

THE UNITED REPUBLIC OF TANZANIA
PRIME MINISTER'S OFFICE
MARKETING INFRASTRUCTURE VALUE ADDITION AND RURAL FINANCE
SUPPORT PROGRAMME (MIVARF)



**THE IMPACT OF MARKET INFRASTRUCTURE AND SYSTEMS
DEVELOPMENT ON SMALLHOLDER FARMER ACCESS TO COMPETITIVE
MARKETS. A CASE STUDY OF MIVARF PROGRAMME / TANZANIA**

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LIST OF ACRONYMS AND ABBREVIATIONS

| | |
|--------|--|
| 4Ps | Public Private-Producer Partnership |
| AEO | African Economic Outlook |
| AfDB | African Development Bank |
| BOT | Bank of Tanzania |
| CAADP | Comprehensive Africa Agriculture Development Programme |
| CCM | Chama Cha Mapinduzi |
| COMESA | Common Market for Eastern and Southern Africa |
| EAC | East African Community |
| FAO | Food and Agricultural Organization of the United Nations |
| GDP | Gross Domestic Product |
| GOT | Government of Tanzania |
| GPD | Gross Domestic Product |
| IFAD | International Fund for Agricultural Development |
| LGAs | Local Government Authorities |
| MFI | Microfinance Institutions |
| MIVARF | Market Infrastructure Value Addition and Rural Finance Support Programme |
| MoF | Ministry of Finance |
| NBC | National Bank of Commerce |
| NGO | Non-Governmental Organisation |
| PCT | Programme Coordination Team |
| PEML | Producer Empowerment and Market Linkages |
| PMO | Prime Minister's Office |
| PPP | Public-Private Partnership |
| SACCOS | Savings and Credit Cooperative Society |
| SACGOT | Southern Corridor for Agricultural Growth in Tanzania |
| SADC | Southern African Development Community |
| SFO | Smallholder Farmer Organization |
| TAFSIP | Tanzania Agriculture and Food Security Investment Plan (TAFSIP) |
| UNDP | United Nation Development Programme |
| US\$ | United States' Dollar |

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SUMMARY

This report is the result of a study that took place in Tanzania for 3 months from November 2019 to January 2020. The survey covered MIVARF (The Marketing Infrastructure, Value Addition and Rural Finance Support Programme), a Programme financed and implemented by IFAD, the AfDB, and the Government of the United Republic of Tanzania. The main objective of the Programme is to reduce rural poverty and accelerate economic growth on a sustainable basis by improving the access of poor rural households to competitive input and output markets.

The Programme initially started on 25 February 2011 and was scheduled to end on 25 February 2018, with a two-year extension. It will definitively end on 25 February 2020. This Programme is aimed at smallholder farmers and covers the country of the United Republic of Tanzania, more precisely, 29 regions, including 24 in the Mainland and five regions in Zanzibar. This Programme has a holistic approach, as it has a hardware and software component. These two fundamental elements are distributed over different components of the Programme, namely a Marketing Infrastructure and System component, a Rural Finance component, and Coordination component. All its main components are broken down into sub-components.

We have focused on developments under the Marketing Infrastructure and System component. The general objective of our research is to evaluate the impact of Marketing Infrastructure and System component on the Programme's beneficiaries. The Specific objective is to analyze the revenue before and after the Programme; analyze the cost of production before and after the Programme.

In order to do so, analysis is structured into three parts: a global analysis, a "gender men" analysis, and a "gender women" analysis.

A field survey through a questionnaire was conducted on a sample of 46 people composed of individual smallholder farmers and leaders of agricultural organizations. In addition to these 46 people, local government officials were also interviewed. The interviews took place in two different regions, namely Arusha and Manyara. The interviewees came from 15 wards and 15 different villages. The methodology used was as follows:

- A random selection of Programme beneficiaries
- A questionnaire between the interviewer and the people involved in the Programme, followed by discussions.

- Statistical processing of the data collected to extract the results of our survey

The singularity of our study is that it has put MIVARF into perspective in a global environment: in particular with the objectives of sustainable development, and the national five year development plan put in place by the government of the United Republic of Tanzania for the period 2016/17 - 2020/21. The Programme has also generated positive externalities. These positive externalities were not the objectives of the Programme. Nevertheless, they derive from MIVARF's activities.

Following the initial objectives of our survey, the following information emerges:

- The products are : maize, beans, sunflower, coffee, banana, pulse, pigeon peas, garlic and others
- The quantities produced have increased on average by 62%, from 9,000 kg to 14,538 kg.
- The quantities sold increased by almost 74% from 7,248 kg to 12,612 kg on average.
- An increase of 69% in the price per kg of the productions passing from 6,959 TSH per kg to 11 792 TSH per kg
- A 55% decrease in post-harvest agricultural losses, from 1,087 kg to 492 kg of losses.
- This increase is coupled with lower transport costs from the production areas to the points of sale. Indeed we have gone from an average of 159 km to 90 km. This has led to a substantial drop in transport costs.
- MIVARF is entirely in line with the objectives of sustainable development. The objective 2.3, which aims by 2030 to double agricultural productivity, has been achieved it in the Programme.
- An increase in the quality of crop products. In fact 98% of the people questioned emphasized the improvement in the quality of their products due to the production methods taught by MIVARF and the use of quality fertilizers provided during the Programme.

These different results before and after the Programme are related to the different activities of the Marketing Infrastructures and Systems component of MIVARF, which were carried out throughout the country, in particular :

- The construction and rehabilitation of 1078 km of roads.
- The construction of 35 storage houses for agricultural products spread over all the regions.
- The construction of 16 markets close to the production areas

- Training on post-harvest management methods
- The installation of machinery for the creation of value addition
- Capacity building of over 118,400 (43% women) smallholder farmers on input, output and financial market linkages.
- Establishment of market information system and trading platforms (Consortia) based on a Public Private-Producer Partnership (4Ps).

All of this was done in the country including, the region of Arusha and Manyara.

All these actions carried out jointly by MIVARF have made it possible to have a holistic approach covering the entire agricultural chain. From production through the harvesting, storage, and sales phase.

This work constitutes a decision-making tool. The resulting results prove the impact that can be made by a Programme that takes place over the long term and, above all, that has a holistic approach. It will serve as a baseline for future Programmes with the same approach, both in Tanzania and in other countries around the world. This will be useful to development institutions as well as governments. « The goal is to invest in rural people for endogenous, inclusive growth and shared prosperity ».

PARTIE I: GENERAL PRESENTATION

The United Republic of Tanzania is the largest country in East Africa. The country enjoys political stability and has a multiparty political system. In reality, only one party has dominated the country's politics since independence in 1961. Its capital is Dodoma, located in the interior. This is where the office of the president, parliament, and some ministries are located. At the same time, Dar es Salaam, the former capital, continues to house most government offices and remains the country's largest city and the central economic hub with the main port and major commercial center. Tanzania's population, estimated at 57 million (World Bank, 2017), is diverse and consists of several ethnic, linguistic, and religious groups, including the renowned Maasai ethnic group in the northern part of the country. According to a World Bank report, the poverty rate increased from 60% in 2007 to about 47% in 2016. However, it is essential to note that the absolute number of poor people has not changed significantly, given the rapid pace of population growth (over 3% per year) and that about 12 million Tanzanians still live in extreme poverty on less than USD 0.60 per day. Over the last decade, the country has experienced steady growth (on average, 6%; 7% per year), according to the World Bank (World Bank, 2017). The country has land rich in biodiversity and natural resources and also has significant natural gas deposits. The agriculture sector is the engine of Tanzania's economic growth and development. It provides about 66.95% of employment, accounts for about 29% of GDP, 30% of exports, and 65% of industrial sector inputs (FAO, 2017). The official languages are Swahili and English.

1.1) GEOGRAPHICAL PRESENTATION

GEOGRAPHY AND LIVELIHOODS

Tanzania covers 945,090 square kilometers. It is located on the east coast of the African continent at the southern end of the Nile basin. Some 94,509 square kilometers (10% of the country's land areas) are part of the Nile Basin, which corresponds to 3% of its total area. Tanzania's geographical importance in East Africa is illustrated by the fact that it shares its borders with five other Nile Basin countries.

The Relief Map of Tanzania illustrates the general landscape features in the Nile Basin that influence the climate, soils, and biodiversity of the region. Together, the geographical patterns of these environmental aspects play a significant role in the types, distribution, and

sustainability of livelihoods in the country. Virtually all of Tanzania's Nile basin is made up of Lake Victoria and the Kagera River catchment.

Tanzania has nine significant watersheds, including the Nile Basin and the Lake Victoria Basin, and is water-rich. Lake Victoria covers 68,800 square kilometers, of which more than half (51%) is in Tanzania. Of the three lakes that form the border with neighboring countries, Tanzania has 2,375 kilometers of shoreline and 1,300 kilometers of coastline.

DOMESTIC POLICY

The United Republic of Tanzania has been a stable country since the independence of Tanganyika in 1961 (mainland Tanzania, which later merged with the Zanzibar archipelago in 1964). The fundamentals of the state were established by the father of independence, Julius Nyerere: national unity, centralization of power, stable institutions, economic socialism, and secularism.

President Magufuli (Chama Cha Mapinduzi / CCM) was elected in October 2015, at the end of Jakaya Kikwete's two terms (according to the constitution).

As soon as he took office, President Magufuli imposed a new style, giving priority to the fight against corruption, the improvement of public services, and the reduction of state spending. His first measures (unannounced visits to various public services, reduction in the number of ministers, a ban on the movement of civil servants abroad, dismissal of a large number of senior civil servants, reduction of specific salaries, creation of a special court for serious corruption offenses) earned him great popularity (he was nicknamed the 'bulldozer').

ZANZIBAR

The archipelago, which is 97% Muslim, has enjoyed semi-autonomous status since 1964, has its government and a chamber of representatives. In 2010, the unexpected rapprochement between the leader of the CUF (Seif Sharif Hamad) and President CCM of Zanzibar (Amani Abeid Karume) led to the establishment of a government of national unity.

The Zanzibar Electoral Commission canceled the 2015 elections. New elections were held (March 2016), without the participation of the CUF (boycott), and were therefore won by the CCM. (French Ministry of Foreign Affairs)

REGIONAL INTEGRATION

Tanzania is a founding member of the East African Community (or EAC) and hosts its headquarters in Arusha. Bringing together Tanzania, Kenya, Rwanda, Burundi, Uganda, and South Sudan, the EAC led to the establishment of a common market in 2010 (EAC countries now account for a third of Tanzania's trade). Tanzania is pushing for a deepening of cooperation between the countries of the Community.

Tanzania has also signed the Tripartite Free Trade Area Agreement, which associates the member states of the Common Market for Eastern and Southern Africa (COMESA). In addition to the EAC, Tanzania is also a member of the Southern African Development Community (SADC).

The five-year national development plan (2017-2021) gives priority to industrialization and human development, to make the United Republic of Tanzania, a middle-income country by 2025. The government's "Tanzania Development Vision 2025" calls for the United Republic of Tanzania to become a semi-industrialized country, strengthening the economy and stabilizing livelihoods.

The United Republic of Tanzania adheres to the One United Nations initiative. It is implementing a United Nations development assistance plan focusing on shared growth, public health, resilience, democratic governance, human rights, and gender equality.

In addition, the country has been hosting refugees from neighboring countries in the Kigoma and Kagera regions since the 1970s. Renewed instability in Burundi in 2015 and 2016 has increased the number of refugees in the country, which now stands at 300,000, mostly women and children.

1.2) PRESENTATION OF THE ECONOMY OF TANZANIA

Tanzania's gross domestic product (GDP) was \$52.09 billion in 2018, with an average per capital income of \$324, placing the country among the poorest in the world. During the 1980s, foreign aid was equivalent to a quarter of GDP each year.

The development plans implemented since independence had encouraged the growth of industrial crops. They had made it possible to limit imports of manufactured goods.

ECONOMIC REFORMS

Tanzania embarked on a series of economic reforms in the late 1980s: partial liberalization of agriculture, limitation of tariff restrictions, and reduction of public expenditure. Tanzania has experienced steady GDP growth since the early 1990s (from 4.5 percent in 1995 to over 6 percent in 2005).

EXPORTS

Export crops include cotton, coffee, sisal, cloves, tea, tobacco, and cashews. livestock farming (sheep, poultry) is also an important activity, with the number of cattle relative to the population being comparable to that of France. Annual wood production amounts to 34.9 million m³, of which more than 90% is used as domestic fuel. The annual fish catch amounts to 345,000 tonnes, more than three-quarters of which comes from lakes, particularly Lake Victoria. Sardines and tuna are fished in the Indian Ocean. "Tanzania" (E. BUCHOT).

INDUSTRIES IN TANZANIA

MINING ACTIVITIES

Mining accounts for only 1% of GDP; it mainly involves gold (6.5 tonnes), diamonds, and precious stones. Coal deposits are poorly exploited.

INDUSTRIES

In the 1970s, primary industries such as assembly lines for the automotive industry, tanneries, and cement plants were developed. The main manufactured products derived from the packaging of raw materials (coffee, cereals, sisal).

COMMERCE

Foreign trade is traditionally in deficit. Exports, mainly to Germany, Great Britain, and Japan, include coffee, cotton, diamonds, tobacco, tea, cloves, and sisal.

Tanzania imports from Great Britain, Japan, Italy, and Oman petroleum, machinery, construction materials, and transport equipment.

TOURISM

Tourism brings in foreign exchange; in the late 1980s, more than 100,000 tourists came to Tanzania every year, attracted by natural parks or historic sites.

TRANSPORT

The country has 4,582 km of railways, including the mainline between Dar es Salaam and Lake Tanganyika, branching off to Mwanza, Mpanda, and Arusha; the Tanzania-Zambia Railway (or Tazara), which serves Tanzania for 969 km, was inaugurated in 1976.

The main seaports are Dar es Salaam and Mtwara. The airports of Dar es Salaam and Zanzibar provide major domestic and international flights.

CURRENCY

The monetary unit, the Tanzanian Shilling, divisible into 100 cents, is issued by the Bank of Tanzania (founded in 1966). In 1967, the government nationalized most of the commercial banks and integrated them into the National Bank of Commerce. In 1992, as part of economic liberalization, two private sector commercial banks were established in the country.

Tanzania faces high poverty (80% of the population lives on less than USD 2 per day), coupled with high population growth, a mostly dominant informal sector (90% of economic activity), and an agricultural sector that employs 90% of the population but contributes only 23% of national wealth. The country also has a persistent energy deficit that hampers its development (only 24% of households have access to electricity). Tanzania is also a poor performer in terms of the business environment (ranked 141st out of 190 in the World Bank's annual "Doing Business" ranking in 2020). This ranking is nevertheless slightly higher than in recent years.

Tanzania is still among the so-called "least developed countries" (LDCs). As such, it is one of the primary beneficiaries of public development aid in Africa. Tanzania's main donors are the United States, the World Bank, and the United Kingdom. Tanzania is the third-largest

recipient country of the 11th European Development Fund (€626M over 2014-2020), which focuses on three sectors: governance, energy, and sustainable agriculture.

In march 2018 the Social Development Policy Division (SDPD) of the Economic Commission for Africa (ECA), an independent Tanzanian research institution, published a report. With a Gini coefficient of 0.43, overall inequality in Africa remains high compared to other regions. However, Tanzania is one of the few countries in Africa where inequality has declined by almost 8%, from 0.39 in 2001 to 0.36 in 2012, according to the report.

1.3) ECONOMIC PROSPECTS IN TANZANIA

MACROECONOMIC PERFORMANCES

Real GDP growth of 6.7% in 2018 slows from 7.1% in 2017. The supply-side impetus comes from the services sectors with a contribution to GDP of 39.3%. The main contributor to the demand side is private consumption, with 63.9%. The slowdown in growth was caused by the external sector and the current account deficit (despite the real depreciation of the Tanzanian shilling) and caused by a higher volume of imports in 2018 than in 2017. Imports of transport equipment, construction equipment, industrial raw materials, and petroleum products for major public investment projects, such as the Standard Gauge Railway. Also, the amount of imports increased due to higher prices of essential products such as crude oil.

Tanzania's budget deficit widens to about -3.9% in 2018 from -1.2% in 2017 due to increased capital expenditure on infrastructure projects. Public debt increases to about 39.3% in 2018 compared to 38.2% in 2017. In 2018, external debt accounted for about 74.9% of total public debt and 34.5% of GDP. However, the risk of debt distress remains low, as external debt is mainly composed of concessional loans.

Monetary policy, which is more favorable in 2018 than in 2017, has allowed for an increase in domestic liquidity and a reduction in borrowing rates, leading to an increased supply of private credit. Inflation slowed in 2018, thanks to improved food supplies.

