



Food Systems and Role of Agricultural Sector

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Introduction:

SUN MOVEMENT countries deal with food systems as a new concept to enhance nutrition and its diverse sources. Through the agricultural sector, they aim to increase their contributions to nutrition to the maximum extent possible and activate the inactive sectors. This increases the production of crops and agricultural commodities in a way that enhances nutrition and health, and in a way that supports the livelihood of the population in all regions, especially rural ones. Also, they aim to improve the nutrition of their members, including the most vulnerable groups such as women and children. Also, they aim to spread nutritional awareness among farmers and poor households. They aim to enhance the capacities of farmers in rural areas on resilience and harness their resources to cultivate a variety of crops and commodities, including grains, fruits and vegetables, and livestock breeding, instead of focusing only on cultivating cash crops to sell in the market.

Because agriculture is the main source of income for many households, especially in rural areas, they aim to support and improve the livelihoods and having access to sufficient and continuous food in a way that improves the economic situation of households and communities alike, and in a way that enables them to cover their needs of unproductive food resources, as well as the ability to have access to health care, education, clean and safe water.

- » Role of agricultural sector in reducing malnutrition
- » Importance of agricultural sector in national economy
- » Objectives of Multi-Sectoral Nutrition Action Plan—agricultural sector
- » Investing in Agricultural Sector and Role of Private Sector.
- » Rural women and malnutrition
- » Most important problems and obstacles facing agricultural sector



Role of Agricultural Sector in Reducing Malnutrition

Most of the population in rural Yemen depends on agriculture and related activities to improve their livelihoods, and because poverty is still overwhelmingly a rural phenomenon, agricultural growth has positive effects on reducing poverty and malnutrition by providing needs of critical importance to the population such as:

- ♦ Providing sufficient and varied food, and achieving higher income.
 - ♦ An essential resource for the development of the food industry.
 - ♦ Reducing poverty, starvation and malnutrition.
 - ♦ Creating job opportunities for a large group of the labor force.
 - ♦ Preserving biological diversity.
 - ♦ Contributing to meeting the humanitarian needs, and the basic requirements for rural resilience and enhancing livelihoods. This reflected in improving the standard of living and nutritional status of households and in reducing poverty.
 - ♦ Increasing the contribution to the domestic product.
 - ♦ Continuous improvement and development of local products.
 - ♦ Providing raw materials from local agricultural products to enhance the development of food industry.
 - ♦ Limiting the import of foodstuffs and encouraging the use of local products, "Use your Country's Product".
 - ♦ Supporting the state's approach to developing the agricultural sector to increase its contributions.
- All this is clearly reflected in the improvement of the households' standard of living and nutrition, and in the reduction of poverty.

On the other hand, agriculture, as well as animal and fish production, is a major focus of national and household food security in Yemen. Agriculture affects food security mainly through two tracks:

- Providing food for the local population.
- Providing an important source of income and livelihood opportunities.

The lack of food consumption, which shows insufficient quality and quantity of the daily diet, is one of the major causes of under nutrition in children and mothers. The percentage of households suffering from hunger in Yemen increased from 13.5% in 2014 to 43.0% in 2016, while only 37% of households had an acceptable diet during 2016. This shows steady stability in the decline in the diet's quality during the years 2014, 2011, 2009, where the percentages were 59, 66, and 68 percent of households, respectively, consuming an acceptable diet.

Importance of Agricultural Sector in National Economy

The agricultural sector is one of the most important pillars of the national economy. Therefore, the agricultural sector has an important role in the national economy of the Republic of Yemen. The contribution of the agricultural sector is about (17.6%) of the gross domestic product (GDP), while the average contribution of the agricultural sector to the national income of the Republic of Yemen is (16.5%). In addition, the agricultural sector comes first in terms of labor absorption, as the agricultural workforce reaches 54% of the total workforce in the country. The arable area in the Republic of Yemen is (1,452,438) hectares, while the cultivated area of it is about (1,124,486) hectares, i.e. 81%, and the average number of holdings reaches (1,191,981) hectares.

