 0.0000
R-squared = 0.1752
Adj R-squared = 0.1422
Root MSE = 270.25

Determinants of labor on femen farm land	Coef.	Std. Err.	t	P>|t|	[95% Conf. Interval]	
Men's labor time	.2015531	.0292515	6.89	**0.000**	.1440069	.2590994
Youth	-34.17723	72.09361	-0.47	0.636	-176.0063	107.6518
Sex	40.69442	34.21623	1.19	0.235	-26.61882	108.0077
Age	.7277571	1.354147	0.54	0.591	-1.936242	3.391757
Religion	48.78064	34.5048	1.41	0.158	-19.10031	116.6616
Ethnicity	.3814882	8.211833	0.05	0.963	-15.77357	16.53655
Marital status	37.10949	23.56541	1.57	0.116	-9.250512	83.46949
Number of children	5.042378	4.691667	1.07	0.283	-4.187492	14.27225
Number of dependant	.0371271	2.330354	0.02	0.987	-4.547354	4.621609
Total_annual income	.0000635	.0000214	2.97	**0.003**	.0000215	.0001055
Women's decision making	2.059778	54.31055	0.04	0.970	-104.7848	108.9044
Agricultural assets	4.95955	9.134662	0.54	0.588	-13.01098	22.93008
Access to technology	-27.79468	42.52381	-0.65	0.514	-111.4513	55.86199
_cons	-136.452	174.7026	-0.78	0.435	-480.1427	207.2387

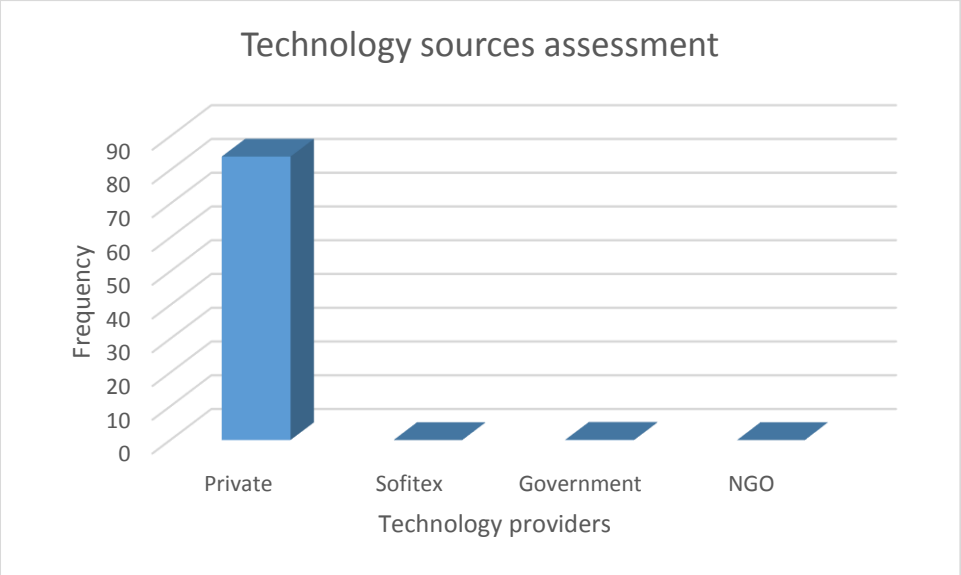
Source: Field surveys, November 2015

2.4 Determinants of access to technology /inputs

2.4.1 Sources of technology

Private sector by delivering 84% of people's needs is the major technology provider in the area. Government subsidized products follow as the second source with 8%, NGOs and SOFITEX with 1% each.

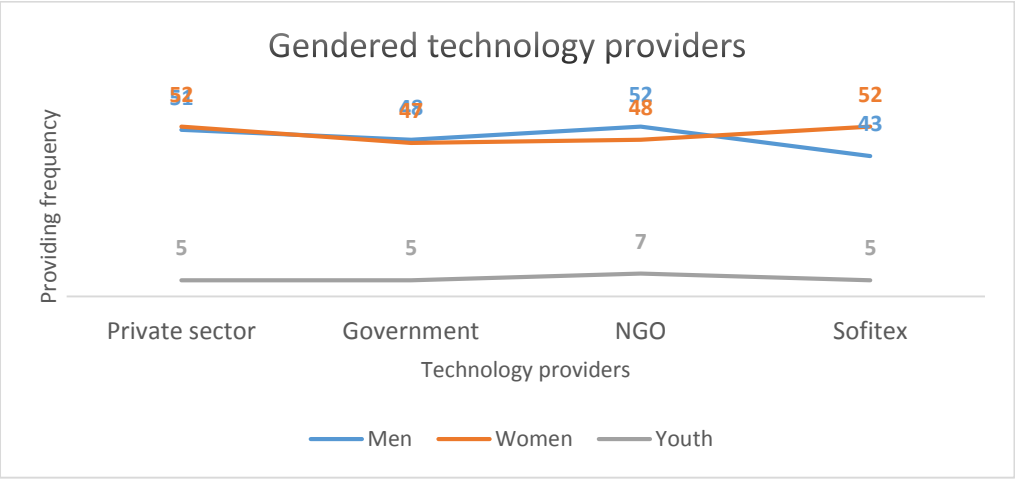
Figure 10: Technology sources assessment



Source: Field surveys, November 2015

Shift by gender, there is not a wide dispersion between the technology sources. Indeed, men (48% and 52%) rely more on the government and the NGO than women (47% and 48%). At a difference of one point less, women resort to the private sector than men. The difference is more significant at the SOFITEX which is requested to 52% of women against 43% of men. Youth are lagging behind in relation to different sources of technology with particular interest to NGOs.

Figure 11: Gendered technology providers



Source: Field surveys, November 2015

2.4.2 Global determinants of access to technology

Age, sex, marital status and number of dependant influence negatively access to technology in the villages while the type of household the number of children, annual income the number all asset's category influence positively this variable. Sex exercise significate negative influence in opposite to number of livestock asset, as well as the number of agricultural asset and property asset which have positive significant impact. Annual income also highly increase probability to access technology (table14).

Table 14: Global determinants of access to technology probit regression

Number of obs = 447
LR chi2(12) = 183.18
Prob > chi2 = 0.0000
Log likelihood = -161.13684 Pseudo R2 = 0.3624

Access to technology	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
Age	-.0077946	.0071501	-1.09	0.276	-.0218086	.0062193
Sex	-.681911	.178407	-3.82	**0.000**	-1.031582	-.3322397
Marital status	-.0684234	.1236063	-0.55	0.580	-.3106874	.1738406
Household type	.0240578	.1451555	0.17	0.868	-.2604419	.3085574
Number of children	.0090958	.0304071	0.30	0.765	-.050501	.0686926
Number of dependants	-.0066582	.0197057	-0.34	0.735	-.0452807	.0319643
Annual income	1.95e-07	1.42e-07	1.37	0.171	-8.41e-08	4.74e-07
Domestic asset	.0244624	.0155563	1.57	0.116	-.0060274	.0549522
Asset of transport	.0732028	.0652884	1.12	0.262	-.0547601	.2011657
Property asset	.0886717	.0431431	2.06	**0.040**	.0041127	.1732307
Agricultural asset	.2788285	.055415	5.03	**0.000**	.170217	.3874399
Livestock asset	1370189	.0386633	3.54	**0.000**	.0612403	.2127975
_Cons	1.010974	.4289924	2.36	0.018	.170164	1.851783

Source: Field surveys, November 2015

Disaggregated by gender, agricultural assets and livestock assets are the positive and significant determinants affecting men's access to technology. These variables also influence women's access to technology in addition to the annual income. (Table 15).

Table 15: Determinants of men access to technology probit regression

Number of obs = 218
LR chi2(11) = 57.05
Prob > chi2 = 0.0000
Pseudo R2 = 0.2920

Log likelihood = -69.160884

Determinants of men Access to technology	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
Youth	2453006	.8793993	0.28	0.780	-1.47829	1.968891
Age	-.0075559	.0120486	-0.63	0.531	-.0311707	.016059
Marital status	-.1010718	.3438865	-0.29	0.769	-.775077	.5729334
Household type	.2426426	.3618448	0.67	0.502	-.4665602	.9518455
Number of children	.041048	.0420847	0.98	0.329	-.0414366	.1235326
Total annual income	-4.55e-08	1.82e-07	-0.25	0.803	-4.02e-07	3.12e-07
Domestic asset	.0176742	.0256282	0.69	0.490	-.0325562	.0679045
Asset of transport	.2036679	.1271593	1.60	0.109	-.0455596	.4528955
Property asset	.0530543	.0626934	0.85	0.397	-.0698224	.175931
Agricultural asset	.288487	.1012735	2.85	**0.004**	.0899947	.4869793
Livestock asset	.1642686	.0805431	2.04	**0.041**	.0064069	.3221303
_cons	.0218946	.6621365	0.03	0.974	-1.275869	1.319658

Source: Field surveys, November 2015

Table 16: Determinants of women access to technology probit regression

Number of obs = 229
LR chi2(11) = 123.64
Prob > chi2 = 0.0000
Pseudo R2 = 0.4228

Log likelihood = -84.398831

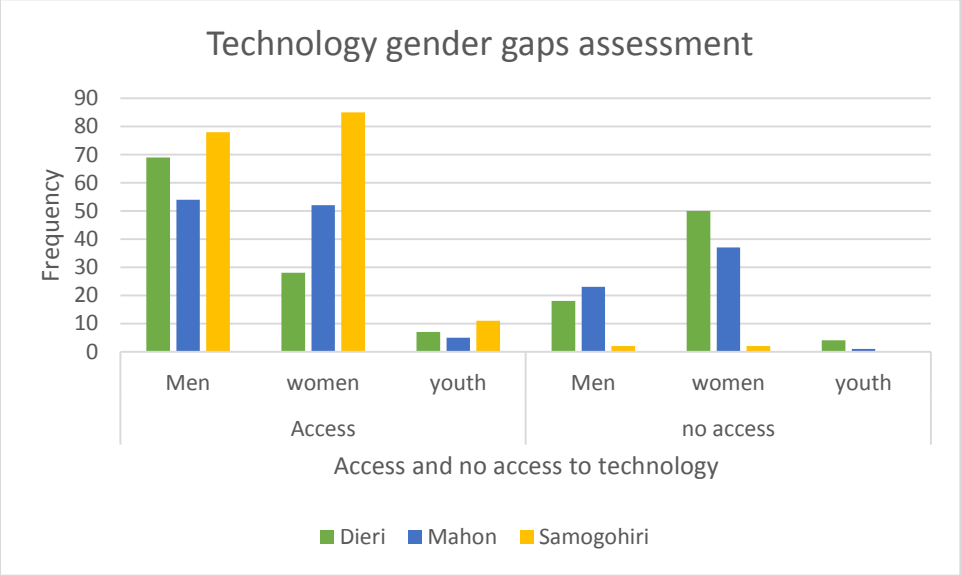
Determinants of women access to technology	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
Youth	.3758052	.4946592	0.76	0.447	-.5937089	1.345319
Age	-.0034616	.0103136	-0.34	0.737	-.0236759	.0167528
Marital status	-.0764287	.1460354	-0.52	0.601	-.3626528	.2097953
Household type	-.0207896	.1853729	-0.11	0.911	-.3841137	.3425346
Number of children	-.0436424	.0502413	-0.87	0.385	-.1421136	.0548288
Total annual income	7.14e-07	2.67e-07	2.67	**0.008**	1.89e-07	1.24e-06
Domestic asset	.0266476	.0205717	1.30	0.195	-.0136722	.0669674
Asset of transport	.025404	.082154	0.31	0.757	-.1356149	.1864228
Property asset	.0969986	.062425	1.55	0.120	-.0253522	.2193493
Agricultural asset	.2286124	.0707629	3.23	**0.001**	.0899197	.3673052
Livestock asset	.122728	.0453007	2.71	**0.007**	.0339402	.2115157
_cons	-.43559	.4781174	-0.91	0.362	-1.372683	.5015029