PERSPECTIVES: POSITIVE AND NEGATIVE FACTORS

The medium-term outlook is positive, with growth of 6.6% in 2019 and 2020, supported by significant infrastructure spending. Inflation is expected to rise slightly from 4.8% in 2018 to 5.2% in 2019 and 5.1% in 2020, due to increased government spending.

However, there are several risk factors: growing private sector concerns about economic policy uncertainties; and increased domestic arrears that could hamper fiscal consolidation and harm the private sector.

Tanzania faces essential challenges: slow progress towards inclusive growth, infrastructure bottlenecks, and vulnerability to climate change. Despite strong economic growth, poverty and income inequality remain high. One of the social development challenges is youth unemployment, which increased from 7.3 percent in 2016 to 5.7 percent in 2012. Bottlenecks are particularly notable in the transport and energy sectors. Farmers, whose incomes depend on rain-fed agriculture, are exposed to income shocks. Finally, public enterprises, due to their inefficiency, present a financial risk.

However, several positive factors favor development opportunities: peace and political stability, the abundance of natural resources; the country's strategic geographic location; and the immense potential for tourism development. Also, the Export Processing Zone Agency, established in 2008, has already attracted nearly \$1 billion in foreign direct investment to accelerate manufacturing exports and help achieve the country's structural transformation and revive the manufacturing sector, which has become one of the most dynamic in Africa. (Source: African Economic Outlook (AEO) 2019).

1.4) FOCUS ON AGRICULTURE

Tanzania has 44 million hectares of arable land, which covers 50% of the total area, but only 25% is cultivated. Most of the production is carried out by small-scale producers with holdings of 0.2 to 2 hectares, half of which are subsistence farmers. The number of large farms remains limited, but the farm structure is changing, with a significant increase in medium-sized farms (5 to 100 ha), which account for 43% of cultivated land.

The country enjoys diverse climates with the right weather conditions recorded in most of the country's producing regions. Food production reached 16.9 MT in 2017-2018.

The main imported products remain cereals (wheat and rice), oil (mainly palm oil), sugar and animal products (fish, milk, eggs). The bulk of Tanzania's exports continue to be cashew nuts, vegetables, coffee, sesame, and cloves. Regarding livestock, the country has the 2nd largest livestock population in Africa, behind Ethiopia and ahead of Sudan. In 2018, mainland Tanzania had 30.5 million cattle, 19 million goats, 5.6 million sheep, and 39 million chickens (French Ministry of Finance).

Agriculture contributes 23% of GDP and accounts for 67% of the country's employment. The sector is also responsible for 30% of exports and 65% of the raw materials used by industry. The aim of economic policy today is to limit the export of raw products and to increase the processing of raw materials in order to derive more significant benefits from exports. The major handicaps of agriculture are climate vulnerability, the rate of irrigated land (which is at 10% of its potential), and low input use. (economiesafricaines.com)

The main cash crops are cotton, cashew nuts, coffee, and sisal. In the report on the five-year plan 2016-2020, the government complained of the loss of productivity in this sector, while traditional activities (cereals, livestock, and fisheries) were experiencing the opposite trend.

Although cotton prices had fallen in 2014, the price has since started to rise again, encouraging production. Farmers saw their income increase by 25 percent in 2017, even though 300,000 tons of fiber had been produced in the same year. This development is the result of favorable climatic conditions rather than a real improvement in agricultural productivity.

Coffee accounts for 5% of Tanzania's exports by value and generates annual revenues of \$100 million. Of the 400 000 producers, 90% are smallholders. The country produces about 55,000 tonnes annually.

Tanzania produces about 200,000 tonnes of cashew nuts per year, placing the country among the world's leading producers. The main challenge for this crop is the lack of processing, which leads to significant export losses.

Other agricultural products are maize, rice, sunflowers, and fruits. Only rice production is subject to export, as the country has not achieved self-sufficiency. The south-east is the most fertile region and, therefore, home to most of this production.

Tanzanian livestock production is diversified, but the priority sectors, as defined by the five-year plan, are beef, poultry, dairy products, and hides and skins. In the fisheries sector,

freshwater, marine and deep-sea fisheries and aquaculture are favored. (economiesafricaines.com)

Since independence, each president has adopted a significant Programme and slogans for the modernization of the agricultural sector. These Programme include Kilimo Kwanza, which in Swahili means "agriculture first"; the Tanzania Agriculture and Food Security Investment Plan (TAFSIP) - part of the Comprehensive Africa Agriculture Development Programme (CAADP); the Monitoring and Implementation Mechanism under the Presidential Office for Implementation; and more recently the Southern Corridor for Agricultural Growth in Tanzania (SACGOT) - the latter was established to mobilize private and public investment in the agricultural sector through public-private partnerships (Ecofin Agency).

Tanzania's export earnings from agricultural products reached \$554.1 million in 2018/2019, slightly less than half the value recorded a year earlier (\$1.2 billion). This is what Reuters reports, quoting data from the country's Central Bank.

According to the financial institution, the drop was due to poor performance in tea and clove shipments, as well as a delay in cashew nut exports. The latter is because the government has been struggling to find takers for the stock of the raw material collected from farmers since last November.

According to the latest estimates by the executive, the amount of shipments has dropped from \$529.6 million to \$196.5 million in 2018.

As a reminder, agriculture accounts for 30% of Tanzania's GDP. It provides income to 80% of the population, according to World Bank data.

About 80% of the population lives from subsistence agriculture, livestock production, and fisheries (World Bank, 2017). Crop production in Tanzania is mainly rainfed and dominated by small farmers. The main staple foods in Tanzania are maize, rice, banana, and cassava, and the country has the third-largest livestock population in sub-Saharan Africa. In 2014, nearly three-quarters of the cultivated area was cultivated using traditional methods and by hand; the rest was cultivated by ox-plow (20%) and tractor (10%). However, the government has made efforts to increase mechanization through massive imports of tractors and other agricultural implements (Majule et al., 2014).

Heavy dependence on erratic weather conditions means that land productivity remains insufficient to cover daily food needs. Also, farmers continue to suffer high post-harvest losses due to pest infestations and deterioration due to a poor treatment and inadequate

storage facilities. The use of chemical fertilizers and so-called improved seeds (industrial hybrid seeds) is deficient in Tanzania. It should be pointed out that this low use of chemical fertilizers is a consequence of the unfortunate experience of farmers in the 1960s and 1970s, which led to the perception that inorganic fertilizer destroys the soil (Majule et al. 2014). Extension Programme and pilot projects have tried to refute this negative perception. However, it must be noted that this idea is still widely shared by farmers in most parts of the country. Similarly, most farmers maintain and recycle their traditional stocks.

As part of the national development agenda, agriculture should drive growth and structural transformation of the economy and maximize the benefits of accelerated growth. The Tanzania Development Vision 2025, which aims to transform Tanzania into a middle-income country, projects that by 2025 the economy will have moved from a low-productivity agricultural economy to a semi-industrialized economy, driven by modernized and highly productive agricultural activities that are effectively integrated and strengthened by industrial and support service activities in rural and urban areas. To this end, Tanzania has just adopted the second phase of the Five Year Development Plan (FYDP II 2016/17 - 2020/21), while the Tanzania Agriculture and Food Security Investment Plan (TAFSIP 2011/2012 - 2020/2021) maps out the investments needed to achieve Tanzania's commitment under the Comprehensive African Agriculture Development Programme (CAADP). The Five-Year Development Plan (FYDP II) Programme focuses on critical interventions, including increasing the use of modern technologies, particularly ICTs and extension services; lengthening and deepening value chains; promoting skills along value chains; marketing; quality and standards, research and innovation; promoting producer groups; and promoting marketing and improving access to financial services.

CLIMATE VARIABILITY

Climate change affects crop yields by reducing soil moisture content and promotes crop diseases. For example, Rowhani et al. (2011) state that the projected seasonal temperature increase of 2oC in 2050 will reduce rice, sorghum and maize yields in Tanzania by 7.6%, 8.8%, and 13% respectively, while a 20% increase in rainfall variability will reduce rice, sorghum and maize yields by 7.6%, 7.2%, and 4.2% respectively by 2050. In addition, an increase in temperature between 2oC and 4oC will lead to ecosystem displacement (Rowhani et al. 2011).

According to FAO, forests, and woodlands also play an essential role in rural and urban livelihoods in Tanzania as about 90% of the population depends directly on bioenergy for heating and cooking. It is estimated that forests provide more than 80 percent of the country's water supply, which accounts for more than 60 percent of Tanzania's hydropower-generated electricity.

In addition, the suitable rangeland grazing areas that pastoralist communities used for feeding and settlement of livestock have decreased due to climate change. Increased livestock losses, as well as diseases such as tsetse fly escalation due to water scarcity and higher temperatures, are reported every year. As a result, pastoralists are forced to desert former grazing areas to migrate to farmers' areas in search of pasture and water for their livestock or to convert to a more sedentary lifestyle. This leads to competition and sometimes serious conflicts between farmers and pastoralists over natural resources (Ojija et al. 2017). The authors' review provides a broader picture of the impacts of climate change on the agricultural sector. It reveals that in many parts of Tanzania, the agricultural sector may continue to suffer from the effects of climate change clustered with limited awareness among communities. Outbreaks of infectious diseases, including malaria and cholera, are expected to increase due to their positive correlation with high temperatures and rainfall. As a result, health problems and reduced agricultural production will continue. The impact of climate change is thus accelerating food shortages, poverty, deforestation and forest degradation, poor living conditions, and the emergence of infectious diseases (Ojija et al. 2017).

Tanzania is among the most vulnerable countries to climate change globally. The average annual temperature in Tanzania has increased by 1.0°C since 1960 and is projected to increase by 1.0-2.7°C by 2060 (UNDP, 2012). Over the past 40 years, Tanzania has experienced severe and recurrent droughts with devastating effects on the agriculture, water, and energy sectors. Climate change scenarios, including a prolonged dry season, severe flooding, altered ecology, pests, and diseases including cholera and malaria epidemics, livestock losses with several animal deaths, crop failures, and uncertainties in crop types, have been regularly observed (Oji-ja et al ., 2017). Currently, more than 70% of all-natural disasters in Tanzania are linked to climate change (Irish Aid, 2016).

PARTIE II: STUDY METHODOLOGY

The choice of the topic of study was made in agreement with the coordination unit of MIVARF and IFAD. The study focuses on the Marketing Infrastructure and System component, which itself is broken down into sub-components. The idea is to see how a Programme that touches different levels from production to sales can have a real impact on the lives of producers.

2.1) OBJECTIVE OF THE SURVEY

The overall objective of the survey is to assess the impact of the Marketing Infrastructure System component on the beneficiaries of the Programme.

As regards the specific objectives, they are:

- Analyze the evolution of the income of the beneficiaries before and after the Programme
- Analyze the evolution of recipients' cost of production before and after the Programme

To achieve this, the following assumptions were considered:

- There is a link between the development of an economic circuit (rural access roads, storage facilities, markets) and income poverty reduction in rural areas.
- Income poverty reduction in rural areas leads to a significant increase in the purchasing power of the beneficiaries and, at the same time, has a positive impact on the endogenous growth of the country.

The importance and interest of the study is that it can be a tool for decision support. Indeed, once the beneficial character has been proven, through effectiveness and role, this will enable us to formulate clear proposals for decision-makers. The ultimate goal is to accelerate economic growth in rural areas, and de facto reduce income poverty.

This mission will serve as a basis for a much more general topic, namely, the elements that influence rural poverty reduction.

To achieve this, our approach will be as follows.

2.2) METHODOICAL APPROACH

The approach is based on hypothetico-deductive reasoning, starting with exploratory investigations that will lead to the validation of hypotheses based on the research questions, as requested by the Programme.

Explanations are sought by deduction and using appropriate methodological tools. More concretely, the aim is to analyze, based on the available literature, more in-depth investigations based on documentary analysis and interviews with Programme actors and beneficiaries.

2.3) DATA COLLECTION

2.3.1) LITERATURE REVIEW

It is the basis of all scientific work. It ran from the preliminary activities of this research to the writing of the final report. The first phase consists of the exploitation of internal documents and the work of the Programme. In the second phase, the analysis of the existing scientific literature, including written documents, the website, press articles, and newspapers, but also existing databases and available audiovisual material related to the Programme. All of this allowed us to better frame our study and identify the most critical elements related to our analysis. It should be added that in addition to the documentation provided on-site, we also had other information and documents from the local government of the areas where the surveys were conducted. These elements were used to collect secondary data useful for our survey.

2.3.2) FIELDWORK

The work was aimed to build a database of diverse origins, some of which were collected through surveys, direct observation (participant observation), field measurements, and semi-structured interviews with Programme actors and different entities. It should be noted that the interviews were conducted with the agreement of the present Programme managers. The persons selected are reliable informant who helped to highlight strategic aspects that we did thought of a priori, but also related and complementary opinions and perspectives; all this was to give a critical insight into the effectiveness of the strategies and actions integrated into the different projects implemented.

2.3.3) DATA PROCESSING AND EXPLOITATION

The second phase consisted of processing and exploiting the data and information collected in the field. In line with the nature of the information and data collected, tables and graphs were prepared to highlight the results obtained. Finally, for the drafting, data processing, application of graphs and tables, Microsoft Office software (Word and Excel), as well as Sphinx software, were used.

PARTIE III: PRESENTATION OF THE MIVARF

The following informations come from the annual progress report of MIVARF 2018/2019

Table 1: Programme Fact Sheet

| | |
|---|--|
| Programme Title | Marketing Infrastructure, Value Addition and Rural Finance Support Programme |
| Programme Components | a. Marketing Infrastructure and Systems b. Rural Finance c. Programme Coordination |
| Executing Agency | Prime Minister's Office |
| Total Programme Cost | USD 160.6million |
| Financing Sources | IFAD USD 90.6million AfDB USD 62.9million GOT, LGAs and beneficiaries USD 7.1 million |
| Terms of Loan | 40 years with a grace period of 10 years repaid including 0.75% service charge per annum |
| Programme Period Extension Period | 7 years from 25 th February 2011 to 25 th February 2018. 2 years from 25 th February 2018 to 25 th February 2020. |
| Original Completion Date Extension Completion Date | 31 st March 2018 31 st March 2020 |
| Original Closing Date Extension Completion Date | 30 th September 2018 30 th September 2020 |
| Geographic Coverage | 29 Regions (24 regions on the Mainland and 5 regions in Zanzibar) |
| National Coordination Office | Arusha, NPC, Mr Walter E. Swai |
| Zanzibar Coordination Office | Unguja, PC, Mr Khalfan M. Saleh |

3.1) ABOUT THE MIVARF

The Marketing Infrastructure, Value Addition, and Rural Finance Support Programme was initially a seven-year Programme whose effective implementation started in July 2011, and its completion date was 31st March 2018 with a closing date of 30th September 2018. However, the Programme was granted a two years extension whereby the completion date is now 31st March 2020 with a closing date of 30th September 2020. The Programme is being implemented in 29 regions and 73 Local Government Authorities (LGAs), it has an overall goal of enhancing incomes and food security of the target group on a sustainable basis.

The Programme comprises of three components that serve as a basis for the implementation of its activities. These are; Marketing Infrastructure and Systems, Rural Finance, and Programme Coordination.

Table 2: A snapshot of the realization of the Programme

| S/N | Particular | Total Outreach | | | 2018/19 Outreach | | |
|--|-----------------------|-------------------------------|------------------------------------|---------------|------------------|---------|---------------|
| | | Programme Target (Households) | Actual Achievement June 2019 | % Achievement | Target | Actual | % Achievement |
| 1. | PEML | 89,600 | 130,051 (22,727 Matching grant) | 145% | 12,800 | 10,168 | 79% |
| 2. | Rural Finance | 965,800 | 736,166 | 76% | 250,000 | 186,166 | 74% |
| | Total | 1,055,400 | 866,217 | 82% | 262,800 | 196,334 | 75% |
| Marketing infrastructure and System | | | | | | | |
| | | | | | | | |
| 3. | Rural Roads (km) | 1,000 | 1,078.6 | 108% | 0 | 0 | - |
| 4. | Warehouses (no.) | 35 | 35 | 100% | 1 | 1 | 100% |
| 5. | Markets (no.) | 16 | 16 | 100% | 1 | 1 | 100% |
| 6. | PHTC (no.) | 13 | 13 | 100% | 3 | 3 | 100% |
| 7. | Matching Grants (no.) | 25 | 33 | 120% | 9 | 4 | 44% |

Under the Marketing Infrastructure and Systems Component which has three sub-components, the Marketing Infrastructure, Value Addition, and Producer Empowerment and Market Linkages, the most significant achievements so far include; rehabilitation of 1,078.6 Km (108% of target) of rural feeder roads, construction of 16 markets (100% of target), construction of 29 warehouses and renovation of all six warehouses (100% of warehouses that were to be constructed and rehabilitated). These developments have greatly enhanced access to markets by the beneficiaries, reduced transactions costs and increased marketing efficiency. In line with this, the Programme has also facilitated the setting-up of 70 (100% of target) Local Marketing Infrastructure Committees to operate and maintain the improved marketing infrastructures. Several achievements have also been realized on the part of Value Addition interventions. These include acquisition of 33 processing machines by beneficiaries and capacity building of over 125,000 beneficiaries (60% Women) on value addition and post-harvest management activities, which are expected to improve household incomes through added value and loss reduction of their products.