Agriculture in Yemen is characterized by diversity because of the variation in climatic characteristics resulting from the variation in the rates of rain, temperature and humidity, as well as different topographical conditions, which led to different plant regions, which helped in product diversity. However, the dependence of many regions on rain-fed agriculture affects the sustainability of agricultural production, as the percentage of rained area is estimated at (47%) of the total cultivated area. Other regions depend on groundwater pumping or a group of reservoirs, dams, streams and water springs, where the irrigated area reaches (53%) of the total cultivated area. As for agricultural exports, they are relatively weak and range between (3-5)% of total exports whereas agri-



cultural imports make up (15-20)% of total imports.

Although agriculture makes a relatively minor contribution to the country's GDP (17.6%), it is a major source of livelihood for many rural households. It provides direct employment opportunities for over half of the workforce in 2014, (54%). Approximately two-thirds of Yemenis get their livelihoods from agricultural-related activities. Several poor people in Yemen work in agriculture as a source of livelihood. In addition, only a small percentage of the food consumed is locally produced due to the extremely low productivity. In 2016, domestic production covered about 25% to 30% of needs, with 90% of the wheat consumed being imported. And due to the increasingly over-reliance on rapidly depleting groundwater reserves, the sector is also high-

ly vulnerable to climate risks. Estimates of cereal production in 2019 show a 30% decrease in yield compared to the previous five-year average.

Livestock production provides a significant contribution to household food security, as it covered over 60% of the country's needs in 2016, while the poultry sector covers nearly 100% of egg consumption in the countries. Livestock also has an important role as a source of income for the poor and the most vulnerable. In 2016, 88% of working households in agriculture participated in took part production. 45% of households with livestock reported that they had reduced their herd sizes since the pre-crisis years (OCHA, 2018).

Thus, the agricultural sector is the primary development sector, which is required to perform several tasks simultaneously, starting with the following:

- ◆ Upgrading the levels of production and productivity, and creating a high rate of growth for a productive process, which the majority of its elements are from local resources and local staff and manpower.
- ◆ Supporting the rural community in its entirety, reducing poverty and working to stabilize the population and curb internal migration.
- ◆ Providing a livelihood and equalize the self-sufficiency ratio in the country as a whole;
- ◆ Preserving the environment.
- ◆ Providing export outputs.
- ◆ Providing the state treasury with financial resources



Objectives of Multi-Sectoral Nutrition Action plan - Agricultural Sector

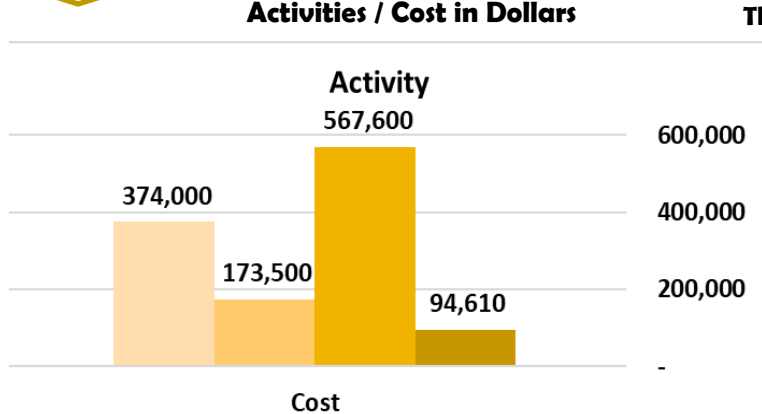
The role of the agricultural sector in the multi-sector nutrition plan 2021/2023 is to increase the level of productivity of the main crops (grains, vegetables, fruits) and livestock. It also aims to enhance sources of income for productive agricultural households and improve the quality of the food consumed in quantity and quality. The total cost of the plan is (\$ 67,065,640), which will benefit small farmers in the various governorates of Yemen.