Source: Field surveys, November 2015

2.5 Gender gaps for men-women-youth (use descriptive statistics)

There is a high level of access to technology in the area, but with significant gender disparities. Indeed, 73% of our respondents including 45% women and 55% men reported having access to at least one technology. The 27% of respondents who have not access to technology is composed of 67% women against 33% men. Thus, 10 points of disparity separate men and women in access to technology and 34 points in the non-access. This distribution of the proportion of access to at least one technology change according to the villages. Thus, in Dieri only 26% of men do not have access to technology against 64% women. Similarly in Mahon men constitute 38% of those who do not have access to technology against 62% for women. However, in Samogohiri women benefit from highest access opportunity 52% against 48% for their male counterparts. Youth at 82% benefit from access to at least one technology. Specifically, they are 63% in Dieri having access to technology, 83% in Mahon and 100% in Samogohiri. (figure 12).

Figure 12: Gender gaps in access to agricultural and related technology



Source: Field surveys, November 2015

2.6 Women and youth's constraints

Vignette: Being a female farmer in Mahon village

...My name is M. Traore, 36, married and mother of 5 children. Associated agriculture and livestock is the main activity in my community. While men focus on cattle breeding, cereals and tubers cultivation because of the importance of assets they hold, we women are strongly invest in the nutsedge or sweet pea (souchet in French) production as well as non-timber forest production collection. We collect then karité and néré for our households' consumption and also for marketing. Likewise, the sweet pea farming is our female domain because it takes time, requires patience and caution in planting and harvesting. Although its high economic market value, men do not farm this speculation because of their lack of knowledge and ability. However, they do farm tubers which need important physic labor, equipment and fertilizer they hold.

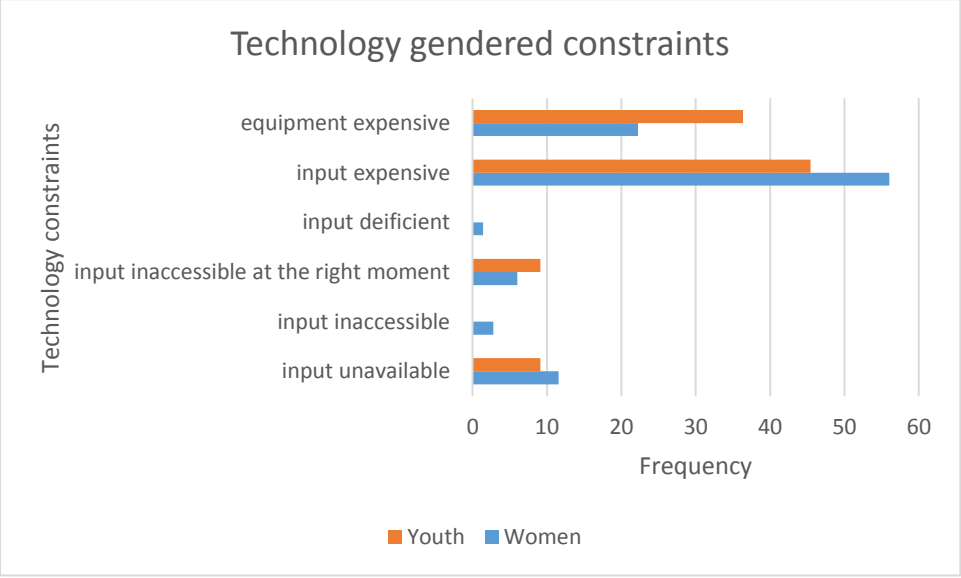
Indeed, access to equipment and fertilizer is our main constraints as each woman can farm up to 2 ha and can need 500 kg of fertilizer. Indeed, we are obliged to wait until the men end their plows in order to rent plows at 30 000 FCFA per ha against 20 000 FCFA per ha for men. Yes, we rent the plow more expensive than men because of our weak bargaining power, the period of high demand and of course we have no choice! In view also of the relatively low fertility of our farms, the chemical fertilizer in complement of organic manure is essential for a good harvest. Thus, we sell our karité nut and nere seeds to buy the fertilizer with the private traders on the local market in Orodara at 20 000 FCFA /50kg as the grant-aided fertilizer less expensive 14 000FCFA/50kg comes always in late when we actually don't' need it. This subsidized fertilizer is also difficult to get because of the high demand from men who take precedence in the distribution. Moreover, the lack of carts to transport the organic manure in our farms remains the major problem regarding this technology. Thus, to promote food security and economic development for rural poor farmers, the state decided to allocate subsidized fertilizer to cash crop producer. As we are organized in self-help group, we have benefited last year (2014).

Unfortunately, for the removal of this fertilizer, the agent of agriculture service told us that we must pay a certain sum. While discussing with him, some men had come to spy upon us through the window. We then asked the officer for a delay to raise the required fund. He accepted to give us a few days. We then engage negotiation with some big traders in Orodara town to benefit from credit with them. Unfortunately, before the delay, I guest, some men have put pressure on the agent of agriculture who informed us that the store was robbed and that the perpetrators took away all our fertilizer. But, we actually know that our husbands are behind all this! Consequently, this year, we scrutinize the purchase of fertilizer on credit from merchants because it is more reliable, although the quality is not always good despite the high cost.

Women's self-help group leader, Mahon, 27/07/2015.

The high price of inputs is the biggest challenge for women and young people in access to technology. In addition, the high cost of agricultural equipment, unavailability of inputs, the inaccessibility of equipment and low quality input are the other constraints (Figure 13).

Figure 13: Women and youth constraints in access to technology



Source: Field surveys, November 2015

2.7 Discussion

As shown above, women provide the bulk of agricultural labor by 57.43% within the household' farmland and 47.15% on their own farmland. The World Bank (2015) also highlighted that the overall women' labor in Sub Saharan Africa in agriculture is estimated at 60% to 80%. Specifically, they provide an average of 40% of the overall labor in crops production. Moreover, FAO (2011) assessed women's labor at an average of 43% in agricultural production in developing countries. Thus, they remain the key providers of unpaid social and economic labor (Chmbers 2005). At some extend they face "time poverty" which impact negatively on their ability to invest time and labor to economically productive activities and take advantage of economic incentives. (Blackden & Wodon 2006).

In support of our results showing the gap between women's and men's rate in paid agriculture and agroforestry, FAO (2011) also revealed that women receive lower wages than their male counterpart for the same labor. They elaborate on rural Ghana's case where men's wages are 58 percent higher than women's wages.
Regarding the division of labor, Okello (2014) also noted the trend of men doing high physical labor and women taking care of less physical strength activities. In addition to this parameter, drivers of this differentiated division and valuation of men' and women' labor include social gender norms. As the results come up with minor changes these last five years, Oakley (2015) noted that gender norms are somehow flexible but change slowly pertaining to gender roles.

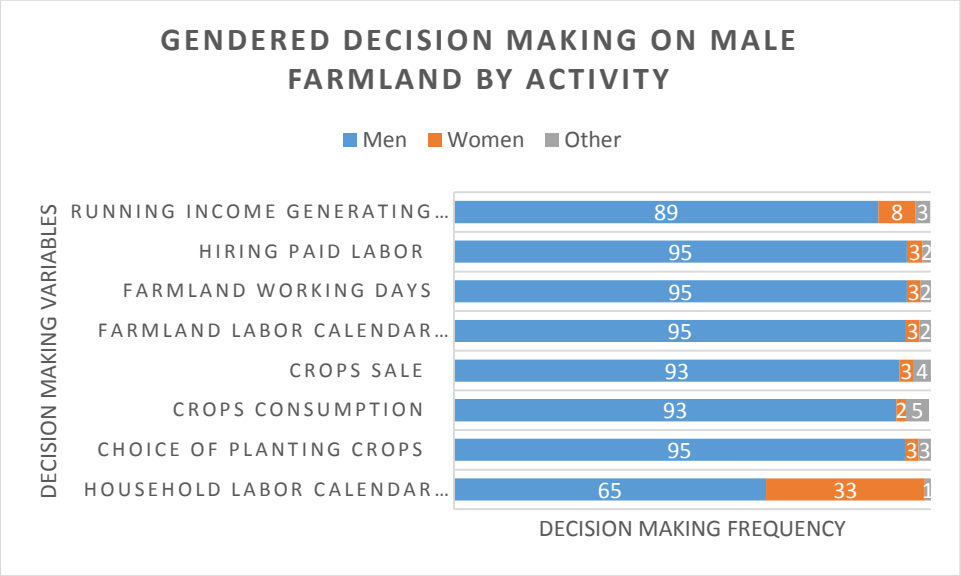
Assets are important determinants of women youth's access to technology. Indeed, studying women empowerment in South East Asia, Agarwal (1994) highlighted the critical role of ownership and control of property and assets as the most critical factor to women well-being, social status and empowerment. Moreover, Jackson (2003), bring to light the importance of financial and other input for addressing gender unbalance in agriculture, poverty alleviation and well-being. Bringing together these views, Peterman et al. (2014) conclude that land and related resources emerge in as a prerequisite to assess asset's place in agriculture in Africa. As engine for agricultural productivity and innovation, sustainable development and wellbeing perspective distinguished five set of asset: natural (land, water, forest), physical (institutions, technology), financial (saving, credit), human (education, health, training) and social (networks) which are all of importance for men and women in agriculture. Thus, Johnson et al. 2015 documented how their ownership and control by women contributed to capital changes in their individual empowerment and their households' livelihood strategies. However, there is gender inequity in access and ownership of these capital by men and women which prevent the latter to fully realise their potential in agriculture (Ragasa 2014). In Middle East and North Africa, Abdelali-Martini and Dey de Pryck (2014) noted that despite the feminisation of agricultural labour occurring, women's livelihood does not improved because of several factors such as access and control over productive assets. This unequal access and control of assets by women negatively impact development effort as Godfrey et al. (2014) argued that Burkina Faso could increase its agricultural output by 10-20 percent if shifting existing resources between men's and women's plots within the same household.