Interventions under the Producer Empowerment and Market Linkages (PEML) sub-component have benefited a good number of Programme beneficiaries. Some of the notable achievements include mobilization and capacity building of over 118,400 (43% women) smallholder farmers on input, output, and financial market linkages.

3.2) SUMMARY PROGRAMME DESCRIPTION

3.2.1) GOAL, OBJECTIVES AND STRATEGIC APPROACH

1. The overall goal of the Marketing Infrastructure, Value Addition, and Rural Finance Support Programme (MIVARF) is to reduce rural poverty and accelerate economic growth on a sustainable basis. The Programme Development Objective is to enhance the incomes and food security of the target group on a sustainable basis. MIVARF will achieve this through enhanced access of poor rural households to a broad range of financial services, coupled with the necessary capacity building and sustainable and profitable linkage to markets.

2. The strategic approach to the implementation of Programme activities is based on a demand-driven approach and competition for resources. This is the primary strategy that characterizes the principle of engagement of the LGAs/districts to participate in the implementation of the Programme. In this approach, resource allocations to the LGAs/districts are transparent, based on meeting eligibility criteria that include among others willing to

contribute to the cost of priority activities for the LGAs/districts and other participating institutions. This also encourages healthy competition among the LGAs/districts for the limited Programme funds.

3.2.2) THE TARGET GROUP

The overall target of the Programme is to reach over 1,000,000 active poor households that live in rural areas. These include (a) smallholder farmers, herders, and fishers; (b) small rural-based entrepreneurs, traders, and artisans; (c) grassroots microfinance institutions (MFIs) and (d) primary societies/associations involved in processing and marketing. A particular focus is given to women in all the above categories. This group is characterized by the potential to improve agricultural productivity and incomes, as well as food security.

3.2.3) COMPONENTS SUMMARY DESCRIPTION

Programme Components: The MIVARF consists of three components; Marketing Infrastructure and Systems, Rural Finance, and Programme Coordination.

I) Marketing Infrastructure and Systems – financed by both AfDB and IFAD has three sub-components, namely, Marketing Infrastructure and Value Addition sub-components financed by AfDB and Producer Empowerment and Market Linkages sub-component financed by IFAD.

- i. Marketing Infrastructure (AfDB financing) - aimed at the establishment and sustainable maintenance of improved marketing infrastructure;
- ii. Value Addition (AfDB financing) -focused towards institutionalizing postharvest management capacity to beneficiaries who will eventually add value to agricultural produce and hence reduce postharvest losses and earn more from their produce;
- iii. Producer Empowerment and Market Linkages (IFAD Financing) - aimed at providing the necessary capacity building to producers and marketing groups, facilitate the establishment of sustainable market linkages through a public-private partnership (PPP) based market information system.

II) Rural Finance – A component financed solely by IFAD has two sub-components, namely, Grassroots Financial Services and Rural Financial Systems Development.

i. Development of Grassroots Financial Services - provides specific support to different financial institutions (including informal financial institutions, SACCOS, MFIs, and community/cooperative banks) intending to increase rural outreach. The Programme is also providing support to apex institutions to strengthen their capacity to oversee activities as well as performance monitoring of the financial institutions;

ii. Rural Financial Systems Development – is aimed at enhancing the appetite of commercial banks for rural and agricultural lending, leveraging substantial commercial funds, building the capacity of the MIVARF target group, supporting eligible institutions to test new approaches, methods and services in rural areas for the benefit of the target group, improving the legal and policy framework for rural microfinance, and facilitating knowledge management.

III) Programme Coordination- financed by IFAD, AfDB, and GOT, is to ensure efficient and effective Programme management, including compliance of MIVARF activities with technical, financial, and regulatory standards.

PARTIE IV: RESULTS AND RECOMMENDATIONS

It was based on a questionnaire that allowed the researcher to extract both quantitative and qualitative information. It took place over seven days in the regions of Arusha and Manyara. The researcher was assisted by a translator, who carried a risk of bias in the answers that is why most of the questions were closed or semi-closed. The researcher visited the beneficiaries of the Programme at their work place including market place where they work, in the warehouses built by the Programme; sometimes by the roadside. Each questionnaire took about 45 to 60 minutes. Interviews were conducted to both individual farmers and leaders of farmers' organizations. The sample was chosen to have overall information about the Programme, which allowed the researcher to make a report as useful as possible. A total of 46 people were interviewed between the regions of Arusha and Manyara. These people came from 15 different communes and 15 different villages. Also, government officials present in the locations where the interviews were conducted were also interviewed.

PRESENTATION OF THE DISTRICTS

DISTRICT OF MERU

The following information is taken from **King'ori Ward Government, in Meru District council, Arusha Region**

Table 3: List of village in Meru District

| Village | Hectar |
|----------------|---------------|
| King'ori | 5342 |
| Muongano | 7311 |
| Mareu | 4323 |
| Old Onyong'iro | 8126 |
| Nkoasiyo | 9117 |
| Mboreni | 7891 |
| Nkoanoel | 5787 |
| Nsengony | 6525 |
| Total | 54422 |

Table 4: Number of population in Meru District Populations

| Village | Household | People |
|----------------|------------------|---------------|
| King'ori | 891 | 5791 |
| Muongano | 1011 | 6571 |
| Mareu | 754 | 4901 |
| Old Onyong'iro | 991 | 6441 |
| Nkoasiyo | 743 | 4829 |
| Mboreni | 1221 | 7936 |
| Nkoanoel | 420 | 2730 |
| Nsengony | 727 | 4725 |
| Total | | 43924 |

Number of villages are 8, their names King'ori, Muungano, Mareu, Old Onyong'iro, Nkoasiyo, Mboreni, Nkoanoel, and Nsengony

No available groups with special needs few reported are taken care of by the faith-based organizations

Other services include

- a) Road – graveled road network available
- b) Mobile networks- Connected to Tigo, Vodacom, Airtel, and Hallotel
- c) Electricity- Connected to the national grid
- d) Water for home consumption – available, water for irrigation not available
- e) Irrigation system – Not available

REGION OF MANYARA

The Manyara region is a region of Tanzania. It takes its name from Lake Manyara, located on its northern border.

It includes most of the Tarangire National Park and the central part of the Masai Steppe. It has an area of approximately: 44,522 km².

Our analysis will be divided into three stages:

- A global analysis
- An Analysis of men
- An Analysis of women

4.1) GLOBAL ANALYSIS

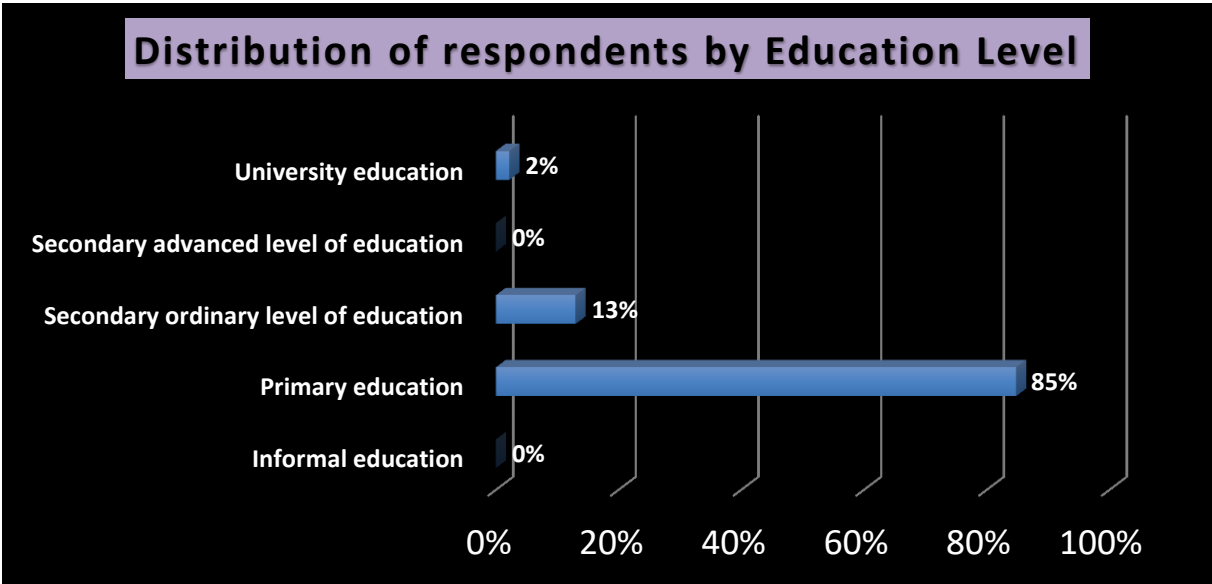
Let us first look at the distribution of our sample by age group. The majority of stakeholders are middle-aged and distributed as follows:

Table 5: Distribution of Respondents by Age

| Distribution of Respondents by Age | | |
|------------------------------------|-----------|-------------|
| | Number | Frequency |
| Youth { 18 - 35 } | 3 | 7% |
| Middle age { 36 - 55 } | 24 | 52% |
| Old age { 56 - and above } | 19 | 41% |
| Total | 46 | 100% |

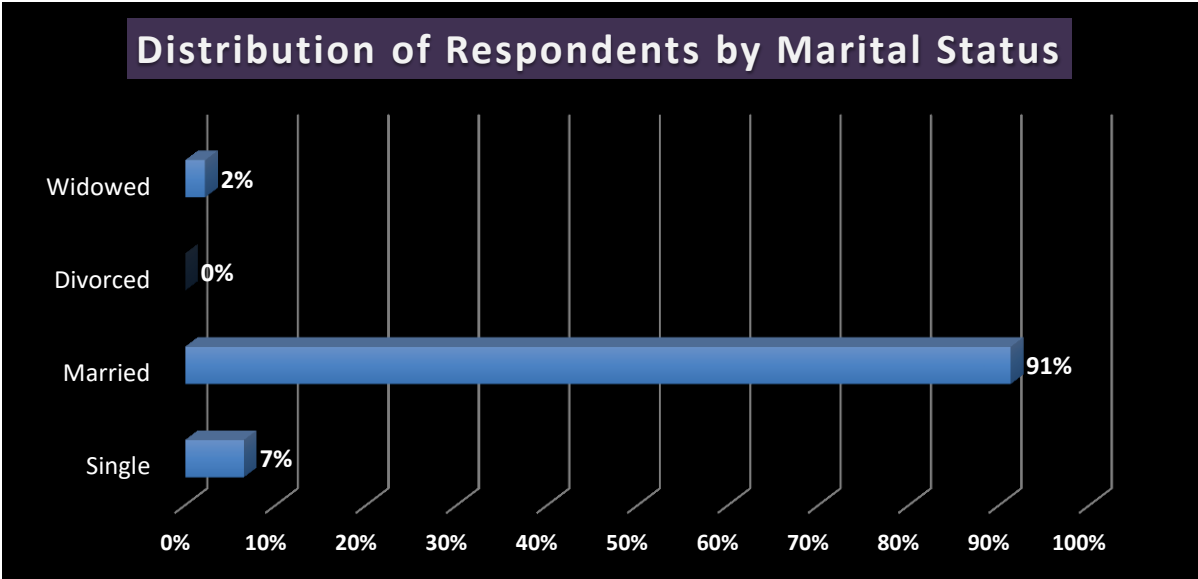
As for the education component, the overwhelming majority of farmers are at the primary level. 85% say they stopped at primary school, while only 2% say they have a university academic level. On the other hand, the literacy rate is considered high in Tanzania, close to 80% (2017 for Indexmundi). Indeed, the most common definition of this rate is the ability to read and write at a given age.

Figure 1: Distribution of respondents by Education Level



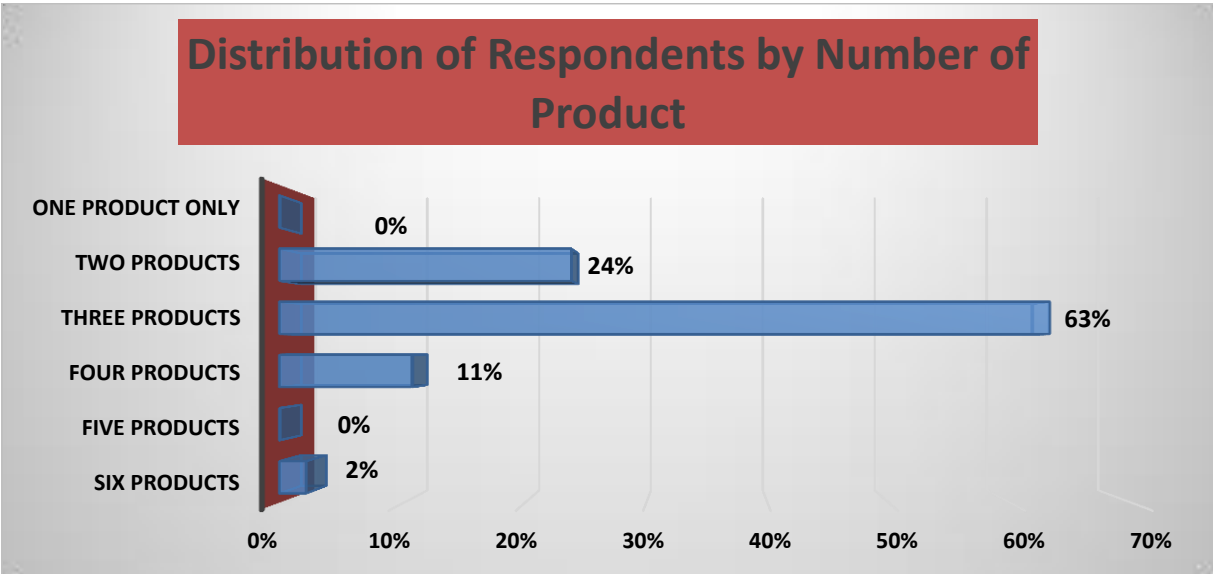
The overwhelming majority of farmers are married. Concerning widows, especially women, it should be noted that they are much more vulnerable than the rest. We will come back to that.

Figure 2: Distribution of Respondents by Marital Status



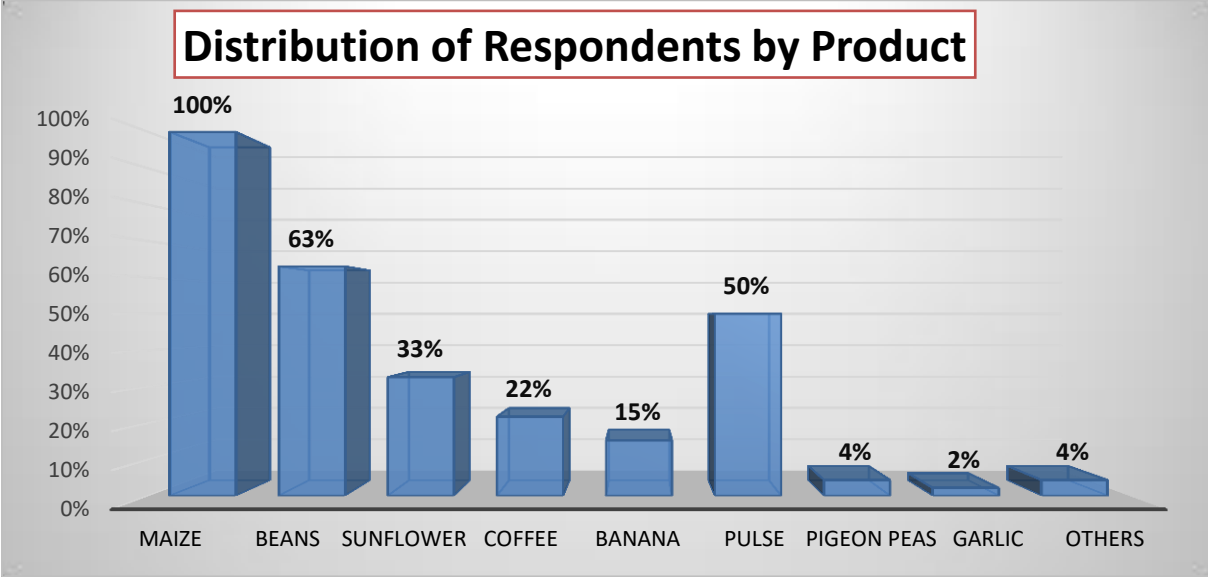
As far as farmers are concerned, the majority produce an average of three products (nearly 63%) followed by 24% who produce an average of two products. It should be noted that 11% produces an average of four products. Only 2% produce six products.

