



Food and Agriculture Organization
of the United Nations

“EL NIÑO” EVENT IN VIET NAM

AGRICULTURE, FOOD SECURITY AND LIVELIHOOD NEEDS ASSESSMENT IN RESPONSE TO DROUGHT AND SALT WATER INTRUSION



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**FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS
Ha Noi, 2016**

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Acknowledgements

The assessment team wishes to express its sincere gratitude and appreciation to Viet Nam's Ministry of Agriculture and Rural Development (MARD) and Department of Agriculture and Rural Development (DARD) for the support provided throughout this exercise. The assessment would not have been possible without the invaluable contributions of Government staff, including officers from technical departments at provincial and district levels. The team also appreciated the close collaboration between different representatives of Food and Agriculture Organization of the United Nations (FAO), United Nations World Food Programme (WFP) and United Nations Entity for Gender Equality and the Empowerment of Women (UN Women) during the assessment process. Sincere thanks also goes to those people living in drought-affected communities who dedicated their time and shared their perspectives and hardships with us.

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Acronyms and abbreviations

CBO	Community-Based Organization
CNDPC	Provincial Committee for Natural Disaster Prevention and Control
DARD	Department of Agriculture and Rural Development
Dfish	Viet Nam Administration of Fishery
FAO	Food and Agriculture Organization of the United Nations
FGD	Focus Group Discussion
GDP	Gross Domestic Product
Ha	Hectare
HH	Household
KII	Key Informant Interview
Km	Kilometres
MARD	Ministry of Agriculture and Rural Development
NGO	Non-Governmental Organisation
UN Women	United Nations Entity for Gender Equality and the Empowerment of Women
US\$	United States Dollar
VND	Viet Nam Dong
WFP	World Food Programme

Executive summary

Against the backdrop of the worst drought in Viet Nam in 90 years - attributed to the El Niño weather event, 52 out of the 63 provinces (83 percent) have been affected by drought and 18 provinces have declared state of emergencies, as of June 2016. Coupled with impacts from the drought, in coastal areas saltwater intrusion has extended up to 90 kilometres (km) inland in some areas, leaving river water too salty for human or animal consumption or to irrigate crops and continue fish-farming production.

The recently concluded 2016 main winter/spring paddy crop, which accounts for 45 percent of annual production nationwide, was negatively affected by limited irrigation availability, following a generally weak rainy season in 2015 associated with El Niño and resulting in intensified salt-water intrusion. The Mekong River Delta, which accounts for half of winter/spring paddy output nationally, recorded the highest losses with official figures in May 2016 from the MARD pointing to a production reduction of 1.1 million tonnes year-on-year to 10 million tonnes. Although 2016 paddy production will exceed domestic requirements at national level, as the country is a net exporter of rice, in some areas the implication of these losses will be reflected at household and national levels.

In addition, 477 113 hectares (ha) of agricultural land as of June 2016 have been damaged (rice, maize, vegetables, fruits and other perennial and annual crops). According to data released by the MARD, the worst affected households in the country have lost between 30 and 70 percent or above of their annual paddy yields and in some provinces this is as high as 90 percent. More than 3 810 animals have died and many more have migrated towards areas where water is more accessible. In addition, more than 81 000 ha of shrimp breeding areas, especially across Mekong Delta provinces, have been damaged.

In order to further assess damage and losses in the agriculture and sub-sectors as well as estimate the impact on people's livelihoods, especially those of vulnerable groups (i.e. women and ethnic minorities), as well as come up with necessary response interventions, a more in-depth FAO-driven assessment was carried out in May 2016.

The assessment was conducted in the three worst affected regions, the Central Highlands, South Central

and Mekong Delta under the overall leadership of FAO, with support from MARD, particularly the departments of Crop Production, Livestock Production as well as Natural Disaster Prevention and Control, Viet Nam Administration of Fishery (Dfish), provincial DARDs and in partnership with the WFP, UN Women and the Viet Nam Women's Union.

This report's findings mainly reflect the situation in assessed areas, although additional national data and information was also used and illustrated as part of this document.

The assessment results show that in the Central Highlands, the greatest damage was reported and observed on perennial cash crop plantations such as coffee and pepper, whereas in South Central and Mekong Delta provinces rice, vegetable and pulses production sustained the main losses, considered staple and cash crops. Damage to perennial crops will require a complete replenishment of the destroyed plantations and high costs of new investment that not all farmers can meet. During the three years it will take perennial crops such as coffee to become productive again, farmers will need to identify new livelihood activities to procure food and cash to support families and avoid further engagement in negative coping mechanisms and depletion of assets.