3. Gender equity in decision making and control over labour and related resources

3.1 Decision making and control over labor and related resources by gender and land type

Without any surprise, men are largely in charge of decision making regarding labor and related resources allocation in men farmland. Thus, women has a minor participation at all levels except the household work schedule establishment. Indeed, she control this variable at 33% against 65% for men surprisingly (Figure 14 below).

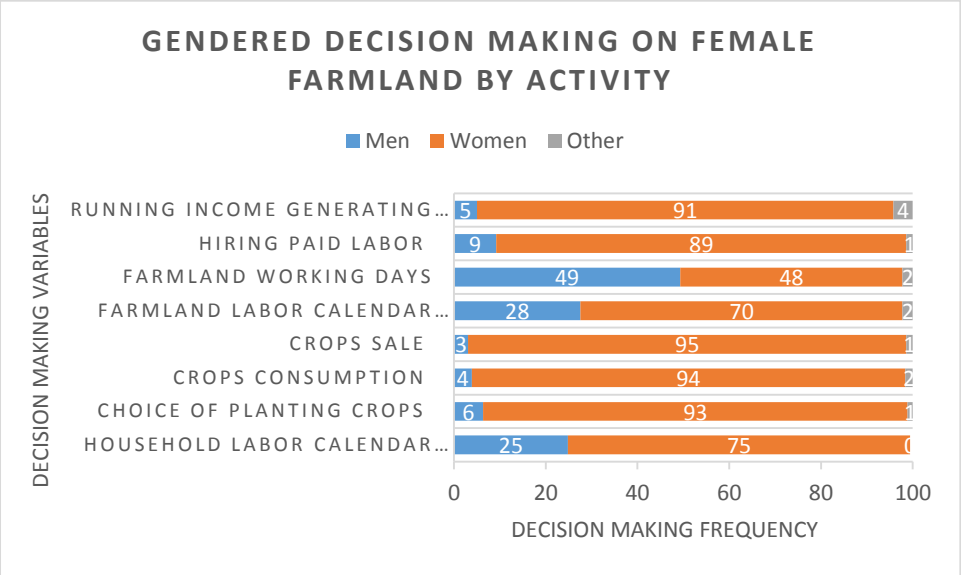
Figure 14: Gendered decision making on men farmland by activity



Source: Field surveys, November 2015

In the same logic, decision making related to the women's farmland is mainly executed by women. In fact, the most notable participation of men in time management on this women farm is about the daily farm work calendar setting for 49% , decision on the duration of these activities for 28% and the overall work schedule management. (Figure 15).

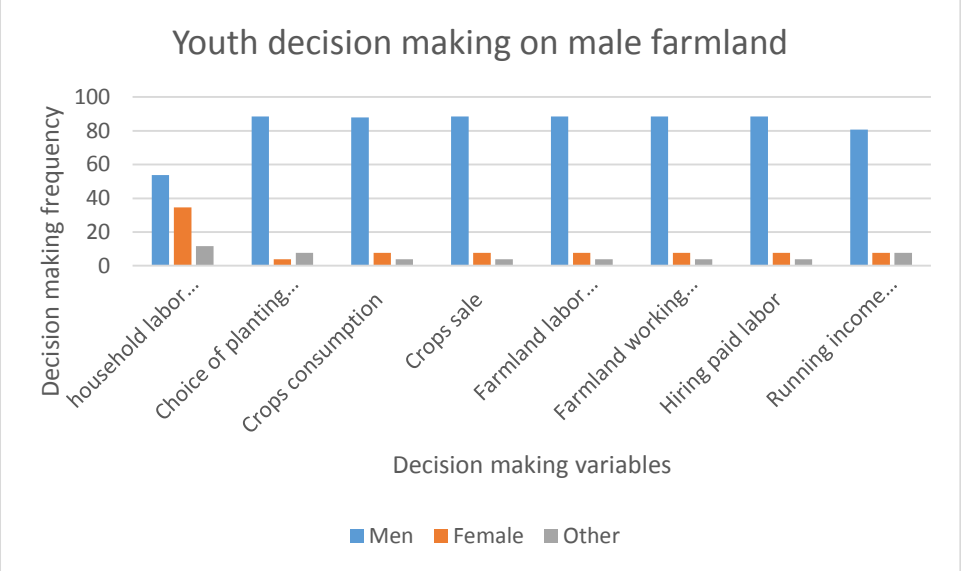
Figure 15: Gendered decision making on women farmland by activity



Source: Field surveys, November 2015

The same trend in decision making over labor and related resources between men and women per land type is also observed regarding youth decision making. Thus, pertaining to men' farmland, young boys are those who take the majority of decision regarding the labor allocation. Girls then has a weaker influence in decision making about 35% on the household work calendar (Figure 16).

Figure 16: Youth decision making on men farmland

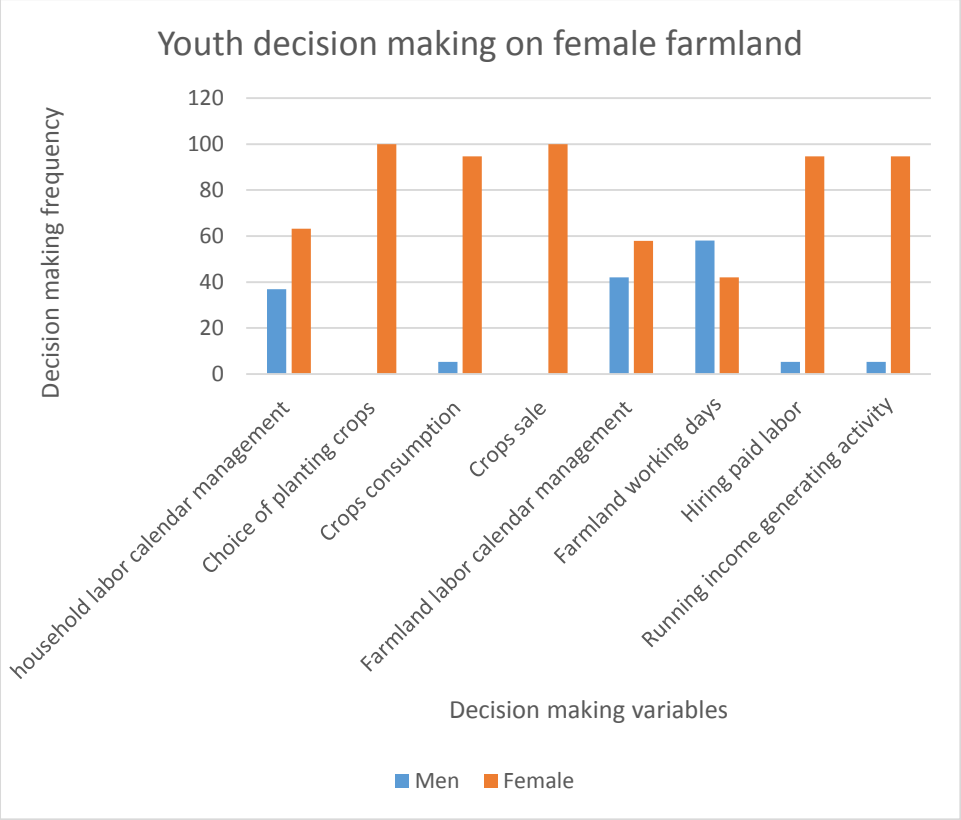


Source: Field surveys, November 2015

On women farmland however, girls make the decisions. They take decisions solely on the choice of the planting crop and the choice of selling or not the crops. It is only in the

management of farm work days that young boys decide at 58% against 42% for young girls. (figure 17).

Figure 17: Youth decision making on women farmland



Source: Field surveys, November 2015

3.2 Determinants of decision making and control of labour and related resources

Women's allocated labor, ethnicity, marital status and the number of livestock assets exercise negative effect on the probability of decision making on the men's farmland. But, sex, religion, household type, number of children and the practice of income generating activity spread positive influence. Sex, religion, ethnicity, marital status, number of children and the running of income generating activity raise as significant determinants.(Table 17).

Table 17: Determinants of decision making on men farmland

Number of obs = 310
LR chi2(9) = 44.08
Prob > chi2 = 0.0000
Log likelihood = -25.490179 Pseudo R2 = 0.4637

Determinant of decision making on men farmland	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
Women labor	-.0022809	.0015483	-1.47	0.141	-.0053155	.0007537
Sex	1.929791	.6937286	2.78	**0.005**	.5701082	3.289474
Religion	1.020176	.5271949	1.94	0.053	-.0131068	2.053459
Ethnicity	-.2633901	.1164532	-2.26	**0.024**	-.4916342	-.0351459
Mariral status	-.7097025	.3454467	-2.05	**0.040**	-1.386766	-.0326393
Household type	.4546949	.2703939	1.68	0.093	-.0752674	.9846571
Number of children	.2141746	.0690306	3.10	**0.002**	.0788771	.349472
Income generating activity	1.184966	.5002431	2.37	**0.018**	.2045076	2.165425
Livestock	-.1272027	.0757806	-1.68	0.093	-.2757299	.0213245
_cons	-8.3457	2.439142	-3.42	0.001	-13.12633	-3.56507

Source: Field surveys, November 2015

Similarly, on women's farmland, their working time, the number of children, the number of dependents and the number of agricultural asset act negatively on the likelihood of their decisions making. However, only the number of dependent and the number of children has significant influence. The number of domestic assets positively determines the probability of decision making on this farmland type. (Table 18 below).