The plan contained six direct goals, which include, under each goal, a group of different activities to achieve these goals are

1. Increase the number, capacity and supervision of staff providing nutrition sensitive agricultural services
2. Increase productivity, quality and diversity of crop production
3. Increase production, health and quality of livestock
4. Increase sustainable irrigation and on-farm water management where these factors are significant determinants of malnutrition
5. Support and scale up small scale food production, processing and retail
6. Increase understanding and awareness around good dietary and food safety and hygiene practices

Note: Ministry of Agriculture and Irrigation (MOAI)

Objective 1: Increase the number, capacity and supervision of staff providing nutrition sensitive agricultural services



- Issue resolution to establish a nutrition unit in the MOAI and operationalise the unit for integrating nutrition in information systems, surveys and planning systems and MEAL
- Training of staff trainers and staff in MOAI
- Produce pre-service and in-service training materials for agricultural extension workers on key nutrition messages and anthropometric screening and referral.
- Integrate nutrition screening and referral services into agricultural extension activities with a focus on female extension workers where possible

The feasibility of the activity/targeted groups/number of targets

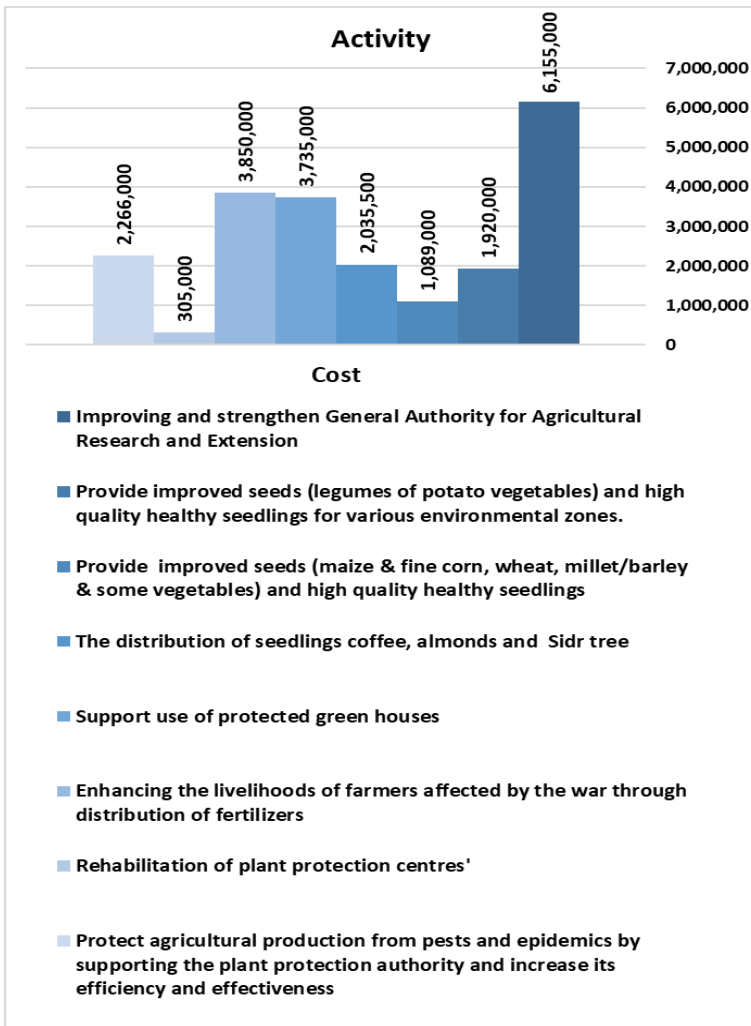
Following up on improving the nutritional aspects of the agricultural sector	
Targeted Groups	MOAI & its offices in all
Number of Targets	22 governorates
Increased number of trainers in public and private agricultural services awareness workers, farmers, women, community leaders, veterinarians,	
Targeted Groups	MOAI Trainers
Number of Targets	3,300
pre-service and in-service training materials	
Targeted Groups	Farmers
Number of Targets	1,100,000
Provide screening and referral services for malnutrition in agricultural extension activities	
Targeted Groups	Farmers / Family
Number of Targets	550

Objectiv

Increase productivity, quality and diversity of crop production

2

Activities / Cost in Dollars



Protecting agricultural production from pests by supporting plant protection and increasing its efficiency and effectiveness