Figure 3: Distribution of Respondents by Number of product



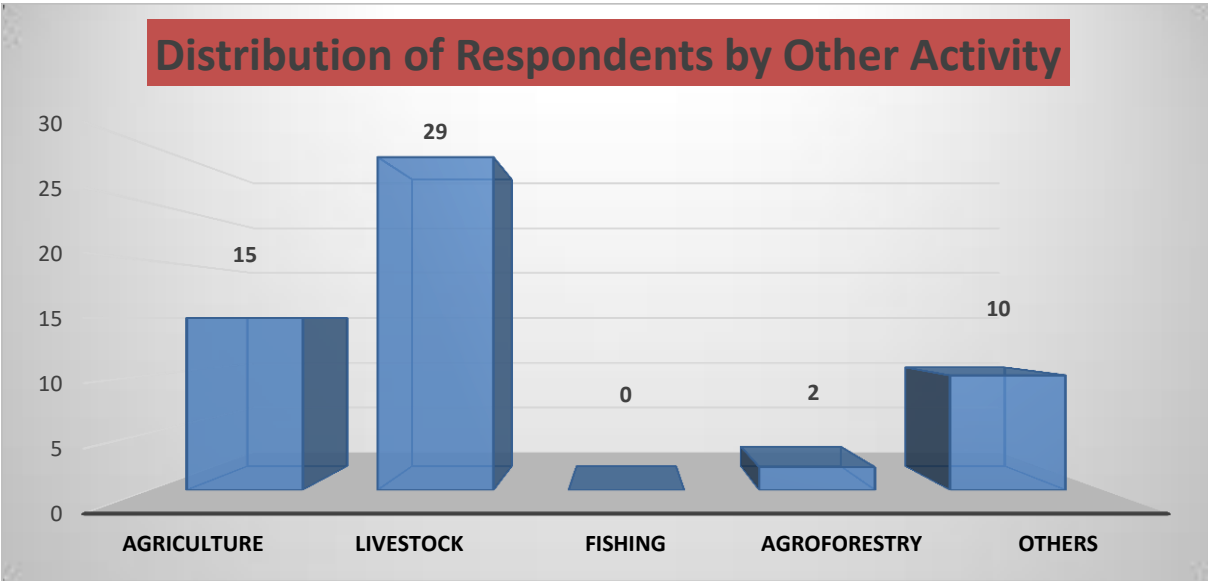
Our analyses will focus on four flagship products. The rest of the income will be analyzed later in the form of externalities related to MIVARF. The breakdown of cultivated products is as follows:

Figure 4: Distribution of Respondents by Product



One of the things we found is that most of our sample members have other income-generating activities outside agriculture, notably Livestock. It should be pointed out that within "Others," the answer "Business" is systematically found. This is indicative of the entrepreneurial nature of the Programme's beneficiaries.

Figure 5: Distribution of Respondents by Other Activity



It should be noted that almost all farmers own land for agricultural purposes. On the other hand, the majority inherited nearly 63% of the land, while 33% bought land. It should be

noted that on average, 1 hectare costs 1.5 million TSH and that once inherited, many end up buying back land themselves.

Also, most members of our sample have several years of experience in agriculture, ranging from 10 to 45 years of age. The different graphs below illustrate the different elements mentioned

Figure 6: Distribution of respondents by possession of own land for agricultural purpose

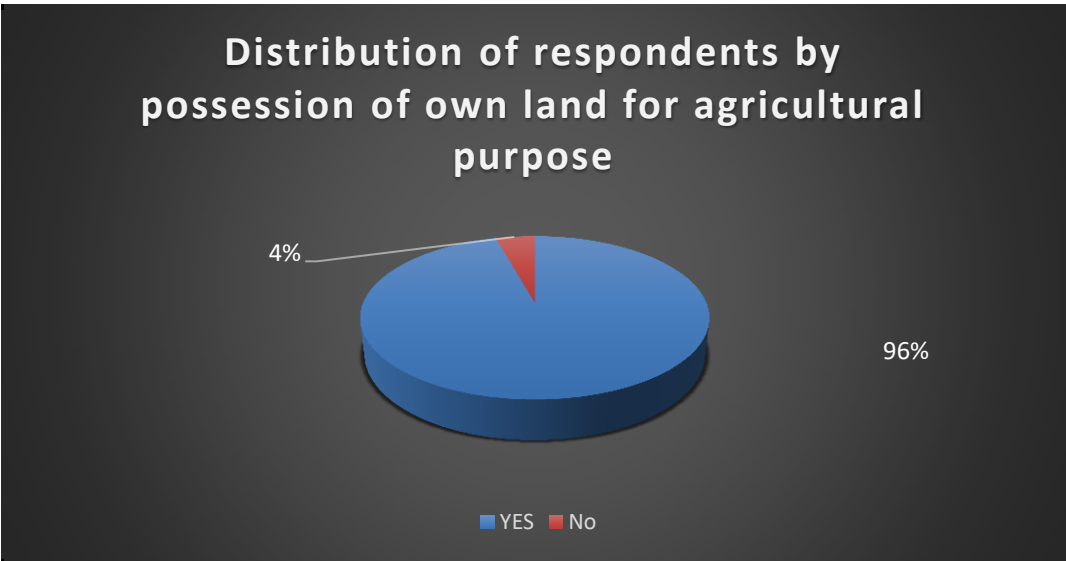


Figure 7: Distribution of respondents by farms type

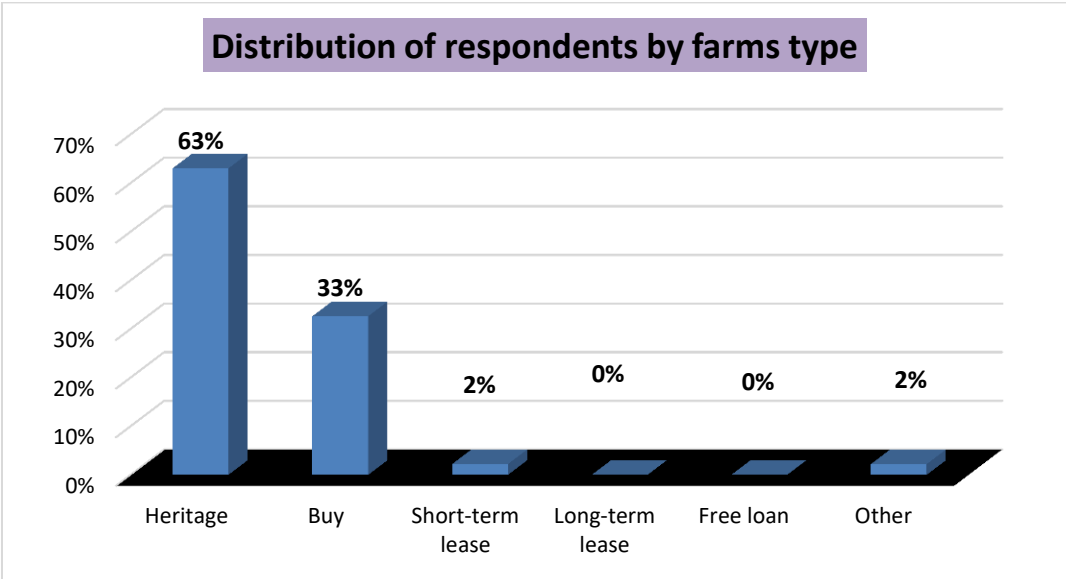
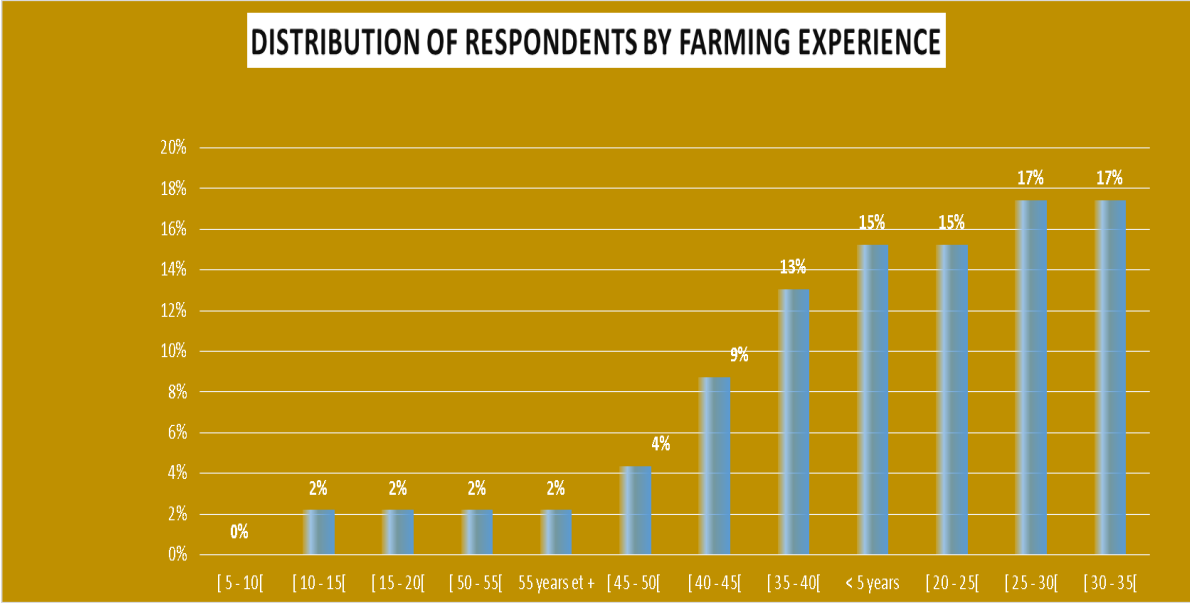


Figure 8: Distribution of respondents by farming experience



The following is an analysis of the subsectors produced under different aspects: quantities produced, quantities sold, income before and after MIVARF Programme intervention.

For the quantities produced: From an average of 9,000 kg before to 14,538 kg after. On average, there is an increase of more than 62% in terms of the quantities produced.

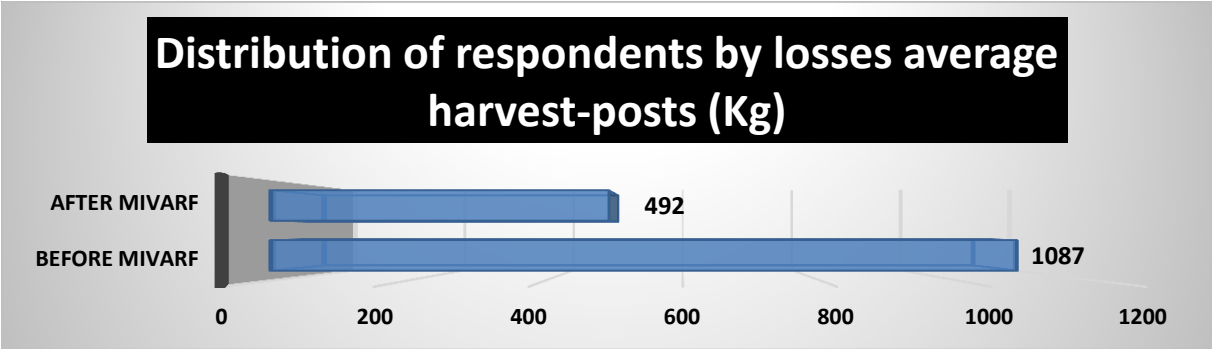
For the quantities sold: Before the Programme, an average of 7,248 kg of products sold; after the Programme intervention, now an average of 12,612 kg is sold. This represents an increase of about 74%.

Table 6: Average of products

| | Mean |
|---|--------|
| Quantity product on average before MIVARF | 9 000 |
| Quantity product on average after MIVARF | 14 538 |
| Quantity sold on average before MIVARF | 7 248 |
| Quantity sold on average after MIVARF | 12 612 |
| Price on average before MIVARF | 6 959 |
| Price on average after MIVARF | 11 792 |

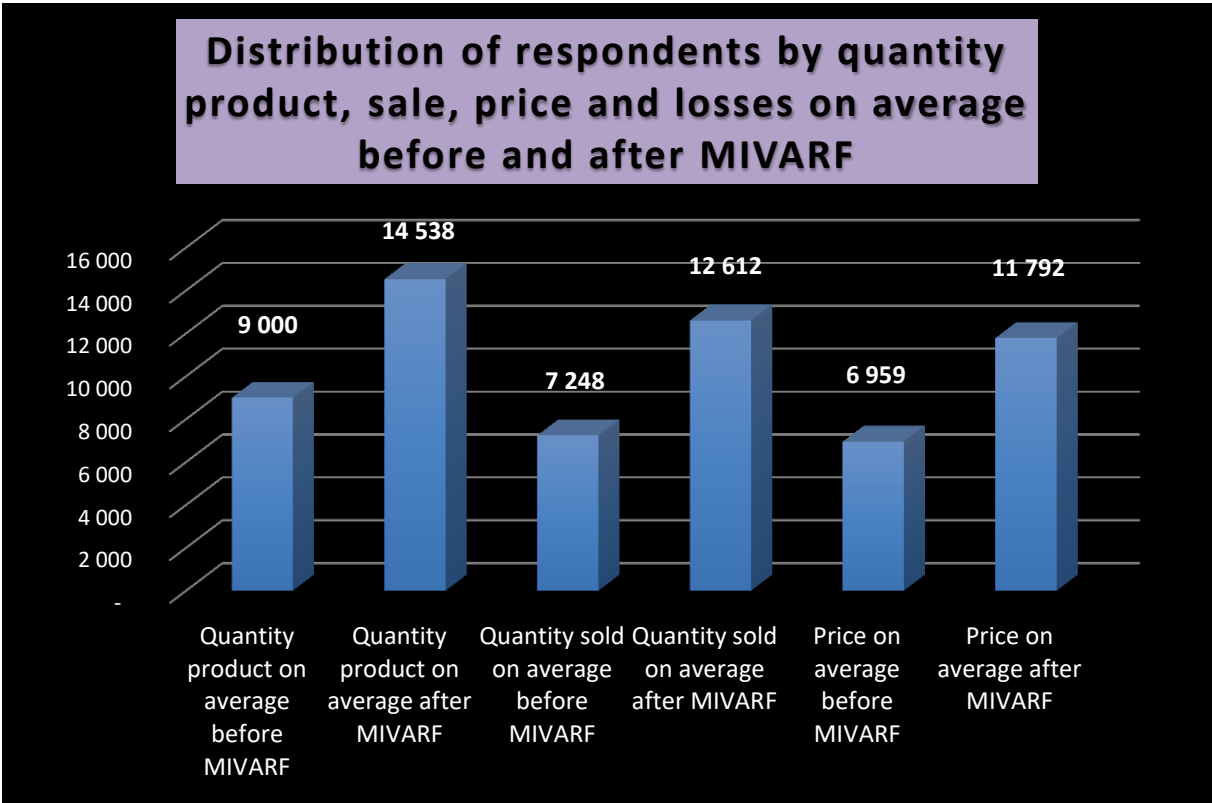
This is a significant variation. It is justified by the fact that the Programme intervened in the entire production process, particularly the post-harvest period, by providing training to beneficiaries on how to manage this critical stage. This resulted in an average loss of 1,087 kg before the Programme to 492 kg after the Programme. A 55% drop in post-harvest losses. This explains, in particular, the increase of almost 74% in the quantities sold above.

Figure 9: Distribution of respondents by losses average harvest-posts (Kg)



Income analysis: As far as prices are concerned, we have gone from 6,959 TSH per kg to 11,792 TSH per kg, a variation of 69%. This has a direct impact on the purchasing power of Programme beneficiaries and improves their living conditions. There are many endogenous reasons for this increase, including improved product quality, the use of quality fertilizers, and a reduction in production costs. The rehabilitation and construction of 1,078 km of roads have helped to facilitate the transport of production areas to sales points; the storage areas developed by the Programme have allowed better conservation of products over time; the formation of beneficiaries into agricultural organizations which allows them to organize themselves better to sell their products, etc...

Figure 10: Distribution of respondents by quantity product, sale, price and losses on average before and after MIVARF



Concerning the type of crops practiced by our sample, the majority practice both food crops and annuities. In other words, almost 89% of agriculture is practiced first for consumption and then for profit.