Table 18: Determinants of decision making on women farmland

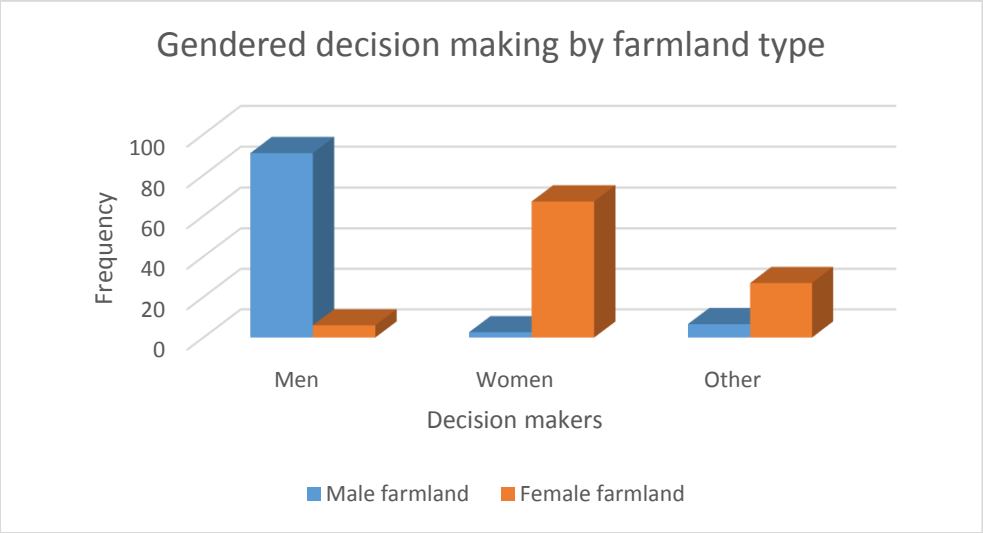
Number of obs = 358
LR chi2(7) = 22.79
Prob > chi2 = 0.0019
Log likelihood = -100.97664 Pseudo R2 = 0.1014

Determinants of decision making on women farmland	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
Women labor	-.0003847	.0002972	-1.29	0.196	-.0009673	.0001978
Age	.0058191	.0085059	0.68	0.494	-.0108522	.0224904
Number of childre|	-.0557589	.0275458	-2.02	**0.043**	-.1097477	-.00177
Number of dependants	-.0315856	.0120787	-2.61	**0.009**	-.0552595	-.0079118
Annual income	1.48e-07	1.32e-07	1.12	0.261	-1.10e-07	4.06e-07
Domestic assets	.0235018	.0107966	2.18	**0.029**	.0023408	.0446628
Agricultural assets	-.0755906	.0458587	-1.65	0.099	-.1654721	.0142909
_cons	1.512996	.3958543	3.82	0.000	.7371362	2.288857

3.3 Gender gaps for women and youth

As expected, decision making regarding men farmland is largely made by men and those towards women farmland by women. Indeed, considering variables such as decision regarding the household labor management, the choice of the crops to be planted, the food management, the sale of the crops as well as the decision of agricultural labor calendar management, the choice of hiring paid labor and those of running an income generating activity, men control 90.76% of the decision while women contribute for 2.61% and other member for 6.63%. Likewise, considering the same variables, women hold 67.07% of decision making against 6.02% for men and 26.91% for other member. Youth participates for 5.62% to decision making and 94.38% for adult. (Figure 18 and 19)

Figure 18: Gendered decision making by farmland type



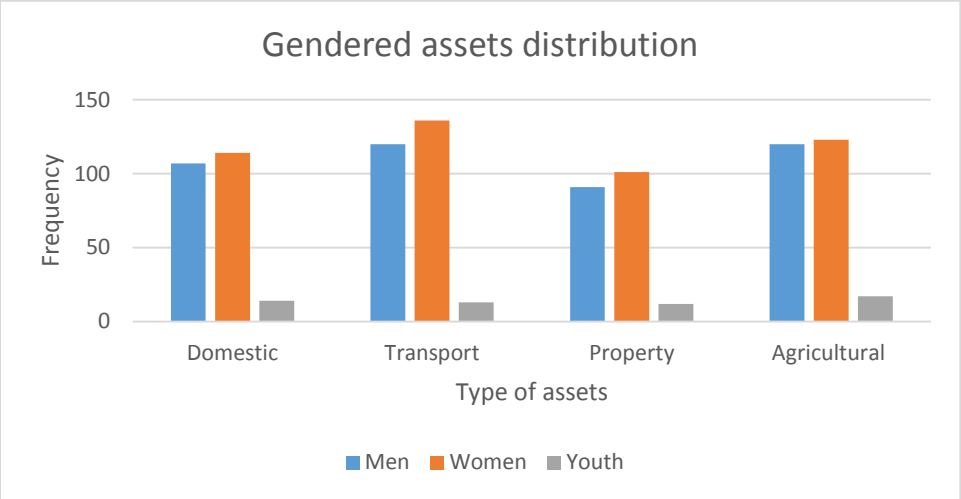
Source: Field surveys, November 2015

Figure 19: Youth decision making

3.4 Women and youth's constraints

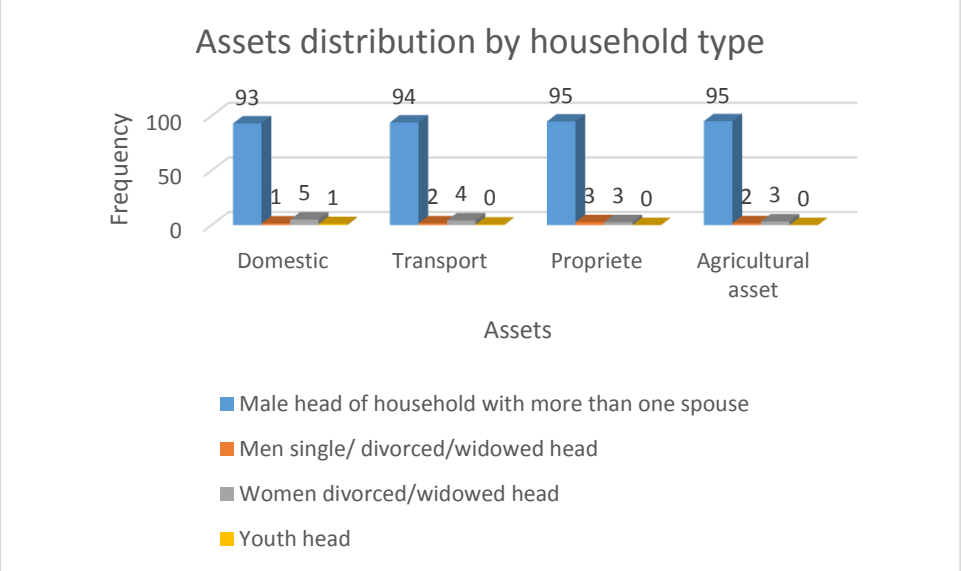
One of women and youth constraints of in the decision making is the ownership and control of the different agricultural, domestic, transportation and property assets. Indeed, the distribution of these categories of assets between sexes certainly shows importance of assets owned by women relative to men (Figure20), but coupled with the household type 93% to 95% of these assets are under the control of households headed by men. (Figure 21below).

Figure 20: Gendered assets distribution



Source: Field surveys, November 2015

Figure 21: Assets distribution by household type



Source: Field surveys, November 2015

Yet specifically domestic assets have a significant positive importance in the control of work and decision making on the women's field. Likewise, agricultural and livestock assets

are critical in access to and control of technology. Another constraint of namely women is the weak control they have over their time and labor. As shown above, they higher labor dedicated to household farminland doesn't improve their decision making regarding this common space. Indeed, women control only 3% of the household farmland labor calendar and 48% regarding their own farm work agenda. Even more compelling is the weak control of 35% they handle on the household labor planning as this is traditionally under her responsibility.

3.5 Discussion on decision making and control over labour and related resources

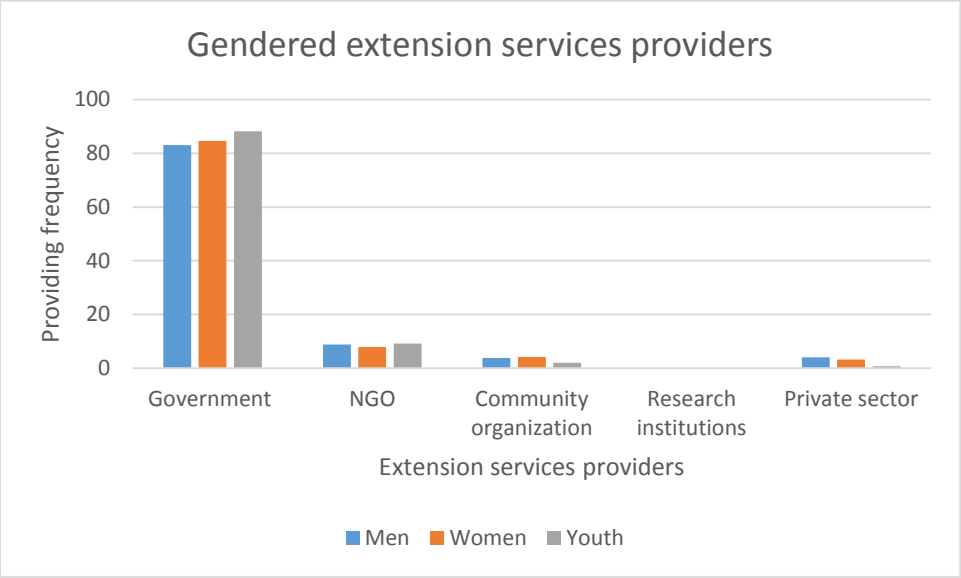
Assets, income and time remain critical for decision making. Doss and Meinzen-Dick (2015: p173) evoke "action resource" defined as "those assets relevant to the specific situation that increase the bargaining power of the actors. They can include tangible assets, such as land or money, and intangible (and context-specific) assets such as time, knowledge, social standing, networks". Yet, gender gap exist in access and control of various assets, inputs and services (FAO 2011). In the present case, increasing domestic assets could contribute to women and youth empowerment and their decision making capacity. Moreover, participation to social organization reveals fruitful influence and leadership opportunity which can support women and youth bargaining power and further their representation in decision making.

4. Gender equity in access to and control of extension services

4.1 Major extension organizations and types of service provided

Technical and advisory services of agriculture, livestock and environment are the major intervention domain of extension services in the area. Through namely visits and trainings these services are spread to communities. As exposed in the figure 22 below, Government is the bigger provider of these services with more than 83% of the farmers needs followed by the NGOs amounting to 8%., the community based organization occupy 4% and the private sector 3%. Research institutions are absent from extension services landscape in the area. Shift by gender, there is no significant disparities in the sources of extension by men, women and youth. They all first resort the government.