Targeted Groups	governorates
Number of Targets	22 governorates

The feasibility of the activity/targeted groups/number of targets

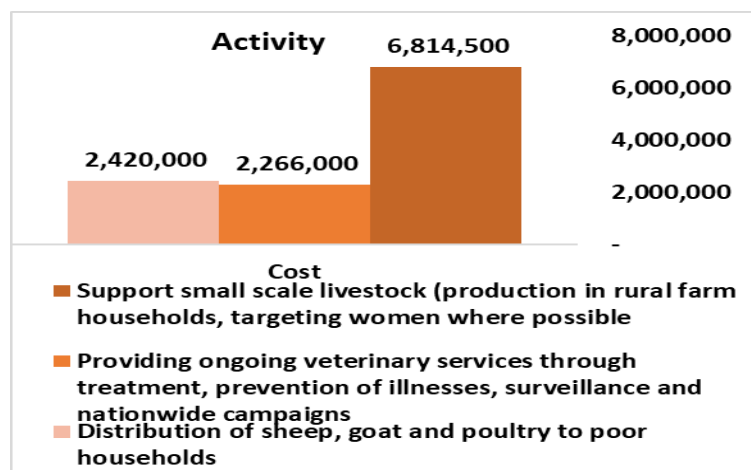
Developing varieties of cereal crops, fruits and vegetables, and developing new genotypes	Targeted Groups	MOAI & its offices in all governorates
	Number of Targets	22 governorates
Distributing improved seeds of high-quality crops (legumes, vegetables, potatoes) in order to ensure access to nutritional needs rich in micro-components such as vitamins and minerals	Targeted Groups	Family / Farmers
	Number of Targets	6600
Distributing cereal crops in a way that contributes to self-sufficiency in grain and provides a source of cash income for rural households	Targeted Groups	Family / Farmers
	Number of Targets	6600
Distributing improved seedlings of cash crops to secure a source of cash income for rural households	Targeted Groups	Farmers
	Number of Targets	3000
Establishing greenhouses to produce some vegetable crops	Targeted Groups	Farmers
	Number of Targets	900
Enhancing the livelihood of farmers affected by the distribution of agricultural inputs	Targeted Groups	Farmers
	Number of Targets	5500
Rehabilitating plant protection centers to increase their efficiency and effectiveness	Targeted Groups	governorates
	Number of Targets	22 governorates

Objectiv

Increase production, health and quality of livestock

3

Activities / Cost in Dollars



The feasibility of the activity/targeted groups/number of targets

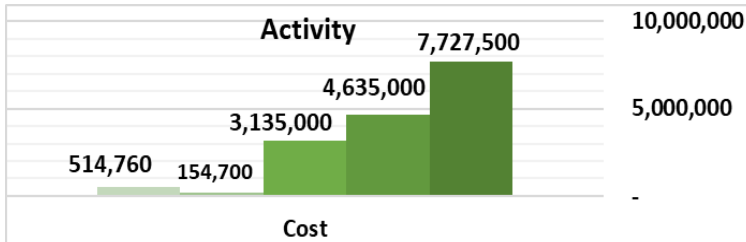
Increasing animal production, enhancing sources of income, and improving animal food consumption	Targeted Groups	Farmers
	Number of Targets	8.250
Providing continuous veterinary services, disease prevention, and nationwide control campaigns	Targeted Groups	Community /farmers
	Number of Targets	22 governorates
Distributing livestock and poultry to ensure dietary diversity, adding protein and calcium to household nutrition, and improving income opportunities for poor rural households	Targeted Groups	Poor Households
	Number of Targets	5,500

Objectiv

Increase sustainable irrigation and on-farm water management where these factors are significant determinants of malnutrition

4

Activities / Cost in Dollars



- Purchase and distribute solar water pumps to provide an alternative to diesel to irrigate crops
- Purchase and distribute rainwater harvesting tanks for irrigation
- Establish an irrigation system to preserve water resources and lands, covering 2750 hectares
- Introduction of aquaculture (small fish) projects in vegetable irrigation
- Purification of irrigation water from pest and fungal infections

Spraying sewage used in irrigation with pesticides to prevent environmental pests and diseases

Targeted Groups	Agricultural Households
Number of Targets	3 governorates

The feasibility of the activity/targeted groups/number of targets

Supporting solar energy pump projects as an alternative to diesel to irrigate crops and reduce the cost of irrigated agricultural production