Table 7: Distribution of respondents by type of culture

| Distribution of respondents by type of culture | | |
|--|----|--------|
| | Nb | % obs. |
| Food crop and Cash Crop | 41 | 89% |
| Food crop only | 5 | 11% |
| Cash crop only | 0 | 0% |
| Total | 46 | 100% |

The management and exploitation of land remains a family affair. This is also confirmed by the fact that the majority of our sample says they inherited their farms. Indeed 63% claim to

have inherited the land. This means that production methods and techniques are passed on from generation to generation.

Table 8: Distribution of respondents by charge of operational management

| Distribution of respondents by charge of operational management | | |
|--|-----------|-------------|
| | Nb | % cit. |
| The households | 45 | 98% |
| Another person | 1 | 2% |
| Total | 46 | 100% |

The following two graphs show that, on average, most farmers have received agricultural training both before and after the implementation of MIVARF. Nevertheless, better results have been obtained thanks to MIVARF. MIVARF's holistic approach can explain this. Indeed, the Programme works on the financial aspect as well as on the infrastructure such as roads, storage centers, markets; added value through processing; training in the post-harvest period.

This approach makes all the difference.

Figure 11: Distribution of respondents by receive agricultural training before

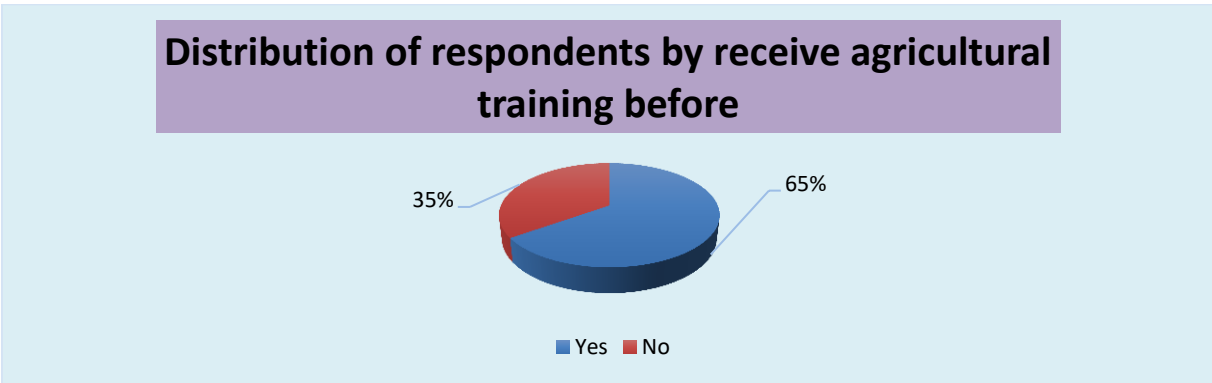
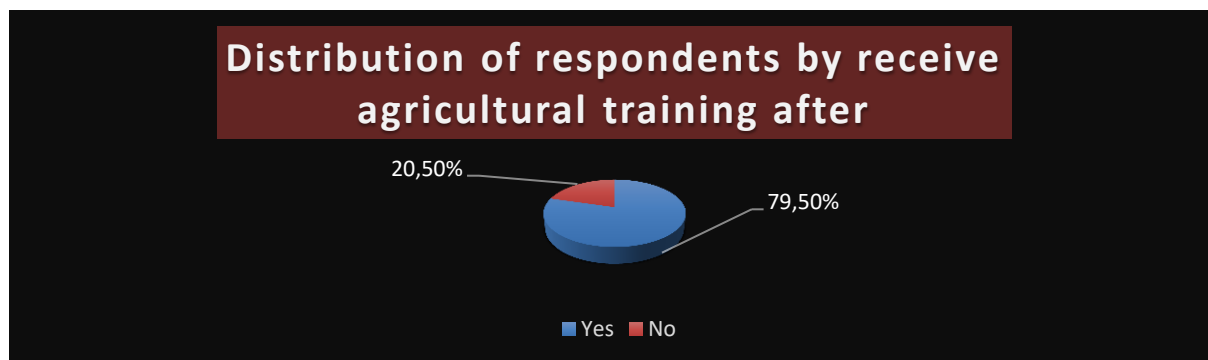


Figure 12: Distribution of respondents by receive agricultural training after



ANALYSIS OF THE EVOLUTION OF STORAGE COSTS

We will now analyze the impact of the Programme in terms of storage costs. It should be remembered that before the Programme, private storage facilities were available. These places were considered expensive by the beneficiaries. Recipients were asked to do a pre- and post- Programme assessment of storage costs. Three criteria were proposed: "low", "medium", "high". We finally analyzed these results before and after MIVARF.

Before: the Programme, nobody considered the costs related to storage as low; in fact, 0% of the respondents consider "low" against 47% who consider it "high."

After: the Programme, 0% of respondents consider the cost of storage to be "high," compared to 30% who consider it to be "low." This clearly shows that the Programme has led to significant cost reductions in the production process.

Figure 13: Distribution of respondents by costs for storage before MIVARF

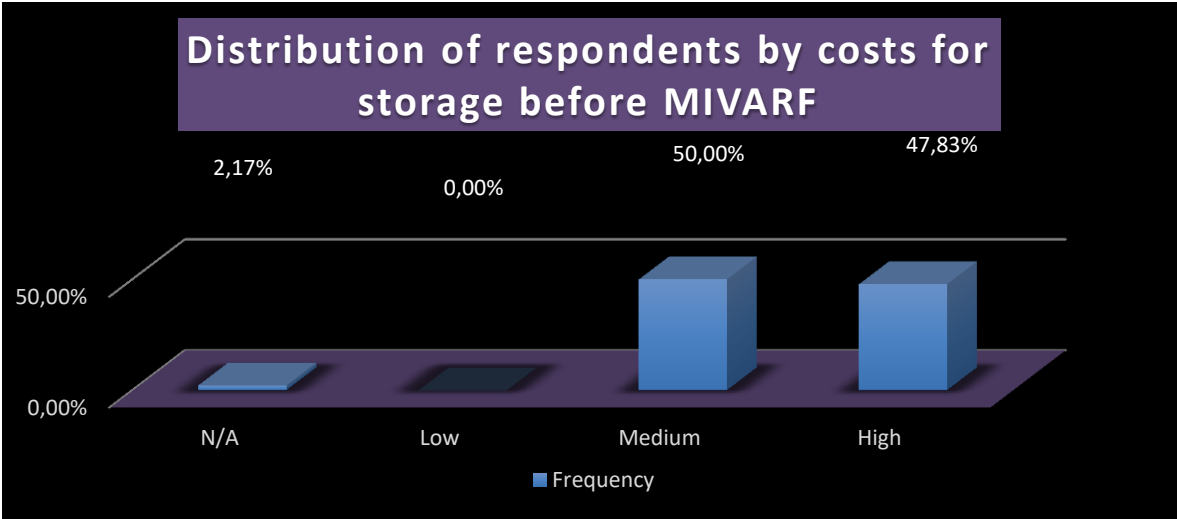
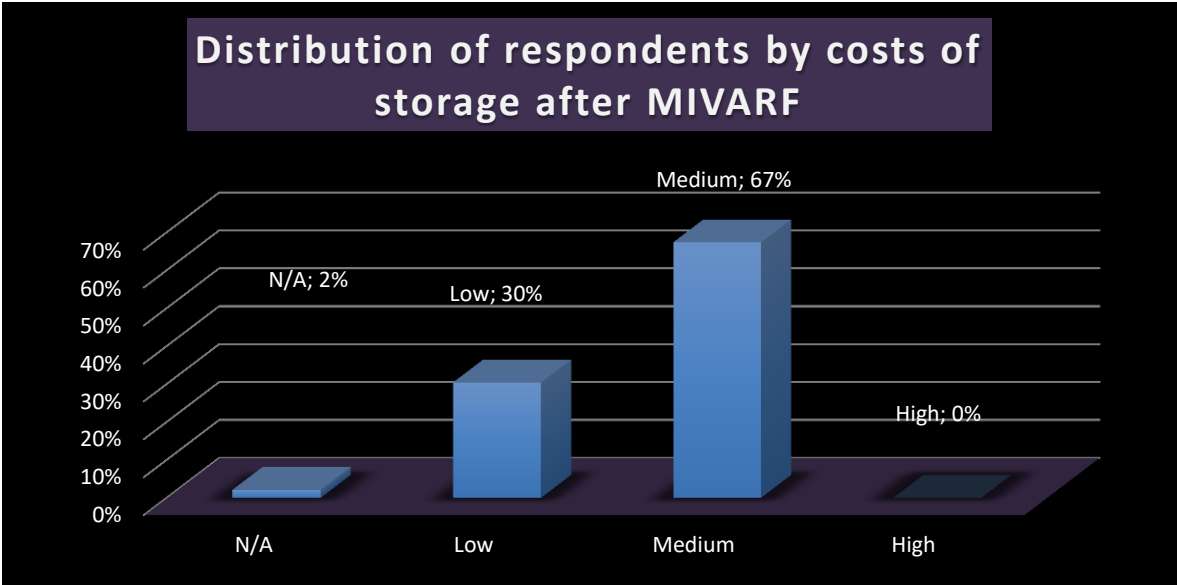


Figure 14: Distribution of respondents by costs of storage after MIVARF

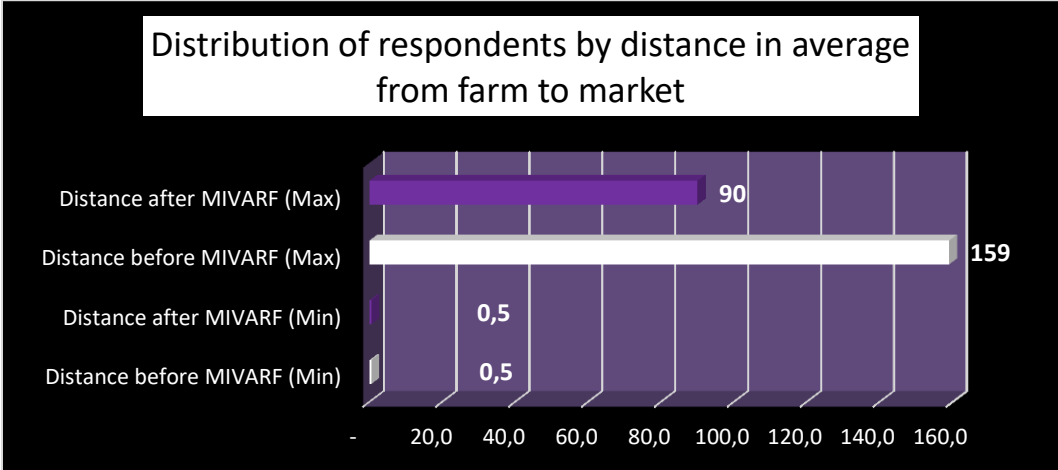


ANALYSIS OF THE EVOLUTION OF TRANSPORT COSTS

We are going to analyze the costs related to transport in a particular way. To do so, we will study the distance from the production areas to the points of sale before and after the Programme. This variable has a direct impact on farmers' income. Before the Programme the average distance was 159 km. Today it is only 90 km, which corresponds to a decrease of

almost 43%. This result can be attributed to the rehabilitation and construction of nearly 1,078 km of roads by the Programme.

Figure 15: Distribution of respondents by distance in average from farm to market

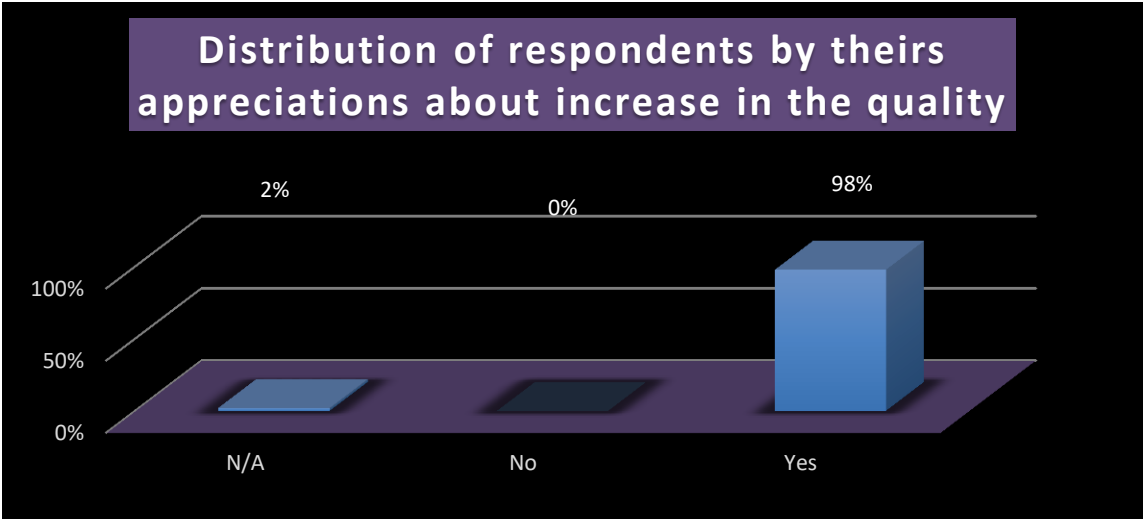


The cumulative reduction in storage costs and the distance of transport between production and sales areas has a positive impact on farmers' incomes.

PRODUCT QUALITY ANALYSIS

Nearly 98% of farmers believe that the quality of their products has improved. The reasons given are improved fertilizers during seed production; better production techniques learned through the training acquired at MIVARF. Besides, there are storage areas set up thanks to the Programme. This allows the crops to be kept longer.

Figure 16: Distribution of respondents by their appreciations about increase in the quality



4.2) GENDER ANALYSIS

In the overall analysis, we studied all products without making any distinction. In this series of cross-analysis, we will look at the three main products grown by men and women. The other products will be considered as externalities related to the Programme.

4.2.1) MEN'S CROSSOVER ANALYSIS

Men's three main products are maize, beans, and banana.

MEN'S / MAIZE CROSSOVER ANALYSIS

Figure 17: Distribution of male respondents by quantity, sale and price of maize

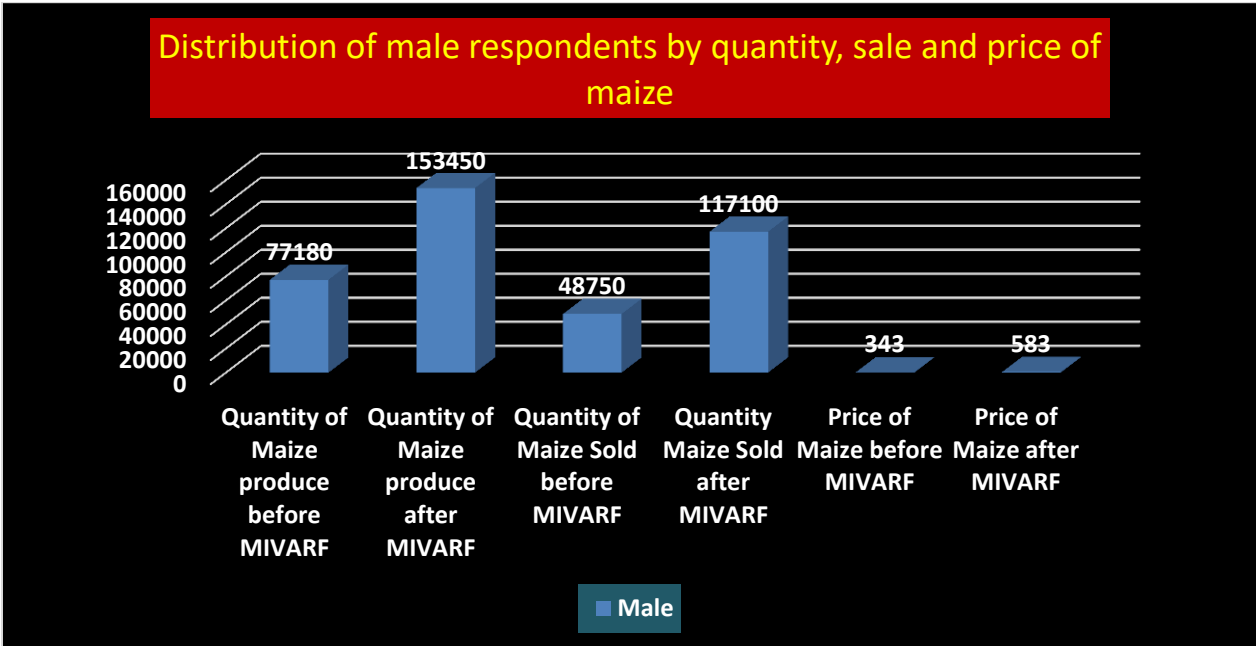


Table 9: Evolution of maize in % between before and after

| Maize | Change in % between before and after |
|-------------------|--------------------------------------|
| Quantity produced | 99% |
| Quantity sold | 140% |
| Price | 70% |

We can see that there is an increase in all of the above parameters, ranging from 70% to almost 140% for some. The various elements cited in the overall analysis, namely post-harvest training, road rehabilitation, use of quality fertilizers, are all elements that explain these sharp increases.