Figure 22: Major extension services providers by gender



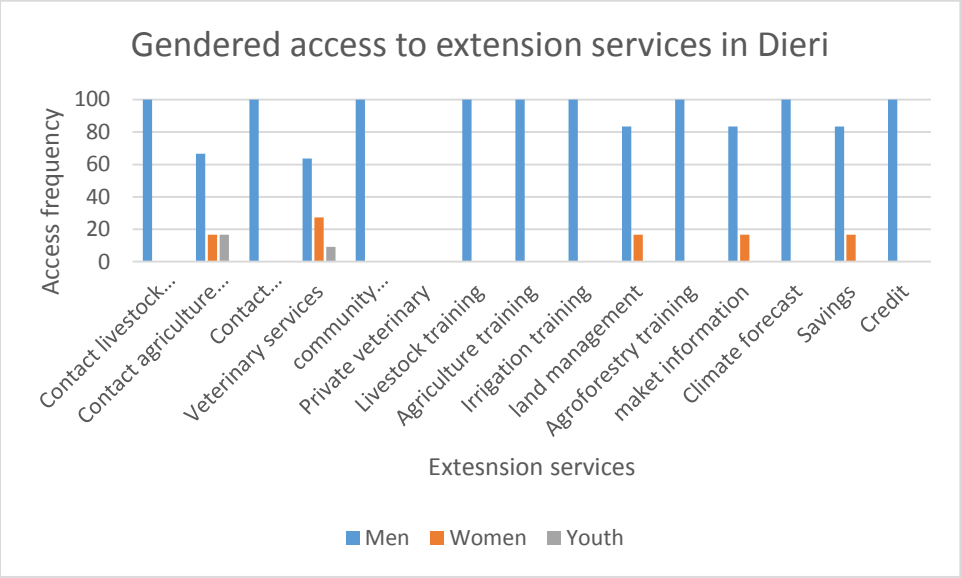
Source: Field surveys, November 2015

4.2 Frequency of contact with extension agents and gender gaps

Unlike the rate of access and use of technology access and use of extension is very low across the villages. Thus, 93% of respondents or 462 people reported not having used at least one extension service last year. The remaining 7% who have used at least one extension services last year is composed of 72% of men and 28 % of women. No youth used extension last year. Specifically the extension use frequency is 2.5% in Dieri, 13% in Mahon and 31% in Samogohiri.

Regarding the extension accessibility, inl Dieri, 77 people including 08 women and 02 youth only reported having access to at least one extension service. 87% of them are men, 10% are women and 3% are youth. This trend is also observed in the compared extension access rates by service. Indeed, the cumulative access to the various extension services is dominated by men in Dieri with an access rate of 64% to 100%. However, women are present at the market information, savings and training in land management. Women and youth have primarily access to visits of agriculture and veterinary technical agents. They have no access to other services such as veterinary technical services, the environment services and various trainings, climate and credit information. No one has access to private veterinarian. (Figure 23 below)

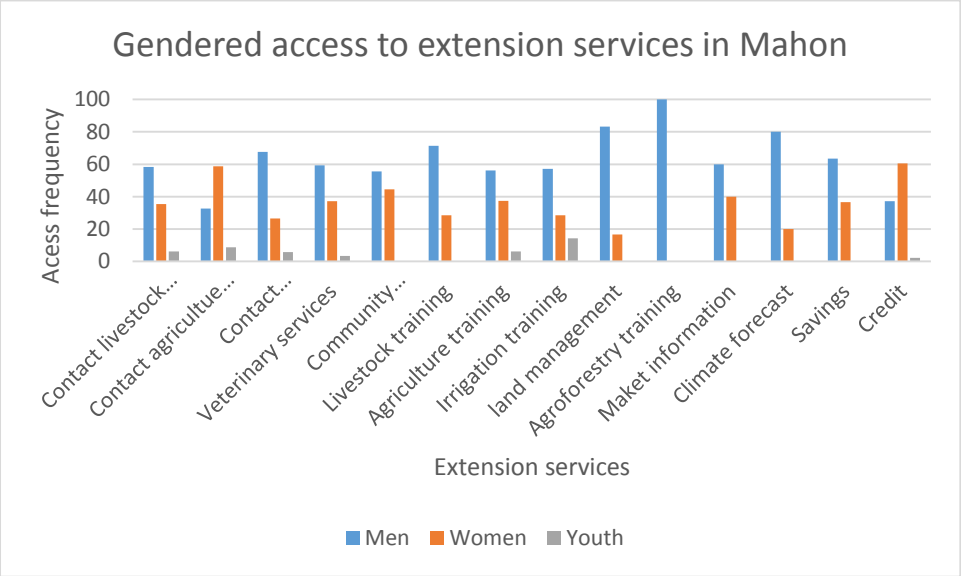
Figure 23: Gendered access to extension services in Dieri



Source: Field surveys, November 2015

In Mahon 121 interviewees report having no access to at least one extension service, but the dispersion of gender disparities is less. Indeed, men benefit from privileged access to livestock and veterinary services, followed by savings, environment services and trainings in agriculture. Financial services, contact with agriculture advisory services are the most accessible to women. They also have a greater access to agricultural services' contact and credit than men and youth. Concerning youth, agricultural services, livestock and environment services are the most accessible. However, only men have access to training in Agroforestry (Figure 24 below)

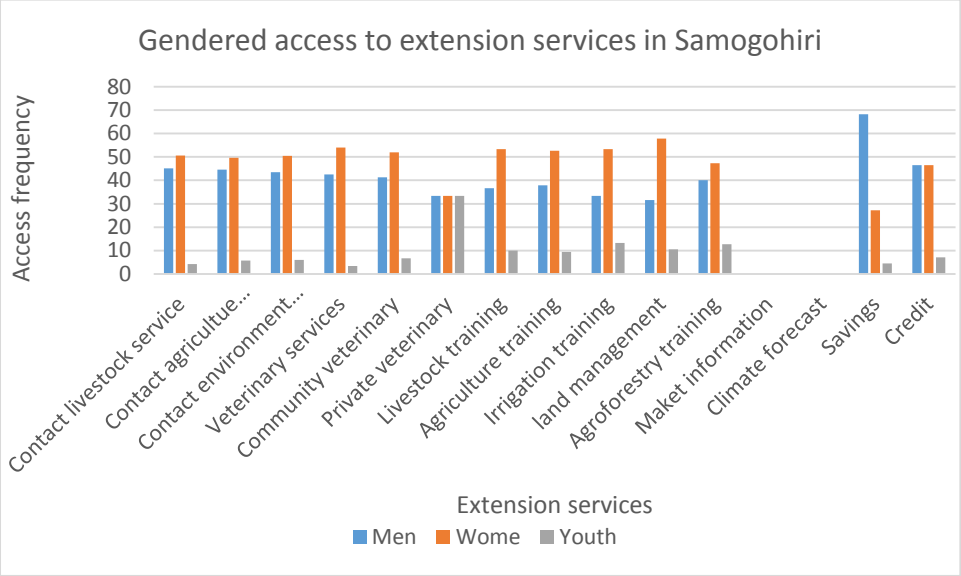
Figure 24: Gendered access to extension services in Mahon



Source: Field surveys, November 2015

Unlike Dieri and Mahon, in Samogohiri, women benefit from larger access to extension services than men and youth. Burt, regarding savings men have more access. Youth have relative access to all the available services. No access was recorded for services related to market and climate information. (Figure 25 below)

Figure 25: Gendered access to extension services in Samogohiri

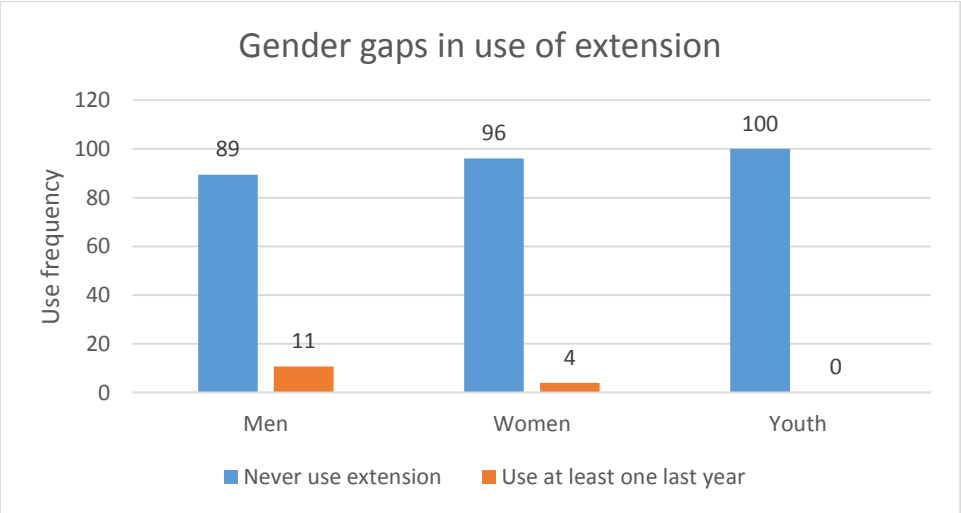


Source: Field surveys, November 2015

4.3 Gender gaps for men-women-youth

Although extension use frequency is relatively low, gender gaps for men women and youth is relatively important. Indeed, among those who did not use extension, 96% is composed of women and 89% for men. (Figure 26)

Figure 26: Gender gaps in use of extension

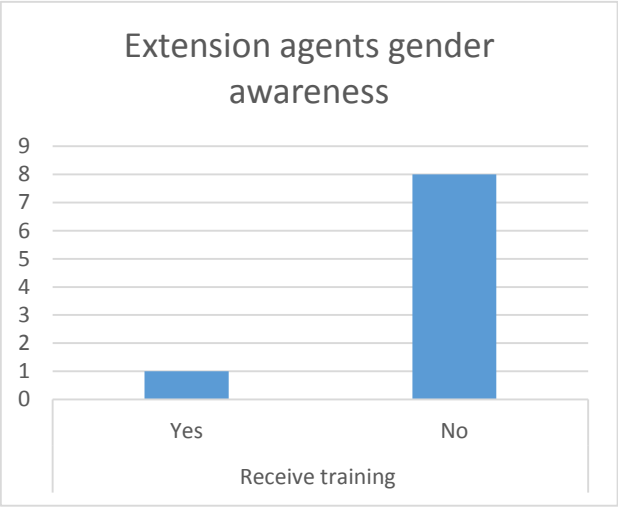


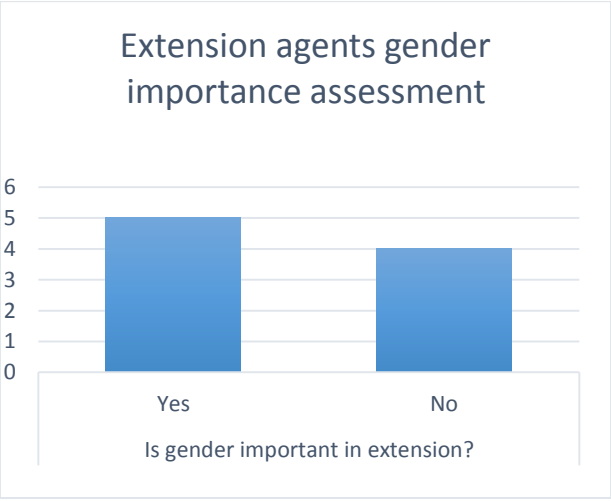
Source: Field surveys, November 2015

The most important extension use recorded in Samogohiri can be explained by the presence and availability of all these services on site in opposite the two other villages. This is all the more important that Mahon for example, due to the recent allocation of state veterinary on site, the use frequency of this service was ranked among the largest in the village.