Targeted Groups	Farmers
Number of Targets	275

Establishing rainwater harvesting tanks to take advantage of rainwater to irrigate crops

Targeted Groups	Farmers
Number of Targets	450

Improving irrigation efficiency for irrigated agriculture and conserving water and land resources and their sustainability

Targeted Groups	Farmers
Number of Targets	825

Improving dietary diversity and creating sources of income for households

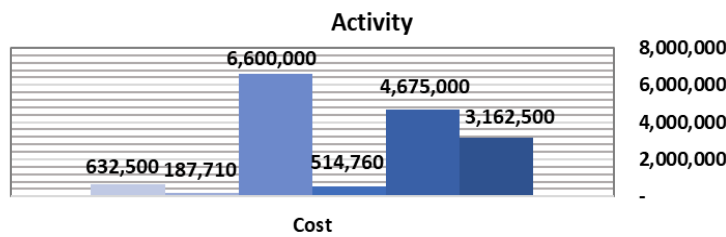
Targeted Groups	Agricultural Households
Number of Targets	5 governorates

Objectiv

Support and scale up small scale food production, processing and retail

5

Activities / Cost in Dollars



- Programmes to promote new methods for beekeeping
- Home gardening programmes to produce nutritious foods, including seeds and mini-irrigation kits
- Establish and support school gardens
- Cash support for small food industries for rural households
- Supporting household and small scale food preservation
- Rehabilitate rural local markets, supply with well-ventilated warehouses and post-harvest refrigerators and regulate internal marketing

Rehabilitating local markets, organizing internal marketing, and limiting post-harvest losses

Targeted Groups	Households with a focus on women
Number of Targets	55

The feasibility of the activity/targeted groups/number of

Distributing honey bee hives to improve income sources

Targeted Groups	Families / farmers
Number of Targets	2,750

Establishing home gardens to produce nutritious food

Targeted Groups	Households with a focus on women
Number of Targets	5,500

Promoting agricultural culture in educational programs and activities

Targeted Groups	Students
Number of Targets	32 School

Enrolling rural households in food processing programs to improve income sources

Targeted Groups	Households with a focus on women
Number of Targets	8,250

Training of trainers from the target governorates under the supervision of the Agricultural Cooperative Union on new methodologies for food processing

Targeted Groups	Households with a focus on women
Number of Targets	1,200

Objectiv

Increase understanding and awareness around good dietary and food safety and hygiene practices

6

Activities / Cost in Dollars



The feasibility of the activity/targeted groups/number of targets

Raising awareness of diversified food intake, food safety and personal hygiene when preparing and eating food, and improving food consumption pattern

Targeted Groups	Farmers
Number of Targets	All Governorates

Investing in Agricultural Sector and its Relation to Improving level of Nutrition and Role of Private Sector

The agricultural sector is one of the most promising sectors for investment. This sector has been referred to as Inexhaustible Oil. Some economic studies, especially after the crisis of high global food commodity prices, have proven that "any investment in the agricultural sector is being economically workable and has a high comparative advantage."

And due to the very slow improvement in the level of nutrition, especially the nutrition of women and infants, there is an increased need for the private sector participation in providing agricultural commodities.

Investing in the agricultural sector makes better returns for investors than traditional investments. That is because of the increase in global food demand and the continued high prices of agricultural products, which opens the way for long-term investment returns for investors in this agricultural sector.

In addition, cereals, legumes, vegetables, meat and dairy products are witnessing continuous growth, providing investors with the potential for achieving good returns.

Advantages of Investing in Agricultural Sector

- » Availability of arable land, with an estimated arable area of 1.5 million hectares.
- » Improvement in annual precipitation rates under climate change and such improvement provides additional quantities of water for irrigation that encourage attracting investment into this important sector.
- » Great climate diversity provides suitable opportunities for the diversity of agricultural projects (plant and animal).
- » Availability of raw materials in large quantities for the establishment of agricultural projects.
- » Availability of a trained and qualified agricultural technical staff to make agricultural projects successful.
- » Many Yemeni agricultural products have a competitive comparative advantage.
- » Yemen has distinguished manpower with its high skills, competitiveness and low cost.
- » Continuous improvement in agricultural extension services, protection and animal health.