On the other hand, in the South Central and Mekong Delta regions a greater diversification of income sources and livelihood activities was found (i.e. rice together with aquaculture production, combination of staple crop and cash production such as pulses, vegetables and fruit trees), in addition to more access to water for irrigation. This has resulted in fewer impacts on livelihoods of people affected in the assessed areas.

An increase in requests for casual labour was observed, especially in the Central Highlands and South Central regions. However due to the scarcity of water, few large-scale farms were able to continue agriculture practices and provide job opportunities.

Deaths to animals, especially chickens and ducks, were reported across all assessed regions, as animals are unable to survive the heat and lack of drinking water. The drought has resulted in less pasture land and increased animal malnutrition, especially among cattle herds, that has resulted in a large number of reported sicknesses. The implication of these animal losses, particularly in the case of poultry, will have repercussions on the capacity of people to generate income, especially women who are considered more likely to engage in this type of animal rearing.

The aquaculture sector was also impacted on, especially in the Mekong Delta and to a less extent the South Central region. The lack of freshwater to continue aquaculture activities, coupled with saltwater intrusion, has mainly affected shrimp production.

Scarcity of water for irrigation, animal as well as human consumption was also reported across all assessed regions resulting in the use of extra money by the affected population to access necessary water. Many people also reported having invested large amounts of capital or borrowed money to dig wells, which sometimes did not result in availability of water as underground water reserves were depleted.

As a result of the decreased availability of cash, household purchasing power for food at markets has been weakened among the worst-affected households. With relatively stable food markets within reach, most households have been frequently adopting negative coping strategies, such as limiting meal portions and borrowing or buying food on credit to maintain acceptable food consumption. The current level of household food access could deteriorate at a faster rate if the drought's impacts continue to drain households' limited financial and food resources at hand.

Despite prolonged Government assistance to the worst affected communities since the beginning of the drought in late 2015, the assessment captured evidence that further support is needed to restore the population's capacity to produce income and food. Hence, short and medium/long-term recovery and resilience-building interventions are required.

A combination of mechanisms such as cash and vouchers, food or cash for work as well as targeted in-kind assistance - especially in the most remote areas, are recommended. The recommendation to adopt cash and voucher interventions is based on the results of the market assessment and interviews conducted with local vendors, who reported the availability of food commodities, agricultural inputs and animal feed across all three regions visited.

In line with this, the most urgent interventions (until December 2016) should mainly focus on the provision of agricultural inputs (i.e. seeds and fertilizers) to start and boost agriculture production during the current monsoon season. In most assessed areas, rains have already started or are about to start. In addition, the provision of seedlings to restore perennial plantations should be prioritized.

Restocking of vaccinated small animals, especially poultry together with feed, is also envisaged. For the aquaculture sector, provision of fingerlings, fish feed and other inputs are necessary. Access to low interest rate bank and Government loans could also benefit many affected households.

Moreover, provision of food assistance should be considered, especially for vulnerable population groups living in remote areas facing market accessibility problems.

Medium/long-term interventions should enhance the capacity of farmers and animal keepers to generate higher productivity and reduce post-harvest losses. Solutions to increase access to irrigation and mechanization as well as accessibility and marketability of animal, aquaculture and agricultural products should be also provided. Other interventions such as restructuring crop production towards climate smart agriculture practices and conducting more in-depth studies into saltwater intrusion impacts are suggested to build more resilient communities.

1. Introduction

1.1. Background information

Since late 2015 Viet Nam has been impacted by the El Niño phenomenon¹ resulting in the Central Highlands, Southern Central and Mekong Delta regions experiencing their most severe drought in the past 90 years. Drought and saltwater intrusion from coastal areas have caused significant damage and threaten national agricultural production and people's livelihoods.

Some 52 out of 63 provinces (83 percent) of Viet Nam have been affected by drought and 18 provinces have declared state of emergencies as of June 2016. As a result, an estimated two million people (400 000 households) are experiencing acute water shortages and require humanitarian assistance.²

With delays to the monsoon rainy season expected to continue in many areas across the country during the 2016 summer-autumn crop season, current rainfall and river water levels are 30 to 50 percent below seasonal averages.³ In coastal areas, saltwater intrusion has extended 20-30 km further inland than average – up to 90 km in some areas. Saltwater intrusion leaves river water too salty for human or animal consumption or to irrigate crops.