Moreover, extension services agents largely ignore what gender means and how it can be taken into account in their activities. Indeed, only one of the nine has already participated into a gender workshop (Figure 27) and has declared positive changes in his activity as a result. From the others perspective, “gender is women” (male, agent of agriculture Samogohiri, 02-08-2015); or “gender is the difference between men and women” (male, forester, Samogohiri, 31-07-2015) or “gender is the weak sex, female” (Male, agent of agriculture, Dieri, 29-08-2015); or “gender is sex related activities’ differences” (Female, veterinary, Dieri, 07-08-2015); “gender is women empowerment” (Male, Forester Mahon, 19-08-2015). Nethertheless, they slightly declare the importance of gender in extension as including women in their activity could increase productivity and support food security. For 44% gender is not important in extension as some services such veterinary or agro forestry are mostly used by men with women’ disinterest. In addition, for 7/9 there is no gender specific measures in their activities as the same information and training is available for men and women.

Figure 27: Extension agents gender awareness





4.4 Determinants of access to and use of extension services

Several significant determinants act positively on access and use of extension. These include access to technology, marital status, number of asset of transport and finally the number of agricultural assets. Other determinants such as income generating activity running, the type of household, the number of children and number of property asset

positively affects the access and use of the extension but not significantly. However, annual income, and age are the only determinants acting negatively on access and use of extension. (Table 19).

Table 19: Determinants of access and use of extension services

Number of obs = 489
LR chi2(10) = 89.68
Prob > chi2 = 0.0000
Log likelihood = -291.00772 Pseudo R2 = 0.1335

Determinants of access and use of extension services	Coef.	Std. Err.	z	P>|z|	[95% Conf. Interval]	
Access to technology	.6890376	.1573687	4.38	**0.000**	.3806006	.9974746
Age	-.0127608	.00543	-2.35	**0.019**	-.0234033	-.0021183
Marital status	.215314	.1046003	2.06	**0.040**	.0103012	.4203268
Household type	.1336192	.1210248	1.10	0.270	-.103585	.3708235
Number of children	.0259888	.0201196	1.29	0.196	-.0134449	.0654225
Income generating activity	.1658137	.1411835	1.17	0.240	-.1109009	.4425284
Annual income	-6.68e-07	9.53e-08	-7.01	**0.000**	-8.55e-07	-4.82e-07
Transport assets	.0608147	.0244498	2.49	**0.013**	.012894	.1087354
Property assets	.028944	.0202033	1.43	0.152	-.0106538	.0685418
Agricultural assets	.0961572	.0362037	2.66	**0.008**	.0251991	.1671152
_cons	-.324665	.314846	-1.03	0.302	-.9417518	.2924218

Source: Field surveys, November 2015

Determinants of men access to and use of agricultural and related extension services

Access to technology and assets of transport are the positive and significant determinants of access and use of extension services for men as opposed to the total annual income which has a significant negative influence. Other determinants such agricultural and livestock assets as well as marital status, age and youth have no significant influence for men. (Table 20 below).

Table 20: Determinants of men access to and use of agricultural and related extension services

Number of obs = 239
LR chi2 (8) = 41.98
Prob > chi2 = 0.0000
Pseudo R2 = 0.1275

Log likelihood = -143.56537

Determinants of men access to and use of extension	Coef.	Std. Err.	z	P>|z|	[95% Conf. Interval]	
Access to technology	.5342854	.2544932	2.10	**0.036**	.0354879	1.033083
Youth	.4089846	.5582533	0.73	0.464	-.6851718	1.503141
Age	-.0057567	.0075771	-0.76	0.447	-.0206076	.0090942
Marital status	.1490792	.2136798	0.70	0.485	-.2697256	.567884
Total annual income	-5.76e-07	1.25e-07	-4.60	**0.000**	-8.21e-07	-3.30e-07
Asset of transport	.0955955	.032935	2.90	**0.004**	.0310442	.1601468
Agricultural asset	.0860623	.0507687	1.70	0.090	-.0134425	.1855672
Livestock asset	.0156839	.0141923	1.11	0.269	-.0121326	.0435003
_cons	-.0196103	.4768168	-0.04	0.967	-.954154	.9149333

Source: Field surveys, November 2015

Determinants of women access to and use of agricultural and related extension services

As for men, access to technology improve significantly women' access and use of extension services. In addition, marital status, asset of transport and agricultural asset also have positive influence. However, age and annual income decrease the probability of accessing and using extension. (Table 21)

Table 21: Determinants of women access to and use of agricultural and related extension services

Number of obs = 242
LR chi2(8) = 49.24
Prob > chi2 = 0.0000
Pseudo R2 = 0.1482

Log likelihood = -141.49633

Determinants of women access and use of extension services	Coef.	Std. Err.	z	P>|z|	[95% Conf. Interval]	
Access to technology	.8881939	.2288804	3.88	**0.000**	.4395965	1.336791
Youth	-.502164	.3590129	-1.40	0.162	-1.205816	.2014883
Age	-.0168779	.0086046	-1.96	**0.050**	-.0337426	-.0000132
Marital status	.347435	.1099122	3.16	**0.002**	.1320109	.562859
Total annual income	-8.08e-07	1.55e-07	-5.23	**0.000**	-1.11e-06	-5.05e-07
Asset of transport	.0764118	.0338151	2.26	**0.024**	.0101353	.1426883
Agricultural asset	.1382994	.0524299	2.64	**0.008**	.0355387	.2410601
Livestock asset	-.0180075	.0120413	-1.50	0.135	-.041608	.0055929
_cons	.1312646	.3886791	0.34	0.736	-.6305324	.8930616

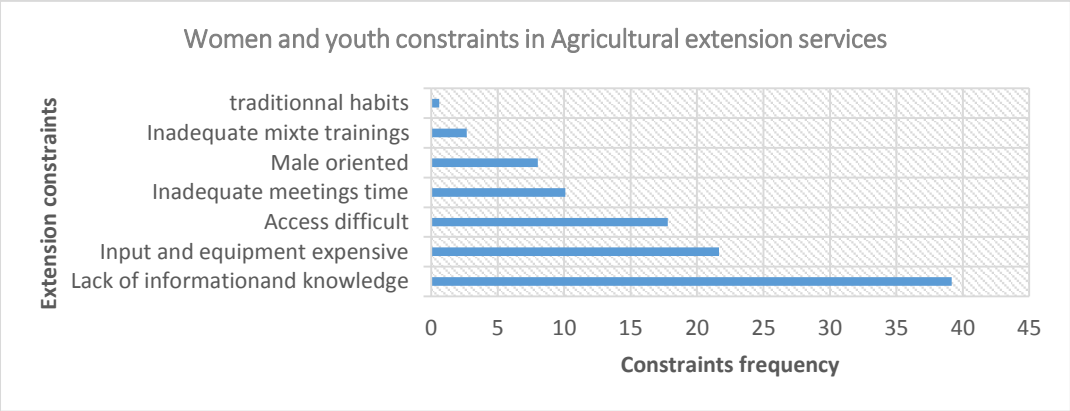
Source: Field surveys, November 2015

4.5 Women and youth's constraints

Women and youth's constraints in Agricultural extension

Over the 337 respondents, the lack of information, the knowledge and the awareness regarding extension services emerges as the first constraint of women and youth with 39%. Afterwards, comes with 22% of frequency the high cost of the extension inputs and equipment. The difficult accessibility of extension due to distance and often to the limited number of participants is ranked at the third position with 18% followed by the inadequate meeting schedule with women' general labor agenda or the long duration of trainings (10%) and the inadequate male oriented content of extension trainings. Finally, with 3% fall the mixed sex trainings which prevent women to freely express themselves and traditional agricultural habits hard to change. (Table 28).

Figure 28: Women and youth constraints in Agricultural extension services

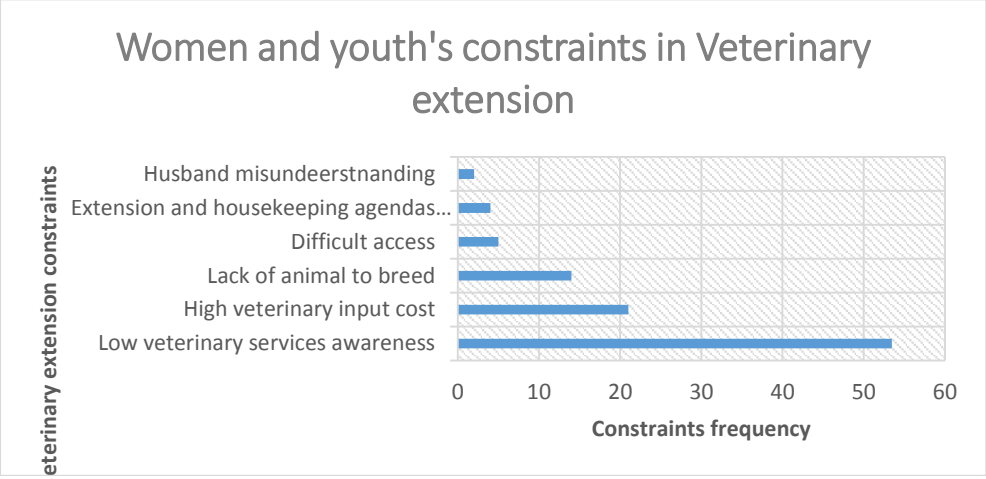


Source: Field surveys, November 2015

Women and youth's constraints in Veterinary extension

Over the 270 respondents, the absence of information, the knowledge and the awareness regarding veterinary services come again as the major constraint of men and youth in veterinary extension. Indeed, there is a glaring ignorance of the existence of veterinary technical services by women with 53% of the ranked constraints. For those who are aware it the lacks of awareness towards the missions of this service, the procedures to follow and finally the services offered. In addition, the trainings which are already scarce in the opinion of respondents, always target large breeders and the same participants every time. High cost of veterinary products, inputs and animal feed with 21% is part the targeted constraints as well as the lack of veterinary officer in the village with 14% of the constraints. Finally, the lack of animal to breed for women and youth with 5% of the constraints followed by the extension agenda conflict with women' availability with 4% and the husband misunderstanding with 2%. (Figure 29).