- » Development of agricultural research.
- » The government attaches great interest to the agricultural sector, whether in terms of its approach to restoring agricultural lands or the credit and marketing facilities provided to farmers and investors in this sector.
- » The government's serious approach to raising self-sufficiency rates in some important products. In order to achieve this, the government has established several projects and institutional services to increase agricultural investments in the production of these crops.
- » Competition in the agricultural sector is relatively low.

Rural Women and Malnutrition

The special attention that rural women receive internationally and nationally is because rural women bear most of the burden of work at home. Also, they have an important role in agricultural work, related to both plant and animal. They carry out large-scale activities that include food production, food processing and marketing. In addition, women are more affected by the consequences of under nutrition or malnutrition in all its forms.

Another thing that highlights the urgent need to focus special attention on women, which increases the burdens of rural women, is the succession of births within the framework of rural households and the frequent birth of children. This affects the mother's health and makes her vulnerable to diseases and increases the possibility of suffering from under nutrition, anemia and other diseases resulting from exhaustion and from depleting the power of rural women in the burdens of pregnancy, childbirth and breastfeeding. Add to that the burden of raising children, managing the house, agricultural work, and taking part in raising animals owned by the household.

According to the results of the survey (sample survey) carried out by the Ministry of Agriculture and Irrigation in 2018, 90% of rural women take part in various agricultural activities.

The surveys show that there are important challenges that rural women face agriculture

- Lack of sufficient drinking water and difficulty in obtaining irrigation water.
- Providing substandard agricultural extension services and other services for rural women, and limited training.
- Insufficient budget allocation by the government and limited funding from international institutions and donors for rural women development programs.
- The small number of women having formal ownership of land plots and there is difficulty in obtaining loans even though the fact that the strategic plan for poverty reduction (since 2002) recognizes the need to improve women's access to land plots, but the laws in force have not been enforced .
- Some prevailing social customs and traditions limit women's participation in projects, associations, and development cooperatives; also, they limit selling their products directly in the markets .
- Studies, research and data on the role of rural women in agriculture are limited .

Therefore, there is a need to empower rural women in a way that qualifies them to influence and participate in decision-making on issues that affect their lives, especially in the nutritional aspect. Also, there is a need to raise awareness of gender

Household Dietary Diversity in Yemen

In 2016, a national survey (Food Security / FAO) was conducted which concluded

- ◆ The most common types of foods, that are eaten daily and in Yemen, were basic foodstuffs such as rice, bread and pasta, as well as sugar and fats.
- ◆ Other highly recommended nutrients and important sources of vitamins, minerals and essential proteins - such as legumes, vegetables, fruits, or food from animal sources - are less.
- ◆ It has been reported that eggs are not part of the diet.
- ◆ Households with poorer or limited consumption often consume bread, sugar and fat equally but other nutrients of nutritional value less frequently.
- ◆ Nearly half of the households did not meet their energy needs.
- ◆ Nearly two-thirds of households (62%) reported reducing the number of meals and portion sizes as a result of increased food shortages.

Data on food consumption in Yemen classified by gender is limited. The minimum acceptable diet for women was assessed through the WFP's regular vulnerability analysis and mapping process among a relatively small sample of 432 women in May 2019. The results showed that over 90% of the women surveyed did not meet the minimum consumption requirements. Five out of ten food groups and 75% only consumed three food groups, showing a serious deficiency in the quality of women's diets.

Yemen Emergency Food Security and Nutrition Assessment (EFSNA)-2017

Health and Social Effects of Qat, Especially on Most Vulnerable Groups

“Women and Children”