The recently concluded 2016 main winter/spring paddy crop, which accounts for about 45 percent of annual production nationwide, was negatively affected by limited irrigation availability, following a generally weak rainy season in 2015 associated with El Niño and resulting in intensified saltwater intrusion. The Mekong River Delta, which accounts for half of winter/spring output of the three assessed regions, recorded the highest losses with officials pointing to production in the delta declining by 1.1 million tonnes year-on-year to 10 million tonnes⁴. Although 2016 paddy production will exceed domestic requirements at national level, as the country is a net exporter of rice, in some areas the implication of these losses will be reflected at household and national levels, resulting in less availability of food and income. Highly vulnerable subsistence farming families with little resilience will likely be the most affected.

In addition, 477 113 ha of agricultural land was affected by the drought and saltwater intrusion nationwide as of June 2016. Out of these, 470 256 ha were used for cultivation of rice, maize, vegetables, fruit and other perennial and annual crops. According to figures released by the MARD in May 2016, the most affected households have lost between 30 and 70 percent or above of their annual paddy yields and in some provinces this is as high as 90 percent. More than 3 810 animals have died and many more have migrated towards areas where water is more accessible.⁵ Last but not least, more than 81 000 ha of shrimp breeding areas in eight Mekong Delta provinces alone have been damaged.⁶

Despite some initial impact assessments, by the Government, UN and non-governmental organizations (NGOs) there was a significant need to collect more disaggregated, accurate and reliable information to adequately recommend short, medium and long-term interventions and respond to the emergency situation.

In this regard, FAO conducted a more in-depth assessment focusing on the impact of the drought and saltwater intrusion on agriculture and sub-sectors (crops, livestock, fisheries and aquaculture), with particular attention on implications related to livelihoods and food security across the affected population and most vulnerable groups (women, ethnic minorities).

FAO led this assessment in partnership with the MARD, particularly the departments of Crop Production, Livestock Production as well as Natural Disaster Prevention and Control, Dfish, provincial DARDs, WFP, UN Women and Women's Union.

1.2. Objectives of the assessment

The joint assessment aimed to:

- Assess major damage and losses caused by the drought and saltwater intrusion in the agricultural and sub-sectors, including crop production, livestock, fisheries and aquaculture, with special attention on possible implications on local food and agricultural input markets.
- Assess the risks and vulnerabilities caused by the disaster, especially agricultural livelihoods and food security at community and household levels, with particular attention to gender differences.
- Identify gaps and additional required interventions in the short, medium and long-terms, especially for affected populations who largely depend on agriculture as their main source of livelihood.

1 "El Niño" is a word referred to the abnormal increase in temperature of the surface sea water in the central and east-central equatorial Pacific. The operation period of El Niño phenomenon is 2-7 years or even more than 10 years. The average existence of El Niño is 11 months.

2 <http://reliefweb.int/report/viet-nam/viet-nam-emergency-response-plan-201617>

3 Overview of drought and saline intrusion in 2015-2016 and trend in coming time, Hanoi 2016

4 <http://www.mard.gov.vn/Pages/statisticreport.aspx?TabId=-thongke>

5 Viet Nam Drought and Saltwater Intrusion, Situation Update No. (as of 15 June 2015)

6 <http://www.nchmf.gov.vn/web/en-US/71/103/28746/Default.aspx>

2. Methodology

2.1. Assessment design and data collection

This assessment was undertaken from 9 to 20 May, 2016 in three of the **worst affected regions** of Viet Nam - the Central Highlands, South Central and Mekong Delta (see Annex 1 for the list of districts, communes, villages and markets assessed).

This report is based on a review of secondary as well as qualitative and quantitative data collected in the field to allow triangulation and validation. Previous assessment findings and additional informative material was produced by international research organizations, development/humanitarian agencies and various ministries. The MARD's post-disaster fortnightly reports on damage and losses related to drought and saltwater intrusion have also contributed to the compilation of this report (e.g. areas, types of crops and animals affected).