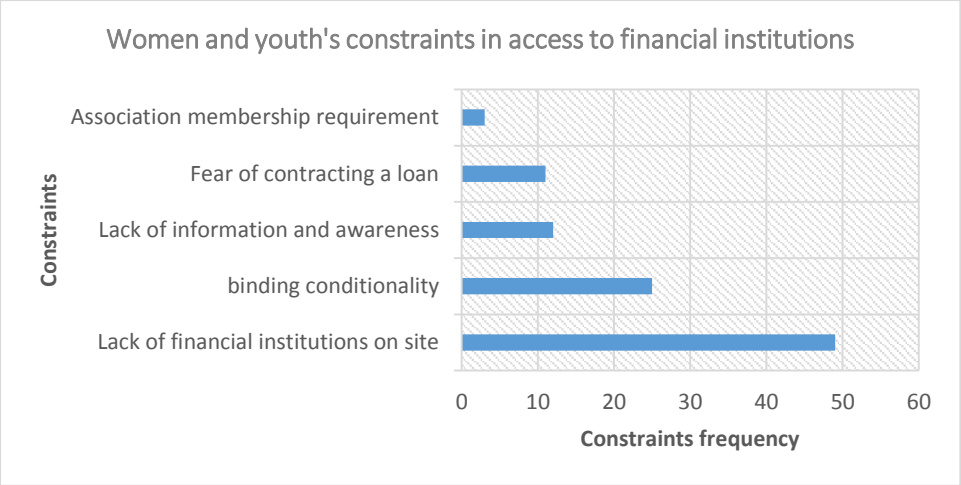
Figure 29: Women and youth's constraints in Veterinary extension



Women and youth constraints in access to financial institutions

Of 333 respondents the lack of financial institutions on site with 49% of the constraints is ranked as the women and youth's critical constraints in access to financial institutions. In fact, the savings services are located in the commune capital distant of at least 10km. In addition, the granting of loans and credit in some of these savings is temporary and does not extend all the year. The conditionality also is of difficulties with 25%. Indeed, the crucial question of the guarantee is for women and youth a major concern. This also include the procedures which are slow and often come after the needed period. The women' low income also is evoked as difficulty as it can causes repayment problems of the contracted credit. The higher interest rates of financial institutions performed and the short repayment periods are also deplored by this category of actor. Minor way, there is also access to a national identity card essential condition for saving files. In third position is the lack of information on financial institutions and credit granting procedures (12%). There is indeed a lack of knowledge of the existence, the role and financial institutions operating procedures which handicaps their attendance. Fear of contracting a loan with difficulties of repayment (11%) is also part of the constraints. This risk taking is a challenge as it coupled to the nature of the income generating activities of women an youth which strongly remain linked to climate conditions and thus present little investment opportunity and a lot of risk. Another set of constraints if the difficulty for a woman and a youth to get credit if they are not part of association (3%). This latter conditionality is somehow positive, but contribute to limiting the chances of private and individual entrepreneurship among this social category (Table 30).

Figure 30: Women and youth's constraints in access to financial institutions



4.6 Discussion in light of existing literature on access to and control of extension services

As revealed in this study, the MAHRH (2010) also support that low control over their farming land combined with their difficult access to quality fertilizer and seeds, their lack of time and the meeting inappropriate location and agenda constitute, women's main barriers in agricultural extension in the Burkina Faso. Hence, Peterman et al. 2014 noted that accross different types of inputs, men generally have higher input measures than women, and that this input gap is responsible for observed productivity differences between men and women. Knowledge also impact on agricultural technology adoption. As we stated in this study, Bernier et al. (2015) also in their study in East Africa, show that Climate Smart Agriculture practices adoption tightly depend on peoples' level of awareness regarding these technics. We come up with similar results regarding the importance of information and awareness for extension use in agriculture and livestock. Yet critical for agricultural innovations, knowledge flows and use reach unequally men and women du to determinant as sexual labour division and other gendered patterns. In fact, traditional information channels and extension services are generally controlled by men with difficult access and use by women although in Burkina Faso the World Bank (1996) recorded 15 to 20% of women participating in agricultural extension services as result of Women In Development politics. Since 1990 under the influence of the structural adjustment plan, the public extension services is decreasing to emerging actors such as Community based organization, private sector and NGO. Intervening methods also have moved from the trainings and visits to advisory support on farmer's demand. Alongside, new challenges arise limiting de facto farmers' access to extension. Thus, Berniere et al. (2015) found that classic strategies oriented on extension services, and agriculture service providers less influence adoption of CSA strategies. Finally, FAO (2014) diagnose absence of physical and marketing infrastructure, financial and risk management instruments, and secure property rights as major obstacle of agricultural innovations adoption by family farming. Therefore, as also highlighted by Johnson et al. (2015) associations are relevant for

women as the development project's intervention by their side positively impact assets for both women and men as well as their awareness regarding agricultural innovation.

Moreover, part of the information and awareness realization, trust and attitude between community and extension services as well as local institutions play critical role in agricultural technologies adoption. Likewise, Adeoti et al. (2002) documented from height sub-Saharan African countries including Burkina Faso case that household size, contact with extension services, agricultural extra income and education positively affect farmers' likelihood of adopting new crops varieties. Likewise, the difficult access to good quality seeds and information raised as the major constraints. However, unlike our results showing the strong influence of assets ownership and control over women' access and use of agricultural technology, Bernier et al. (2015 p.3) "did not find an expected link between property rights or ownership of assets and the adoption of CSA practices". Afterwards, following the women and youth's constraints paint by the stakeholders regarding the male oriented content of the extension program, FAO (2014:63) observed that "extension agents often engage men farmers more than women". They also highlight the extension agent' sex which can be among the barriers. Yet, we didn't find evidence supporting this assertion. Finally, as evidence based strategy from this study, Meinzen-Dick et al. (2011) also confirm that successful strategies to improve women access to extension services include strengthening self-help groups and women's associations, promoting awareness of women's leadership and advocacy abilities and conducting gender-sensitive training for staff are other options.

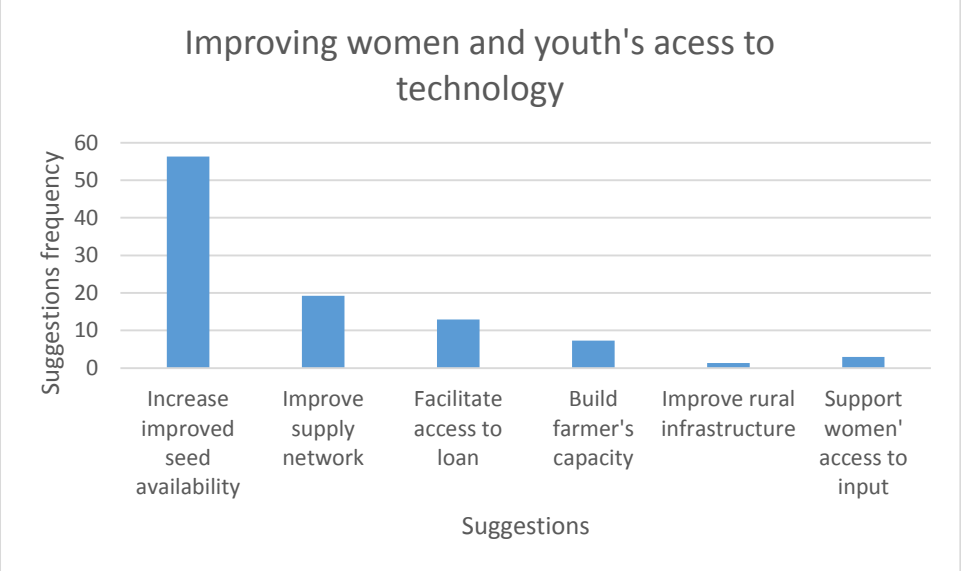
IV. Towards gender equity in access to, decision making and control over agricultural resources and veterinary extension service

1. Strategies to improving Women and youth's access to agricultural labor and related resources

Considering 302 respondents' views and as presented in the figure 31 below the following have been suggested:

- ✓ Improving the availability of improved seeds discounted is suggested at 56% as a strategy to improve women's access to technology contributing to reduce women's working time;
- ✓ Improving and or building an interactive technology supply networks among the value chain actors with 19% of suggestions;
- ✓ Facilitating access to credit by alleviating the binding conditions with 13% of the suggestion;
- ✓ Women and youth's capacity building for them to take advantage of available incentives in agricultural labor comes with 7% as their decision making positively influence on their control of labor;
- ✓ Improving rural Infrastructure such as crops warehouse and local processing plants for high economic value product such as cashew.

Figure 31: Improving women and youth's access to technology



2. Strategies to improving Women and youth's control of agricultural labor and related resources

- Having equipment at the right moment and the right cost is the challenge to be met. Thereby, subsidized equipment for women and youth association may be a more sustainable mean for their control over labor.

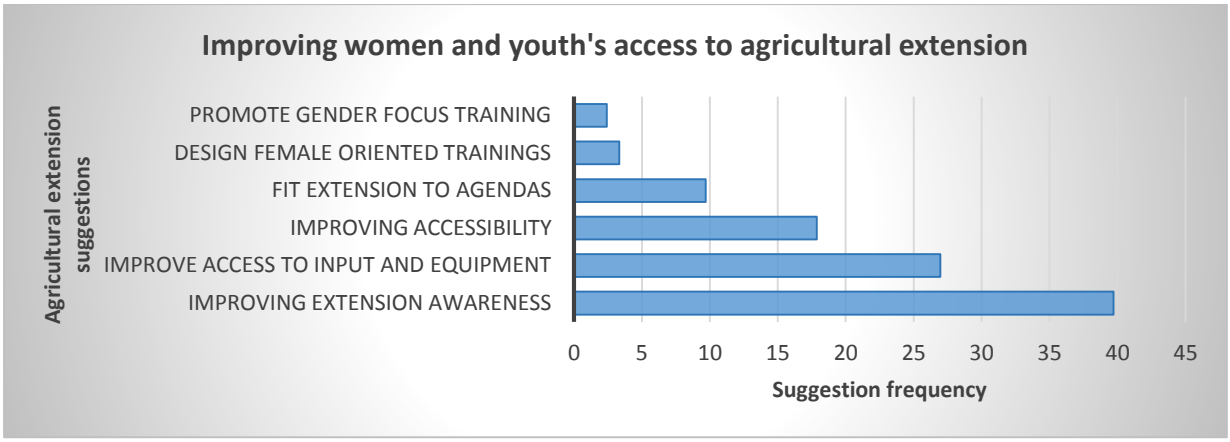
3. Strategies to improving Women and youth's access to and control of veterinary or extension service.