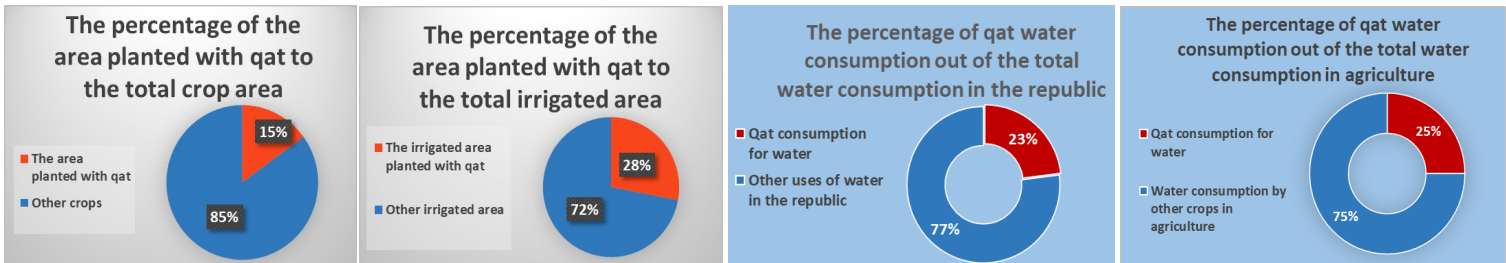
Until 1960, chewing qat was limited to the rich only. Now, it is consumed daily and at the level of Yemeni society groups: men, women and children.

Qat affects health in many ways, as it increases blood pressure and lowers the weight of newborns and infants when pregnant women chew qat. Also, it is one of the causes of cancer due to the excessive use of multiple pesticides, as the use of insecticides and fungicides is very common in the production of qat. These pesticides are not used according to the international standards permitted for agricultural products. Also, qat drains the family budget and wastes time.

The area cultivated with qat increased over 13 times during the past three decades, which led to a decrease in the areas cultivated with food and export commodities such as coffee, fruits, vegetables and sorghum. In 2019, the area planted with qat reached about 167 thousand hectares, representing 15% of the total crop area and 28% of the irrigated area. Also, qat

consumes huge quantities of the limited water, which reduces the quantities for strategic crops and high-value commodities that contribute to providing foreign currency and improving food security conditions in the country, as qat consumes 23% of total water consumption and 25% of water consumed in agriculture. In addition, the increasing consumption of qat contributes significantly to deepening the problem of poverty and food and nutritional insecurity. Qat is one of the main causes of the spread of malnutrition in the Yemeni society.

The widespread consumption of qat is a dangerous phenomenon, especially at the level of food-insecure households. The most difficult challenge facing Yemen is reducing the demand for it. That is because qat is associated with the social dimensions. Therefore, the promotion of alternative crops for qat requires significant efforts to improve the profitability and competitiveness of these crops. In order to meet these challenges, an institutional system shall deal comprehensively with all the complex and intertwining issues of qat in the short and long term.



Most Important Problems and Obstacles Facing Agricultural Sector:

The objectives of the national agriculture sector strategy (2012-2016) are to increase growth, sustainability and equity through increasing agricultural production, local food production, and rural income and employment, especially for the poor. It also aims to improve the sustainability of the environment and natural resources and strengthen climate resistance. The strategy pays special attention to improving food security and nutritional status by increasing the availability and access to nutritious food and nutritional advice.

The national agriculture sector strategy 2012-2016 identified the problems and obstacles facing the agricultural sector in Yemen

a. Main problems facing agricultural sector:

- » Low productivity “despite recent improvements in water use efficiency”.
- » Decreasing public investments “including investments in services, research and agricultural extension”
- » Weak empowerment of rural women “even though they do three-fourths of agricultural work and all the requirements of household management, health and nutrition”.

The strategy shows that these three factors cause an increase in poverty rates, food insecurity and malnutrition in rural areas at the local level. They also led to dependence on food imports. They led to exposure to price shocks in foreign markets and supply fluctuation at the general level.

b. Other problems and obstacles:

- » Weakness of the approved budget for the agricultural sector.
- » Lack of natural resources such as water and lack of arable space for several reasons, such as desertification and drought.
- » Climate changes have and directly affected agricultural production recently.
- » Fragmentation of agricultural holdings, which afflicts the agricultural sector in most developing countries.
- » Increase of the area planted with qat at the expense of other food crops.
- » Poor training and qualification for agricultural technical staff.

A real political orientation and concerted efforts by official and international organizations and the private sector in Yemen has become a necessity to face these development challenges related to the agricultural sector and food production in Yemen. It is important to make more efforts to support and protect this drained sector and all associated with it in order to reach better levels of food and nutrition security and sustainable agricultural growth.