Six teams, each composed of five enumerators and led by FAO and MARD representatives collected data in the field (see Annex 2 for team composition). In each province, multiple levels of data and information collection were conducted. Each affected region was visited by two teams, who assessed two provinces, six districts and markets, and 18 villages. Upon consultation with local government, districts and communities most affected were given priority during the assessment

1) Province level: At this level, teams conducted Key Informant Interviews (KIIs) with staff from the MARD province office and district representatives (see checklist in Annex 4). This initial meeting enabled teams to better understand the main impacts of the drought and saltwater intrusion on the affected population, clarify mission objectives and agree on fieldwork logistics. Representatives of the Farmer's Union, Women's Union, Fatherland Front, Youth Union as well as Red Cross associations were also invited to KIIs to understand the drought's impacts on particular population groups (see checklist in Annex 6). At the end of fieldwork, each team debriefed DARD province officials on the situation encountered on the ground and discussed recovery needs.

2) District level: Assessment teams met with District Agriculture Division representatives to identify the scope and characteristics of impacts. In addition, KIIs were conducted at market level. Vendors of food commodities and agricultural/livestock input providers were interviewed separately using a checklist (see checklist in Annex 7).

3) Village level: In the worst affected villages in each district, assessment teams conducted Focus Group Discussions (FGDs) with separate groups of men and women (see checklist in Annex 5). Each group consisted of 10 to 15 people, who were engaged in the main local livelihood activities (farming, livestock keeping, aquaculture). The separation of women and men enabled teams to develop a better understanding of the implications of the drought and saltwater intrusion in different groups and enhanced gender sensitivity analysis. A transect walk was also conducted in each village visited to allow for more direct observations of disaster impacts.



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Picture 1: Focus Group Discussion with a group of male farmers in Mekong Delta

4) Household level:⁷ In each village visited, the team conducted household surveys focused on food access and food consumption in rural settings. Four households were randomly selected in every assessed village to respond to a structured household food security questionnaire developed by WFP, available in Annex 8. The questions covered household demographics and welfare, access to community endowments, food consumption situation, livelihood and asset losses as well as assistance received. Feedback was collected via tablets into an online database. In total, 215 effective responses were recorded and analysed.

⁷ The term "household" refers to all members of a family sharing food consumption (sharing the same kitchen or eating together) on a daily basis. Each member also contributes directly or indirectly to the household's income, either through labour, cash or in-kind contributions except for small children or elderly persons unable to conduct any kind of household activity.

2.2. Limitations

Due to time and resource constraints, the assessment did not cover all affected provinces and districts in the three assessed regions. In addition:

- Data collected in this assessment does not support representative statistical inference on any administrative level. Instead, the information will generate more concrete and updated understanding of El Niño impacts on different scales.
 - The results of this assessment mainly reflect the situation(s) in the most affected/visited regions, provinces and districts and are not fully representative of the overall situation of all drought and saltwater intrusion-affected areas in the country.
 - A more in-depth assessment to verify the nutritional status of the affected population will be required to complement information provided in this report.
- A more in-depth analysis is needed to understand the gendered impacts of the drought and saltwater intrusion on women and men in agriculture.
 - Data collected does not fully quantify the response requirements. Therefore, further quantification is required to prepare region-specific and local responses. Most data provided is in Vietnamese language, including information gathered during fieldwork. Large parts of this information had to be translated into English, which was time consuming.
 - Complementary studies are needed to contribute to aspects related to ethnic minorities or socially disadvantaged groups.



Figure 1: Regions and districts visited during the assessment

3. Overall pre-drought and saltwater intrusion situation

3.1. Demographics

The total population of Viet Nam in 2014 was around 93.4 million people, of which 70 percent live in rural areas.⁸ The typical number of occupants in rural households covered in this assessment is five people. On average, two out of five household members contribute to income generation to support the entire family.⁹

Rural Viet Nam is home to nearly 70 percent of the country's young population aged between 16 and 30 years, which constitute 21 percent of its national population. A Viet Nam Youth Union study in 2011 revealed that 4 percent of rural youth lacked employment.¹⁰ At the same time, rural-urban migration is on the rise due to underemployment and fluctuating income status caused by abiotic stress (e.g. drought, floods and salinity) in the agricultural sector. In all six provinces studied, outmigration rates approximate to the national average (8.8 percent), with the highest found in Ninh Thuan (10.8 percent). However, remittances sent by Vietnamese migrants abroad are less than US\$ 50 per month on average, one of the lowest compared to neighbouring countries.¹¹

3.2. Agriculture in Viet Nam

3.2.1 Climate and agro-ecological zones

Viet Nam has a sub-tropical monsoonal climate with four separate seasons - spring, summer, autumn and winter - in the north and a tropical climate with only two seasons - dry and wet - in the south. Rainfall is highly seasonal and concentrated in the monsoon season (April-November). Average annual precipitation is around 1 820 mm. It varies from an average 1 600 to 2 200 mm in the midlands and plains and 2 000 to 2 500 mm in mountainous areas.