CROSS ANALYSIS MEN / BEANS

Figure 18: Distribution of male respondents by quantity, sale and price of beans

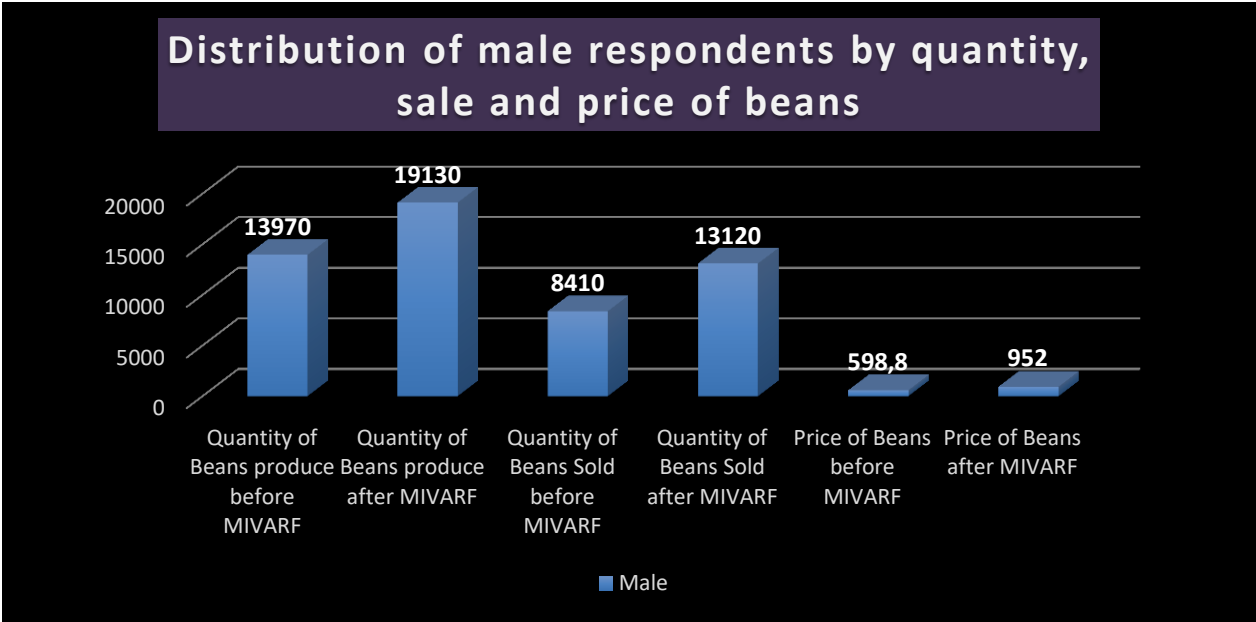


Table 10: Evolution of beans in % between before and after

| Beans | Evolution in % between before and after |
|-------------------|---|
| Quantity produced | 37% |
| Quantity sold | 56% |
| Price | 59% |

As far as the Beans are concerned, we have an increase, but less critical. However, it should be remembered that maize is the main product chosen by the Programme. The increase in other revenues is only positive externalities related to the benefits of MIVARF.

MEN'S CROSSOVER ANALYSIS / PULSE

Figure 19: Distribution of male respondents by quantity, sale and price of pulse

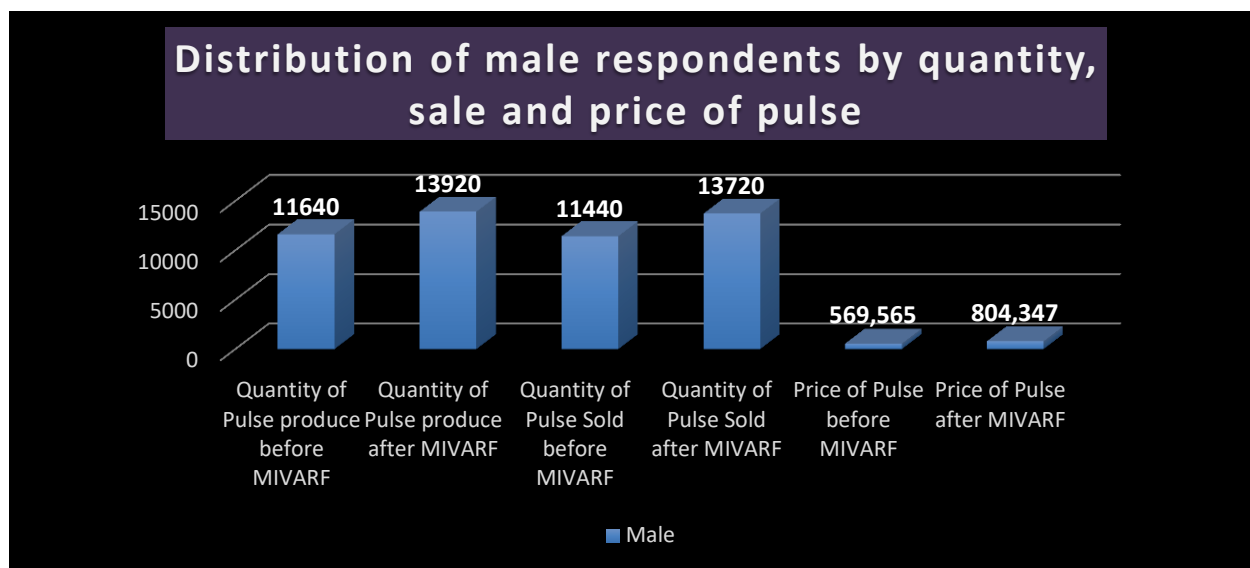


Table 11: Evolution of pulse in % between before and after

| Pulse | Evolution in % between before and after |
|-------------------|---|
| Quantity produced | 20% |
| Quantity sold | 20% |
| Price | 41% |

The increase in Pulse can be explained in the same way as the increase in beans.

4.2.2) WOMEN'S CROSSOVER ANALYSIS

Women's three main products are maize, beans, and banana.

WOMEN'S / MAIZE CROSSOVER ANALYSIS

Figure 20: Distribution of female respondents by quantity, sale and price of maize

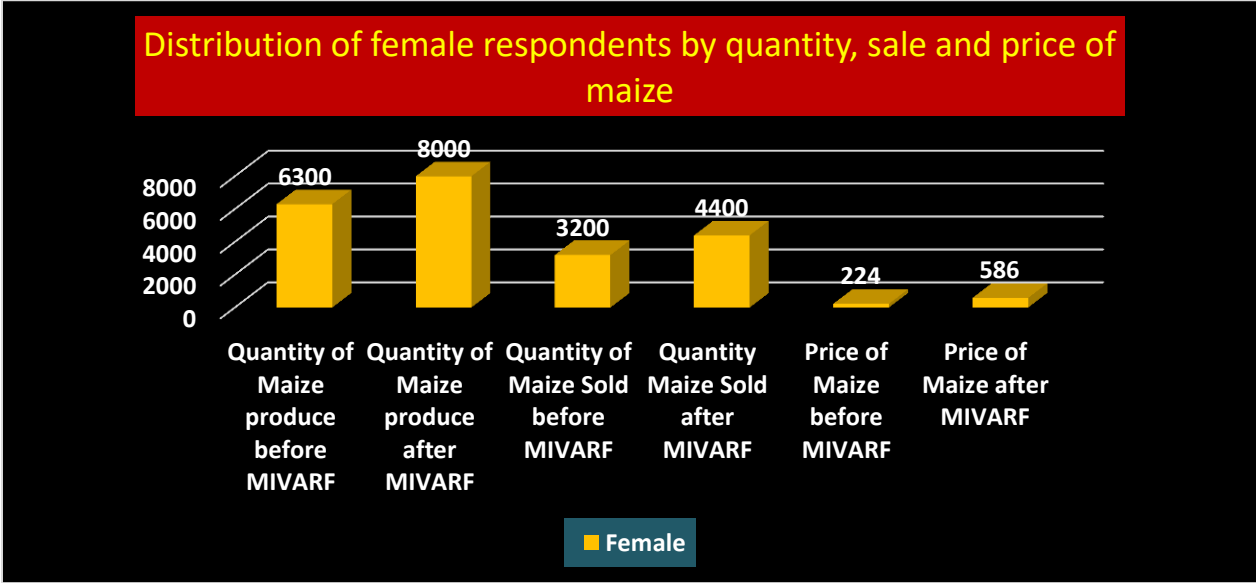


Table 12: Evolution of maize in % between before and after

| Maize | Evolution in % between before and after |
|-------------------|---|
| Quantity produced | 27% |
| Quantity sold | 38% |
| Price | 161% |

The maize is the product selected by the Programme when it saw its price multiplied by more than 100%. Everything that has been put in place by the Programme has contributed to this.

CROSS ANALYSIS WOMEN / BEANS

Figure 21: Distribution of female respondents by quantity, sale and price of beans

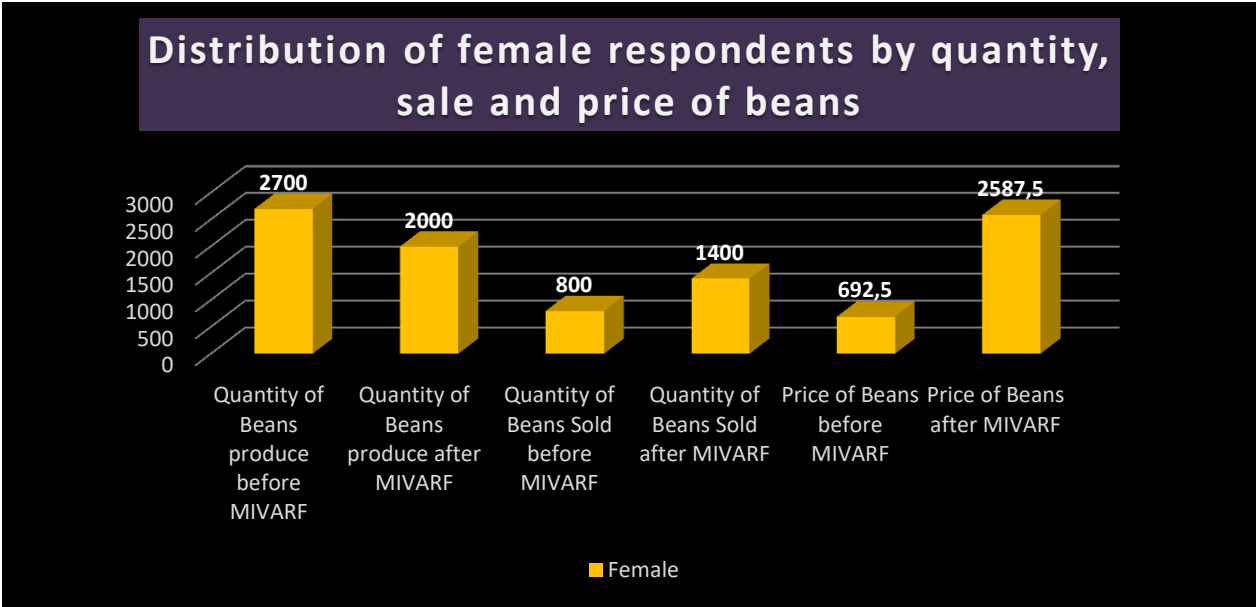


Table 13: Evolution of beans in % between before and after

| Beans | Evolution in % between before and after |
|-------------------|---|
| Quantity produced | -26% |
| Quantity sold | 75% |
| Price | 274% |

While the quantities produced fell, the quantities sold increased by almost 75% and the price by 274%. This is because producers are now taking demand into account and are therefore supplying better quality products that are desired by the market.

CROSS ANALYSIS WOMEN / BANANA

Figure 22: Distribution of female respondents by quantity, sale and price of banana

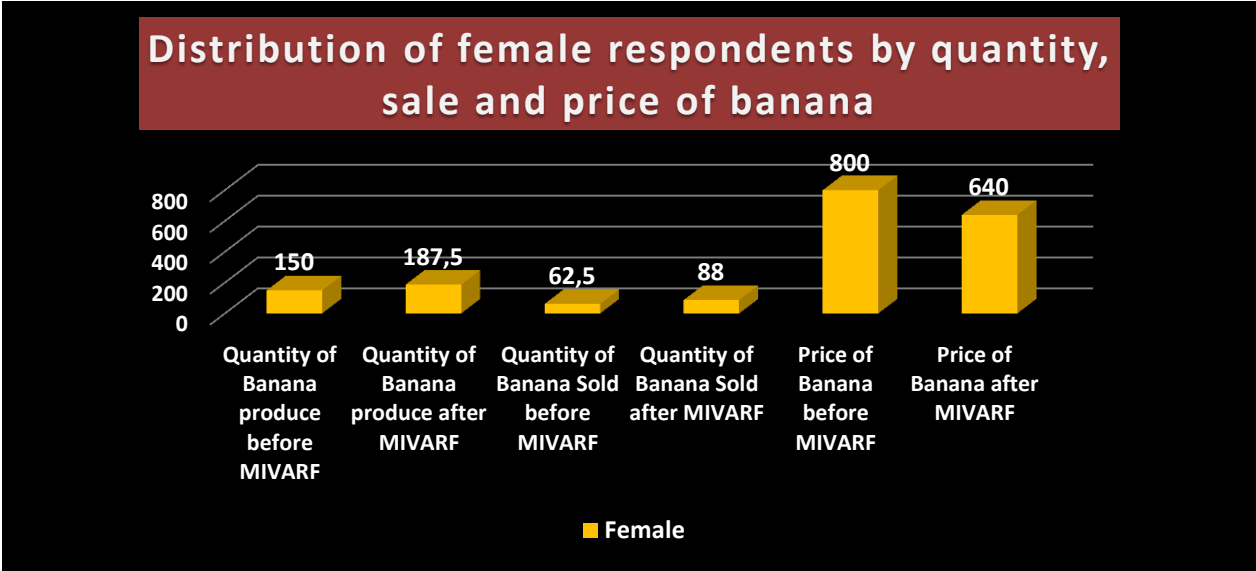


Table 14: Evolution of banana in % between before and after

| Banana | Evolution in % between before and after |
|-------------------|---|
| Quantity produced | 25% |
| Quantity sold | 40% |
| Price | -20% |

Banana has increased only slightly as women concentrate on products that bring them more income. One of the effects of the Programme is that it has made it possible to select products with high added value.

4.3) PUTTING THE MIVARF INTO PERSPECTIVE IN A GLOBAL ENVIRONMENT

ODD INDICATORS RELATING TO THE PROGRAMME

OBJECTIVE 2.3

The objective 2.3 has said: By 2030 double the agricultural productivity and the incomes of small-scale food producers, particularly women, indigenous peoples, family farmers, pastoralists and fishers, including through secure and equal access to land, other productive resources and inputs, knowledge, financial services, markets and opportunities for value addition and non-farm employment.

MIVARF is entirely in line with the objectives of sustainable development, particularly objective 2.3. Productivity has doubled, particularly in the maize sector, for both men and women; beyond the maize sector, which is an essential point chosen by the Programme, total production has more than doubled, in line with objective 2.3 of the objectives of sustainable development.