Agricultural extension

From 330 respondents' perspectives shown in the figure 32 below the following have been suggested:

- ✓ Improving extension services awareness among women and youth through information, sensitization and well-shaped trainings. Ensuring equal chance of participation in trainings to all the stakeholders as well as inviting the maximum of participants is also necessary to allow agricultural innovation awareness and adoption by women and youth;
- ✓ Improving access to inputs and equipment by reducing the cost and promoting subsidized inputs and plow. Therefore, in addition to the State disposition, flexible conditions could be negotiated with private and savings and NGOs;
- ✓ Accessibility to extension could be improved by promoting community based agriculture and veterinary agents to supply the lack of state technical agents in site;
- ✓ Adapting extension activities to women' agenda by taking into account their daily and seasonal calendar. Thus, trainings could be carried out the market days and during the dry season preferably to the raining season. The content should be well designed be brief, focus on the targeted group interests and followed by practice for a greater impact;
- ✓ Avoid mixed training as much as possible to allow all the stakeholder to freely express his self;

Figure 32: Improving women and youth's access to agricultural extension

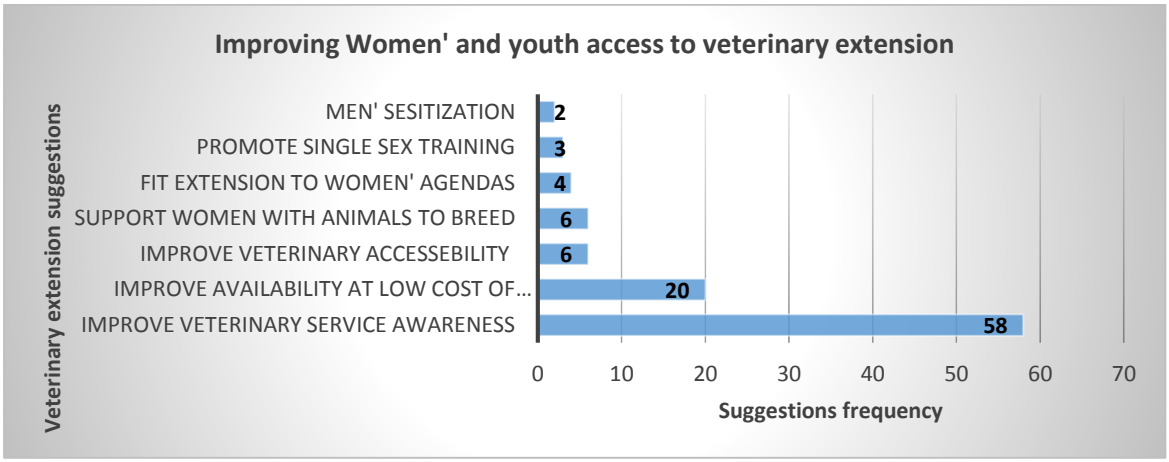


Veterinary extension

Based on 292 respondents' perspectives indicated in the figure 33 below the following have been suggested:

- ✓ Improving women and youth's awareness in veterinary services through information and training regarding livestock;
- ✓ Improve availability of veterinary inputs and livestock feed
- ✓ Promote access to low cost veterinary services ;
- ✓ Support women with animals to breed where the potential exists;
- ✓ Match women and youth's agenda with veterinary extension activities;
- ✓ Promote single sex training instead of mixed training;
- ✓ Sensitize men for their support to women's cattle breeding.

Figure 33: Improving Women' and youth access to veterinary extension

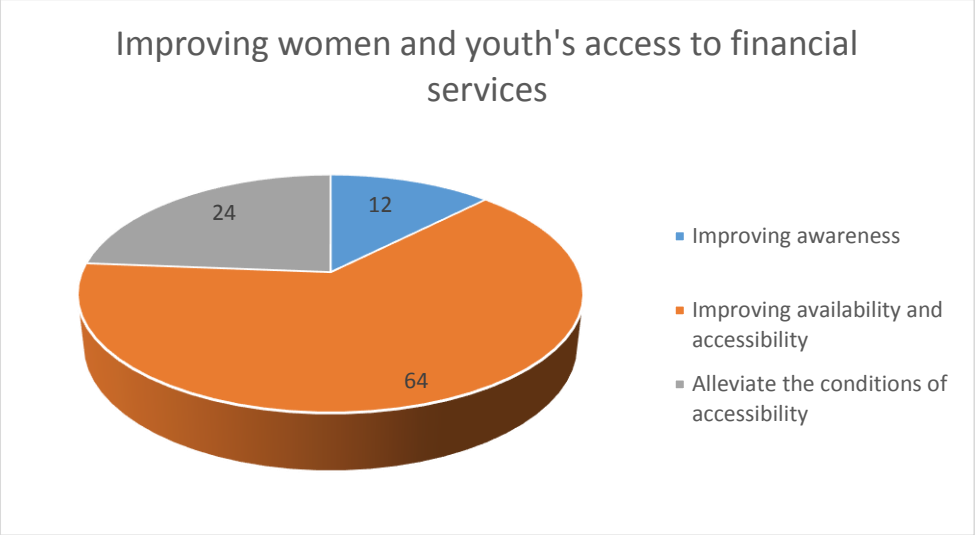


Financial services

Relying on 282 respondents' perspectives shown in the figure 34 below the following have been suggested:

- ✓ Improving awareness through efficient information flow and sensitization campaign;
- ✓ Improving financial services availability for credit throughout the year and their accessibility in site;
- ✓ Alleviate the conditions of access to credit and savings by providing flexible warranty system and relative long delay of more than 3 months for the repayment. It would also be useful to examine the records of those who also want loan outside the seal of associations.

Figure 34: Improving women and youth's access to financial services



V. Conclusion

The present gender strategic research conducted in southern Burkina Faso has assess gender equity in decision making, access to and control over labor and extension services. Specifically, it has been carried out in the CGIAR West African Sahel and Dry Savannas (WAS & DS) intervention site namely the villages of Samogohiri, Mahon and Dieri in the province of Kénédougou, Orodara. The study objective was to i) analyzing gender equity in decision making and in access to and control over labor and related resources and ii) providing scientific evidence on strategies to improving women's access to and control over agricultural and veterinary extension services. Based on quantitative and qualitative research methodologies, interviews have been carried out with the relevant stakeholders and questionnaire administrated to 498 household. Content analysis for qualitative date have been applied as well as statistic logistic regression for quantitative data. Afterward, the projected objectives have been achieved as well as the research questions responded and the hypothesis verified:

1. In general ethnicity, primary activity, annual income are the positive and significant determinants of men's labor while sex and access to technology exercise negative influence. Regarding women' labor determinants, ethnicity, the number of children, women's decision making and agricultural asset act as positif variables. Shift by farmland type, differentiated pattern determine gendered access to agricultural resources labor and extension services. In men' farmland, women' labor is the single positive determinant of labor allocation whereas sex, religion, ethnicity the number of children and annual income has negative impact. In their female counterparts, it's namely men' labor and annual income which improve labor provision. In extension, global determinant are access to technology, the marital status, agricultural asset and asset of transport which have positive and significant influence in opposite to age and annual income acting as negative determinants. Specifically in men' farmland, the positive determinants are access to technology and asset of transport while the negative determinant is annual income. In women' farmland, its access to technology, the marital status, the asset o transport and the agricultural asset which have negative influence in opposite to age and annual income. Therefore the hypothesis "Gender equity in decision making enables women to have access and control over resources and labor" has been confirmed.
2. Gendered schemes in men' and women' control of and decision making over agricultural production means and extension services assessment reveal differentiated decision making pattern according to farmland type and targeted domain. Decision making over labor pertaining to men' farmland is largely taken by themselves. Likewise, women also lead decision making over labor pertaining to their farmland. But, men's influence have been surprisingly noted in the household labor schedule commonly considered as female exclusive responsibility. Thus, in men's farmland, the positive determinants of decision making are sex, the number of children and the running of income generating activity while ethnicity and marital status are negative determinants. In women' farmland however, the number of children and the number of dependant weaken the decision making while domestic assets strength this

variable. Hence, “men and women do not have the same level of access and control of agricultural extension services and veterinary”.

From the results, evidences based strategies assorted with recommendation have been made to enhance access and control of women and youth in agriculture and veterinary extension services.

VI. Recommendations

Gender equity in access to and use of labor and related resources

- Based on evidences regarding the greater influence of asset to access and use technology and as reported during the FGD, equipment support for women's self-help group may be of strategy to strengthen their income generating activities while enhancing their related assets ownership.
- Assets are important determinants for access to different agricultural technology. Therefore, increasing women's access to assets may lead to greatest access and use of technology and further increasing of their farm productivity and their annual income as agriculture is their flagship source of income.
- Reinforcing gender equity in the distribution of subsidized fertilizer and other input: The state and other NGO should built fair accountability mechanism to ensure that the agricultural subsidized input they grant for men and women effectively reach equally each of them.
- As women and youth have a strong participation, leadership and influence in the agricultural, tontine and agroforest product transformation organizations, these frameworks could be well suitable for fostering their decision making capacity and furthermore improve their access to and control over labor.
- Promote cooperation between men and women as their different labor has significant influence on overall labor allocation on both household farmland and women farmland.

Gender equity in decision making and control over labor and related resources

- As they hold relative decision making opportunity on their farmland, supporting women with diverse inputs facilitation can increase their decision making opportunity and authority.
- Specific marketing trainings for women may be helpful for them to better manage their income generating activities for a greater market bargaining and opportunity (namely in Mahon regarding the nutsedge, in Dieri the cashew).

Gender equity in access to and control of extension services

- ✓ Large campaign of information, sensitization and training involving all the relevant stakeholders could help increasing awareness in extension services and agricultural and livestock innovation adoption.
- ✓ Traditional communication channels for the overall extension need to be strengthen and improved to be gender sensitive. For that purpose, gender sensitive trainings could be organized for the extension agents regarding basic gender principles and its relevance in agriculture, agroforestry and livestock and how it can be taken into account in overall extension;
- ✓ As the State is engaged in private sector promotion in extension, and to solve the problem of physical distance raised as difficulty, opportunity can be used to

promote community based extension agents to who will be first trained by the state agents available.

Because of weak intra household gender relations constraints and the suggestion of women and youth livestock for breeding coulb be provided under various form such as gift or aid specifically in Mahon and Samogohiri.

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