Figure 23: Distribution of respondents by quantity product, sale, price and losses on average before and after MIVARF

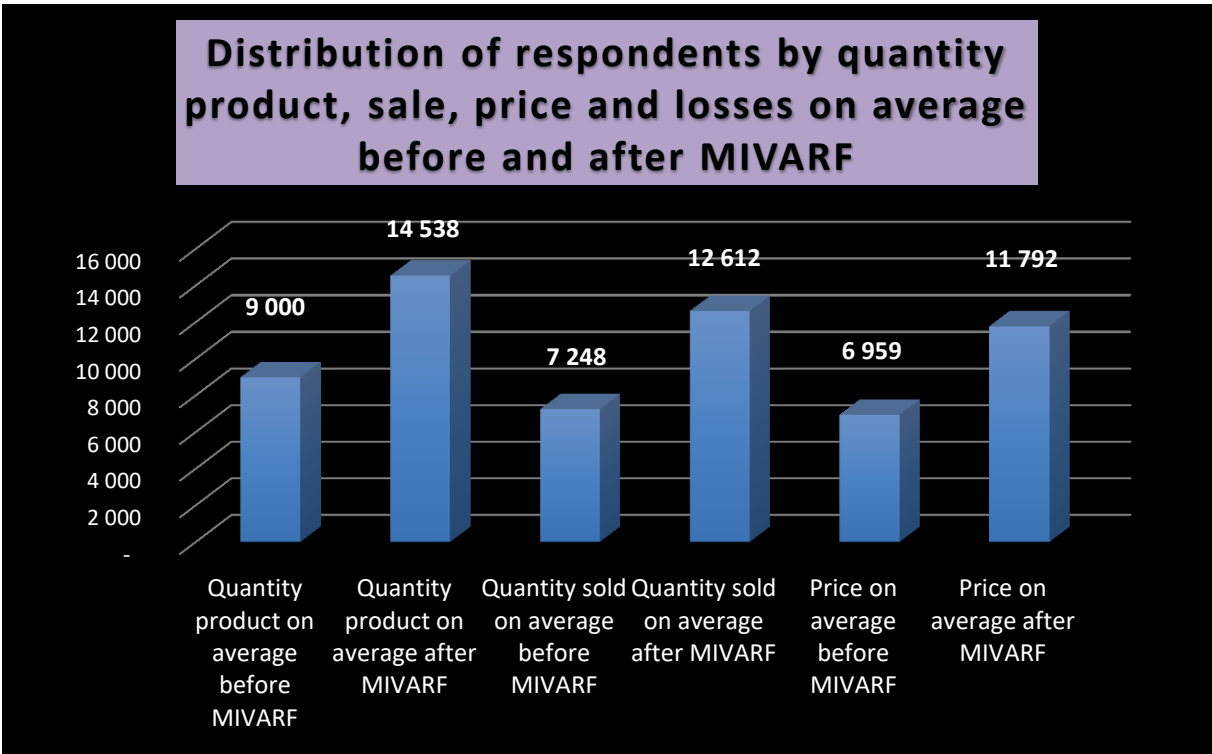


Table 15: Global evolution in % before and after

| Total | Evolution in % before and after |
|-------------------|---------------------------------|
| Quantity produced | 62% |
| Quantity sold | 74% |
| Price | 69% |

The Rural Finance component, which is another component of MIVARF, has enabled the most precarious populations to benefit from quality financial services, thus helping them to develop and support their activities. The Rural Innovation Fund has been established with nearly. Million Dollars, which has been spread, throughout the Programme.

SYNTHESIS OF THE EVOLUTION OF ALL LOANS OVER THE PERIOD

The establishment of adequate markets machinery, for the creation of added value are other elements that meet objective 2.3.

NATIONAL DEVELOPMENT PLAN

In its National Development Plan for the period 2016/17 - 2020/21, put in place by the Government of the United Republic of Tanzania. Agriculture appears to be one of the essential levers for accelerating the country's development and eradicating poverty. In the agricultural component of this plan, maize appears as one of the critical elements of it. The challenges related to this sector and the actions to be taken have been identified. This table comes from the development plan put in place by the GoT for the period 2016/17 - 2020/21.

Table 16: Source from National five year development plan 2016/17 – 2020/21 of the United Republic of Tanzania

| Location/ type | Challenges | Interventions required | Expected results |
|--|--|--|--|
| Crops Strategic Choices | | | |
| Maize | <ul style="list-style-type: none"> • Low productivity • High post harvest loss • Limited storage capacities | <ul style="list-style-type: none"> • Increase use of modern technology • Construction of 150 collective warehouse Based Marketing schemes –COWABAMA | <ul style="list-style-type: none"> • Increase maize production by 100,000 tons annually • Post harvest losses reduced |
| Rice - Expanded Rice production Project (ERPP) | <ul style="list-style-type: none"> • Weak rice cultivation practice • Limited irrigation coverage • Low productivity • Weak rice cultivation practice • Limited irrigation coverage • Low productivity | <ul style="list-style-type: none"> • Project for supporting rice industry Development in Tanzania • Increase use of modern technology • Linking KPL commercial Farm with smallholder farmers to raise productivity to world class levels (Mngeta and Kihansi Valley) using improved irrigation and System for Rice Intensification (SRI) and state of the art rice drying and milling technology • Improving crop productivity through irrigation and crop management • Innovative marketing strategies • Sustainable seed systems. • Project management and coordination • Improved rice production techniques through (SRI). | <ul style="list-style-type: none"> • 1.963 million tons of paddy produced per year by 2018 • SRI phase I operational and producing at least 50,000 tons (Mngeta farm) and 10,000 tons (smallholders out-growers) per annum 2018. • technology installation Large-Scale Zero Tillage Mechanized farming introduced by 2020 • Create at least 86 full time jobs and 325 part time jobs during SRI phase I of project development. • Increase Rice Production and Productivity. • Expansion of Rice marketing • Increased productivity from 4-6MT/ha to 8-10MT/ha • Increased seed production on 400ha] |

This shows that MIVARF's choices are entirely in line with the government's action Programme.

4.4) MIVARF EXTERNALITIES

MIVARF had set itself several objectives, but we realized that the Programme has had other effects. The Programme has had positive externalities. Indeed, there was an increase in other products that were not targeted by the Programme.

Figure 24: Distribution of respondents by indirect employment created

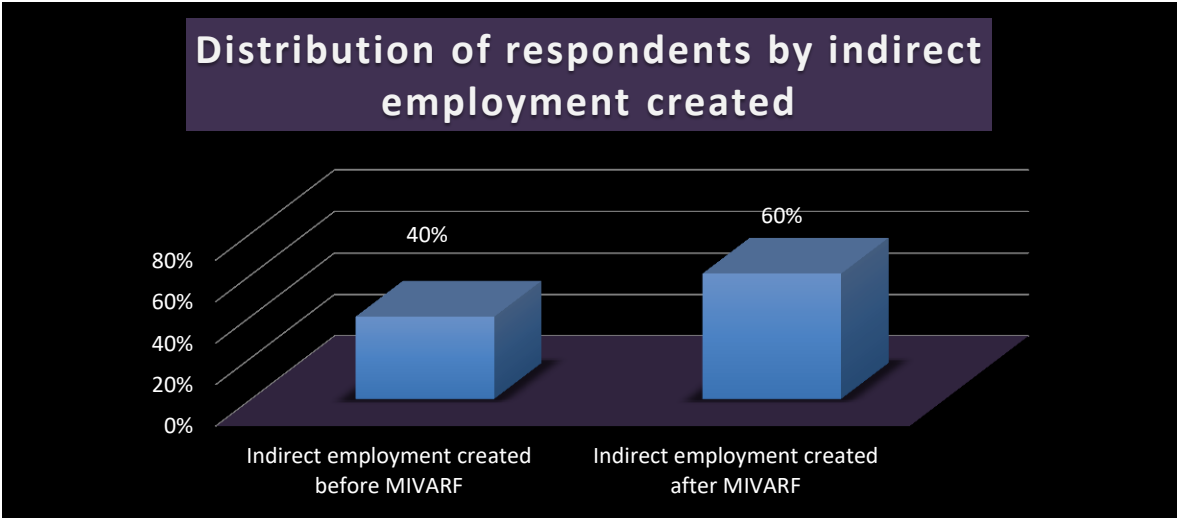
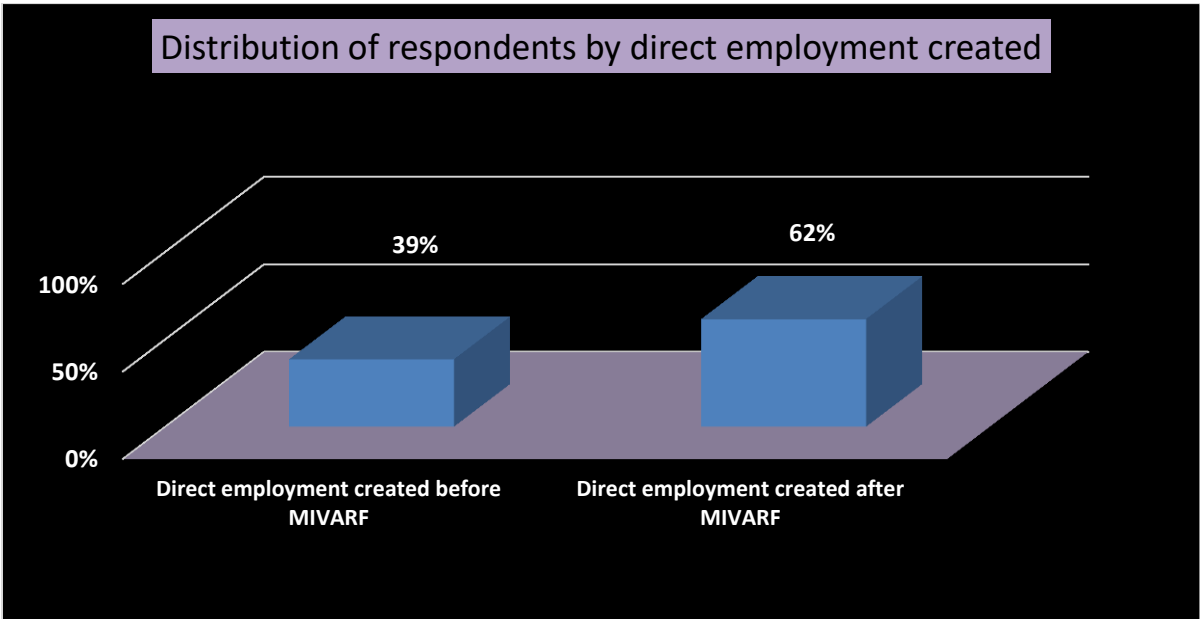


Figure 25: Distribution of respondents by direct employment created

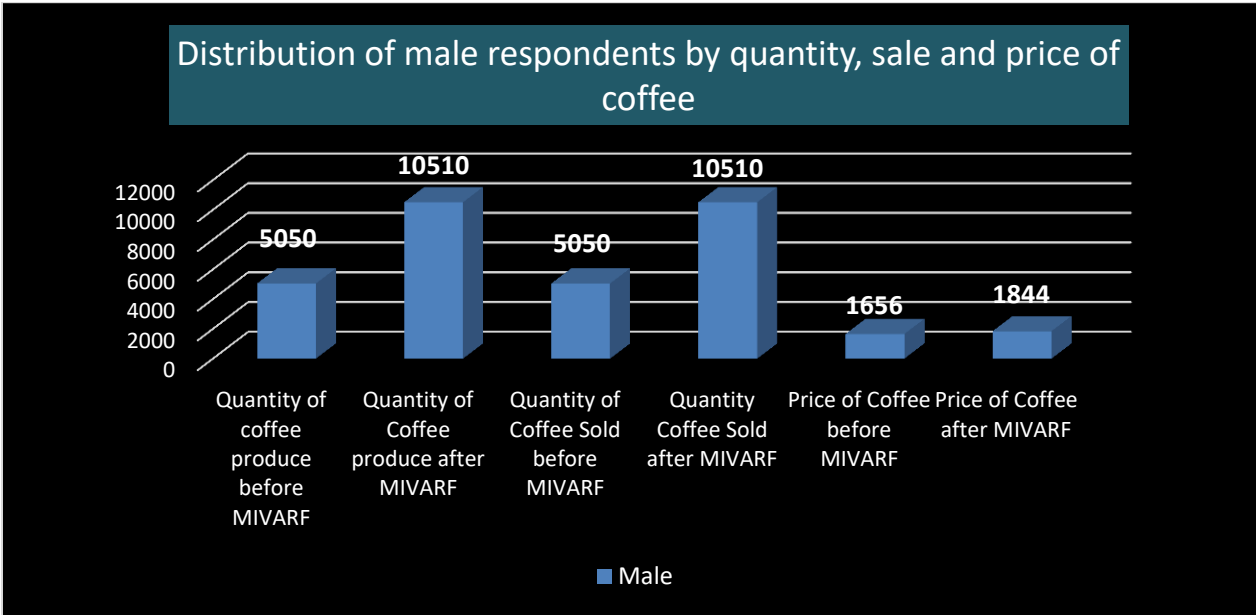


There has been an increase of more than 58% direct jobs created and 50% in indirect jobs created as a result of the Programme.

ON NON-PRIORITY MIVARF PRODUCTS

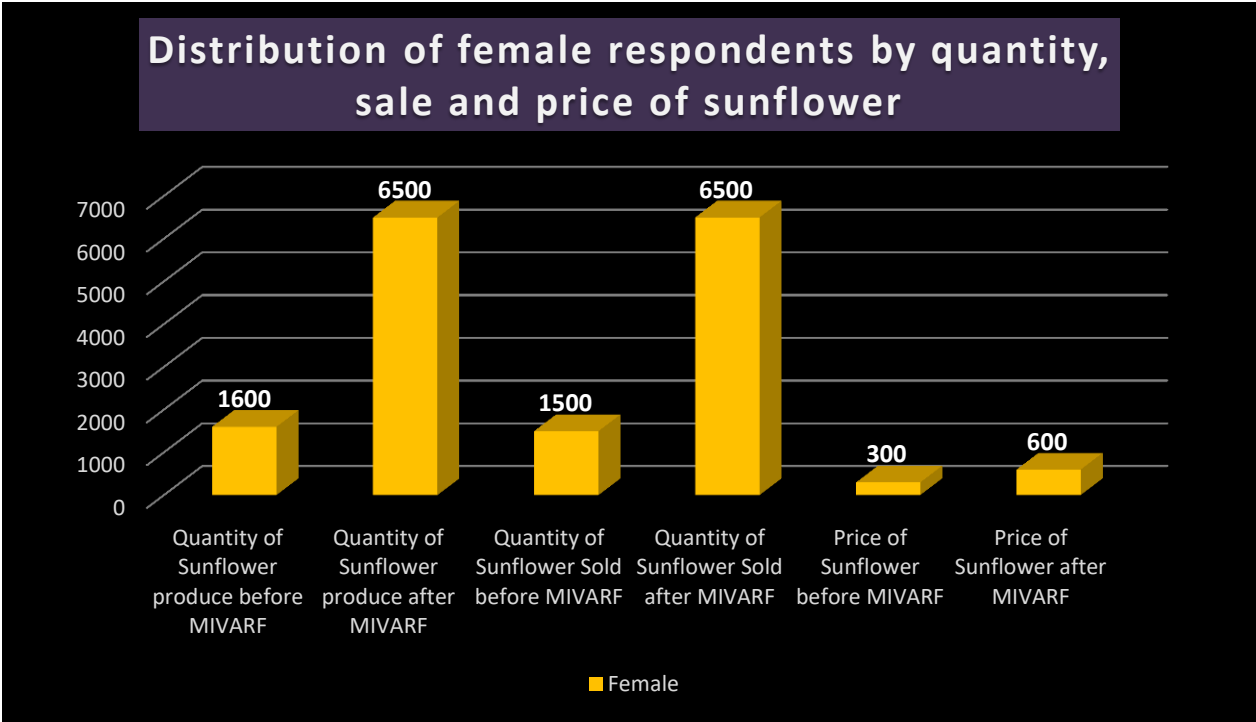
Example of Coffee / Man

Figure 26: Distribution of male respondents by quantity, sale and price of coffee



Example of the Sunflower / Women

Figure 27: Distribution of female respondents by quantity, sale and price of sunflower



For two different products for men and women, there is a clear trend. Most of the speakers mentioned the same reasons, namely:

- The roads rehabilitated and put in place by the Programme have opened up the way to the production tracks at the points of sale. This has an impact on all others products.
- The markets and sheds built have also been used for other products.
- The training received was duplicated on the other products.
- Once better quality fertilizers had been planned, they did the same for the other products.
- The additional revenues generated by the increase in product sales have enabled the development of other revenue-generating activities.
- The microfinance circuits set up under the Rural Finance component of the Programme have enabled better financial management of their activities.
- The setting up of farmers' organizations has ultimately enabled them to organize themselves better for all their activities.
- The warehouses set up have made it possible to lower the costs related to storage costs.
- These warehouses have made it possible to extend the storage period of the products and to maintain a better quality of the products.
- On average, we have gone from 3 months of storage before the Programme to more than 12 months of storage after the Programme.
- In the end, the entire production chain was improved.

In reality, we realize that MIVARF goes far beyond the mission that was defined at the outset. The holistic nature of the Programme combining both Hardware and Software has allowed positive indirect externalities on many other things.

4.5) CHALLENGES ENCOUNTERED

As with any Programme, some challenges remain and will need to be taken into account for the future.

- Indeed some areas the beneficiaries themselves have defined building zones for their activities. Once these areas were completed, the beneficiaries did not fully use it. This is a loss for the entire production chain.

- Strong dependence on climate change. This leads to high instability in rainfall. These have an increasing impact on harvests, which can weaken crops despite all the efforts made.
- Farming activities are, for the most part, family-run. To move to the next level, we would need a real agricultural industry for the future.
- **Widows and orphans:** Indeed, there is no support for these people. The leaders of agricultural organizations interviewed admitted that they had no real solutions to help them. This can be very serious in some situations. They are very vulnerable and often find themselves abandoned to their fate. Indeed, the initial goal of MIVARF is to reduce rural poverty, and these sectors of the population are part of it. Intervening on these populations in specific ways would further increase the impact of MIVARF on vulnerable groups.

RECOMMENDATIONS

The MIVARF, which was set up several years ago and is now coming to an end, has achieved most of its objectives. Today the objective must be to be able to keep the achievements of his Programme both in terms of hardware and software.

- The possibility of being able to duplicate such a Programme in other spheres would be a significant asset.
- Today, development requires the establishment of an industry capable of transforming products, adding value, and generating economies of scale. Most agriculture is family farming. This must make us wonder about the need to bring the bulk of these producers up to a higher level. Tanzania has a population of more than 57 million in 2017, according to the World Bank, and a fertility rate of more than five children per woman according to a World Bank estimate for 2016. The development of the innovative industry can only be beneficial for the whole population.
- The MIVARF Programme initially intended for the most vulnerable must be able to consider **widows and orphans**. Indeed, his families are mostly the most destitute and have almost no outside support. One proposal would be the establishment of a farmers' organization composed for most of its members. The objective here is for them to be able to merge the resources at their disposal. Indeed, this will allow them to have access to credit and to be able to produce not only to live but also to generate additional income.

CONCLUSION

Agriculture in Tanzania is predominantly rural and concentrates the bulk of the labor force. The initial objective of MIVARF was to reduce poverty in these sections of the population. We focused our study on the Marketing Infrastructure and Systems component of the Programme. The general objective of our mission was to evaluate the impact of the Programme on the beneficiary populations. The specific objectives were to analyze the evolution of income and production costs before and after the Programme. Taking into account the results of our survey, we note that:

As far as income is concerned, prices per kg of crops have increased overall. Why?

- A 55% decrease in crop losses before and after the Programme.
- An increase in production quality. Indeed, 98% of respondents said that they had seen an improvement in their products due in particular to the quality fertilizers used during the Programme.
- An increase in the value addition due in particular to the processing machines set up by the Programme.
- An increase in the storage life of the products thanks to the storage areas built by the Programme. From an average of 3 months of storage before the Programme we are at 12 months of storage after the Programme.
- An increase in direct employment of 58% and indirect employment of 50% before and after the Programme.

With regard to production-related costs. There is a decrease. Why is that?

- The construction and rehabilitation of 1078 km of roads throughout Tanzania, especially in areas related to agricultural production.
- The construction of nearly 16 markets near the production areas
- The capacity building implemented by the Programme
- The establishment of farm organizations by the Programme. This has allowed farmers to lower input costs by buying in bulk, creating economies of scale.
- Value chain development through the establishment of a Public Private-Producer Partnership (4PS) platform.

In agreement with all these elements, we can affirm that the income of the beneficiaries of the MIVARF Programme has increased. It emerges from this study that a holistic approach to the agricultural process has a real impact on rural populations. This needs to be amplified in order

to move agriculture in Tanzania from the predominantly family-based agriculture to industrial agriculture.

It is important to remember that our study is part of a much larger framework, namely: the elements influencing rural poverty reduction. "The aim is to invest in rural people for endogenous, inclusive growth and shared prosperity.

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ANNEXE

MAP OF THE PROGRAMME AREA from The International Fund for Agricultural Development



12-1-2010

 The designations employed and the presentation of the material in this map do not imply the expression of any opinion whatsoever on the part of IFAD concerning the delimitation of the frontiers or boundaries, or the authorities thereof.

IFAD Map compiled by IFAD

Section (1) GENERAL INFORMATION

| | |
|--|---|
| <p>1. Questionnaire number <input type="text"/></p> <p><i>Le code a 3 caractères.</i></p> <p>2. City <input type="text"/></p> <p>3. District <input type="text"/></p> <p>4. Commune <input type="text"/></p> | <p>5. Village <input type="text"/></p> <p>Groupe 1 GPS</p> <p>6. Latitude <input type="text"/></p> <p>7. Longitude <input type="text"/></p> <p>8. Altitude <input type="text"/></p> <p>9. Date of the survey <input type="text"/></p> |
|--|---|

Section (2) INFORMATIONS OF THE RESPONDENT

| | |
|--|---|
| <p>10. Respondent's name <input type="text"/></p> <p>11. Gender <input type="radio"/> 1. Male <input type="radio"/> 2. Female</p> <p>12. Age of the respondent by category <input type="radio"/> 1. Youth {18- 35} <input type="radio"/> 2. Middle age {36 - 55} <input type="radio"/> 3. Old age {56 - and above}</p> <p>13. Place of birth <input type="text"/></p> <p>14. Geolocation or main house of the respondent <input type="text"/></p> <p>15. What is the size of the household ? <input type="text"/></p> | <p>Groupe 2 How many men, women, boys and girls are in the household?</p> <p>16. MEN <input type="text"/></p> <p>17. WOMEN <input type="text"/></p> <p>18. BOYS <input type="text"/></p> <p>19. GIRLS <input type="text"/></p> <p>20. Education level <input type="radio"/> 1. Informal education <input type="radio"/> 2. Primary education <input type="radio"/> 3. Secondary ordinary level of education <input type="radio"/> 4. Secondary advanced level of education <input type="radio"/> 5. University education</p> <p>21. Marital Status <input type="radio"/> 1. Single <input type="radio"/> 2. Married <input type="radio"/> 3. Divorced <input type="radio"/> 4. Widowed</p> |
|--|---|

Section (3) AGRICULTURAL ACTIVITIES

| | |
|--|--|
| <p>22. Main product that you produce ? <input type="checkbox"/> 1. Maize <input type="checkbox"/> 2. Beans <input type="checkbox"/> 3. Sunflower <input type="checkbox"/> 4. Coffee <input type="checkbox"/> 5. Banana <input type="checkbox"/> 6. Pulse <input type="checkbox"/> 7. Pigeon Peas <input type="checkbox"/> 8. Others</p> <p><i>Vous pouvez cocher plusieurs cases.</i></p> <p>23. Other activity <input type="checkbox"/> 1. Agriculture <input type="checkbox"/> 2. Livestock <input type="checkbox"/> 3. Fishing <input type="checkbox"/> 4. Agroforestry <input type="checkbox"/> 5. Others</p> <p><i>Vous pouvez cocher plusieurs cases.</i></p> <p>24. If 'Others', specify : <input type="text"/></p> | <p>25. Do you own land for agricultural purposes <input type="radio"/> 1. YES <input type="radio"/> 2. No</p> <p>26. If no, do you rent the land? <input type="text"/></p> <p><i>If no, do you rent the land?</i></p> <p>27. Total farm size (acre) <input type="text"/></p> <p>28. Actual farm size use (acre) <input type="text"/></p> <p>29. Farming experience in years <input type="text"/></p> |
|--|--|

A

Section (4) ABOUT THE MIVARF PROGRAMM - MARKETING INFRASTRUCTURE AND SYSTEMS

30. Do you involve in another post-harvesting training program apart from MIVARF?
 1. No 2. Yes

31. If Yes, for the question, please mention the program

32. What is the type of crop?

Mention type of crop, quantity product, sold, on average without the MIVARF and with the MIVARF?

- 33. Quantity production on average before the MIVARF?
- 34. Quantity product on average after the MIVARF?
- 35. Quantity sold on average before the MIVARF?
- 36. Quantity sold on average after the MIVARF?
- 37. Price/Kg(Tsh)before the MIVARF?
- 38. Price/Kg (Tsh) after the MIVARF?

Groupe 4 Mention losses in average harvest posts (Kg)

39. Losses in average harvest posts (Kg) Before MIVARF

40. Losses in average harvest posts (Kg) After MIVARF

41. If there is a difference of losses, Explain why?

Section (5) SOURCES OF INCOME

42. What type of culture do you practice?
 1. Food crop 2. Cash crop
Vous pouvez cocher plusieurs cases.

43. What are you planting?
 1. Grains 2. Oilseed and nuts
 3. Roots and tubers 4. Fruits and vegetables
 5. Fishery and livestock 6. Others
Vous pouvez cocher plusieurs cases.

44. What's your farming season or period?

45. Who is in charge of operational management?
 1. The households 2. Another person

46. Did you receive any agricultural training before the MIVARF?
 1. Yes 2. No

47. Did you receive any agricultural training after the MIVARF?
 1. Yes 2. No

48. What are your major sources of income? Order the answers
 1. Sale of food crops 2. Sale of cash crops
 3. Wage employment 4. Others (specify)

Ordonnez 4 réponses.

49. Others sources of income?

La question n'est pertinente que si Source of income = "Others (specify)"

Section (6) HOUSEHOLDS

GROUPE N°#

50. Total Women who participate in the farm?
51. Number of women who participate in seeding 2019?
52. Number of women who participate in the harvest?
53. Total Other adults present (brothers, parents)?
54. Number of other adults (brothers, parents) who participate in seeding?
55. Number of other adults (brothers, parents) who participate in the harvest?
56. Total children who participate in the farm?
57. Number of children who participate in seeding?
58. Number of children who participate in the harvest?
59. Total of adults present working outside the home?
60. Number of adults working outside home who participate in seeding?
61. Number of adults working outside home who participate in the harvest?
62. Total minors present in the farm?
63. Number of minors who participate in seeding?
64. Number of minors who participate in the harvest?
65. Total minors present going to school?
66. Number of minors present going to school who participate in seeding?
67. Number of minors present going to school who participate in the harvest?
-
68. Women who participate in the farm, Are they paid Yes/No?
 1. Yes 2. No
-
69. Other adults (brothers, parents) who participate in the farm, Are they Paid Yes/No?
 1. Yes 2. No
-
70. Children who participate in the farm, Are they paid Yes/No?
 1. Yes 2. No
-
71. Adults working outside home, Are they paid Yes/No?
 1. Yes 2. No
-
72. Minors who participate in the farm, Are they paid Yes/No?
 1. Yes 2. No
-
73. Minors present going to school who participate in the farm, Are they paid Yes/No?
 1. Yes 2. No

74. Is there an increase of people who work for you before and after MIVARF?
 1. Yes 2. No

75. Explain why there is an increase of people who work for you before and after MIVARF?

La question n'est pertinente que si Increase of people work before & after = "Yes"

76. Characteristics of farms (Acquisition Mode)

1. Heritage 2. Buy
 3. Short-term lease 4. Long-term lease
 5. Free loan 6. Other

77. Method of payment

1. Cash 2. Fixed rent 3. Free 4. Other

La question n'est pertinente que si Farms type = "Buy"

78. Since which year?

79. Owner

1. Yes 2. No

80. List the three main challenges related to your marketing activities before MIVARF?

1. Input Market access 2. Produce market access
 3. Finance market access 4. Storage
 5. Value addition technology 6. Access to market place

Ordonnez 3 réponses.

81. List the three main challenges related to your marketing activities after MIVARF?

1. Input Market access 2. Produce market access
 3. Finance market access 4. Storage
 5. Value addition technology 6. Access to market place

Ordonnez 3 réponses.

GROUPE N°6

82. The distance (Km) in average from your farm to the market before MIVARF?

83. The distance (Km) in average from your farm to the market after MIVARF?

GROUPE N°7

84. the transportation costs on average before MIVARF?

85. the transportation costs on average after MIVARF?

Section (6) HOUSEHOLDS

GROUPE N°#

50. Total Women who participate in the farm?
51. Number of women who participate in seeding 2019?
52. Number of women who participate in the harvest?
53. Total Other adults present (brothers, parents)?
54. Number of other adults (brothers, parents) who participate in seeding?
55. Number of other adults (brothers, parents) who participate in the harvest?
56. Total children who participate in the farm?
57. Number of children who participate in seeding?
58. Number of children who participate in the harvest?
59. Total of adults present working outside the home?
60. Number of adults working outside home who participate in seeding?
61. Number of adults working outside home who participate in the harvest?
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63. Number of minors who participate in seeding?
64. Number of minors who participate in the harvest?
65. Total minors present going to school?
66. Number of minors present going to school who participate in seeding?
67. Number of minors present going to school who participate in the harvest?
-
68. Women who participate in the farm, Are they paid Yes/No?
 1. Yes 2. No
-
69. Other adults (brothers, parents) who participate in the farm, Are they Paid Yes/No?
 1. Yes 2. No
-
70. Children who participate in the farm, Are they paid Yes/No?
 1. Yes 2. No
-
71. Adults working outside home, Are they paid Yes/No?
 1. Yes 2. No
-
72. Minors who participate in the farm, Are they paid Yes/No?
 1. Yes 2. No
-
73. Minors present going to school who participate in the farm, Are they paid Yes/No?
 1. Yes 2. No

74. Is there an increase of people who work for you before and after MIVARF?
 1. Yes 2. No

75. Explain why there is an increase of people who work for you before and after MIVARF?

La question n'est pertinente que si Increase of people work before & after = "Yes"

76. Characteristics of farms (Acquisition Mode)

1. Heritage 2. Buy
 3. Short-term lease 4. Long-term lease
 5. Free loan 6. Other

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La question n'est pertinente que si Farms type = "Buy"

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1. Input Market access 2. Produce market access
 3. Finance market access 4. Storage
 5. Value addition technology 6. Access to market place

Ordonnez 3 réponses.

81. List the three main challenges related to your marketing activities after MIVARF?

1. Input Market access 2. Produce market access
 3. Finance market access 4. Storage
 5. Value addition technology 6. Access to market place

Ordonnez 3 réponses.

GROUPE N°6

82. The distance (Km) in average from your farm to the market before MIVARF?

83. The distance (Km) in average from your farm to the market after MIVARF?

GROUPE N°7

84. the transportation costs on average before MIVARF?

85. the transportation costs on average after MIVARF?

Section (7) CHALLENGE PERCEPTION

86. What marketing channels are used ?

87. Why do you use the channel(s) mentioned previously?

*La question n'est pertinente que si What marketing channels are used ?
<> 'no answers'*

88. Do you use storage facility or processing equipment or market place support by the MIVARF?

1. Yes 2. No

89. If 'No' , please tell why ?

90. What is the scale of your operation ?

GRUPE N°8

91. How many direct employment were you created in total?

92. How many direct employment were you created before MIVARF?

93. How many direct employment were you created after MIVARF?

GRUPE N°9

94. How many indirect employment were you created in total?

95. How many indirect employment created BEFORE MIVARF?

96. How many indirect employment created after MIVARF?

97. Do you see an increase in the quality of your products?

1. No 2. Yes

98. If yes, how do you put value addition to your products?

99. How the equipment built and rehabilitated by the MIVARF, have helped you in your business ?

100. How do you price your products ?

101. What amount of time do you use to store your produce and to sell it?

102. Does storage costs before the MIVARF?

1. Low 2. Medium 3. High

103. Does storage costs after the MIVARF ?

1. Low 2. Medium 3. High

104. Do you think the warehouse, road rehabilitated has increased your farm efficiency ?

1. Yes 2. No

105. Explain why you think the warehouse, road rehabilitated has increased your farm efficiency,

La question n'est pertinente que si Farm efficiency = "Yes" ou Farm efficiency = "No"

106. List the three main challenges of organization before the MIVARF?

1. Price 2. Supervision 3. Equipment 4. Credit
5. Insurance 6. Other(s)

Ordomez 3 réponses.

107. List the three main challenges of organization after the MIVARF?

1. Price 2. Supervision 3. Equipment 4. Credit
5. Insurance 6. Other(s)

Ordomez 3 réponses.

GRUPE N°10

108. Number of youth registration?

109. Number of men registration?

110. Number of women registration?

111. How vulnerable people are involved in the group ?

Section (8) SMALLHOLDER FARMER ORGANIZATION

112. What motivated you to be in a farmer organization?

113. What are the major benefits you get from farmer organizations?

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114. Describe generally your farmer group governance structure ?

115. How smallholder farmer organization market their products ?

116. What is marketed ?

117. How it is marketed ?

118. When it is marketed?

119. What's the most difficult thing in the organization ?

Section (9) FOR THE WARD GOVERNMENT (TOWN HALL)

120. Farm size (ha)

121. Population

122. Number of villages?

123. Name of the village?

124. Available special groups with special needs

125. Other supporting services?

1. Road 2. Mobile networks
 3. Electricity 4. Water
 5. Irrigation system 6. Others

Vous pouvez cocher plusieurs cases (5 au maximum).

126. If 'Others', precise :

La question n'est pertinente que si Other supporting services? = "Others"