There are nine recognized agro-ecological zones in the country, as illustrated in Figure 1. Each zone receives different rainfall patterns. During past years, these patterns have continually changed due to climate change and events such "El Niño", leading to shorter and heavier rains across the country.

Each agro-ecological zone is represented by different topography, climate conditions, soil composition, water availability, as well as livelihood and cropping patterns.

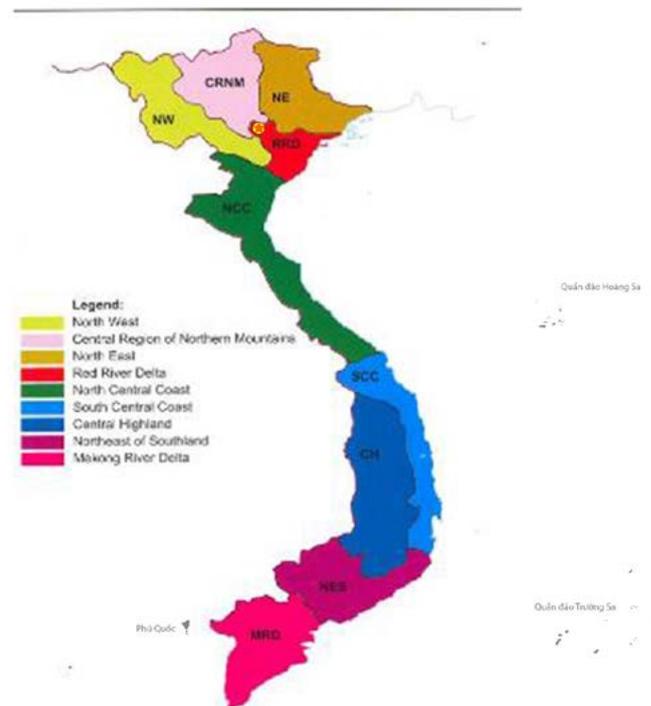


Figure 2: Agro-ecological zones of Viet Nam¹²

3.2.2 Water resources

Almost 60 percent of total water resources are generated outside the country, making the country susceptible to decisions made about water resources in upstream countries.

Viet Nam has a dense network of 2 360 rivers with an average length of more than 10 km each. There are 16 river basins larger than 2 000 km², eight of which have a catchment area larger than 10 000 km². The largest basins are the Mekong and Red River/Thai Binh ones, covering 45 percent of the territory.¹³

Groundwater resources are abundant, however, over-exploitation results in falling water tables and salinity intrusion, especially in the Mekong River Delta.¹⁴

8 [http://www.indexmundi.com/Viet Nam/demographics_profile.html](http://www.indexmundi.com/Viet_Nam/demographics_profile.html)

9 Information based on data collected during households survey

10 [http://www.grips.ac.jp/Viet Nam/VDFTokyo/Doc/Social-Book1Chapter4.pdf](http://www.grips.ac.jp/Viet_Nam/VDFTokyo/Doc/Social-Book1Chapter4.pdf)

11 <https://www.ifad.org/documents/10180/20e27f8a-1db0-4a17-ad89-2a3f3dd9bb29>

12 http://www.apipnm.org/swlwpnr/reports/y_ta/z_vn/vnmp231.htm

13 [http://www.wepa-db.net/policies/state/Viet Nam/surface.htm](http://www.wepa-db.net/policies/state/Viet_Nam/surface.htm)

14 [http://www.wepa-db.net/policies/state/Viet Nam/groundwater.htm](http://www.wepa-db.net/policies/state/Viet_Nam/groundwater.htm)

Local shortages can occur during the dry season. For example, in dry years supply of drinking water competes with agricultural uses that exceed water availability. Irrigated agriculture uses about 94.8 percent of total water withdrawals and places the largest burden on water resources in the country.¹⁵

3.2.3 Crops

Agriculture production occurs on 9.53 million ha, corresponding to 29.3 percent of total land and it contributes 18.1 percent of the country's gross domestic product (GDP).¹⁶ About 60 percent of the employed labour force is engaged in agriculture-related activities in the country, including forestry, fishery and aquaculture.

Rice constitutes the most important crop in the country in terms of production and food consumption. It is the staple food of Vietnamese people providing 80 percent of carbohydrates and 40 percent of protein intake in diet.¹⁷ This crop is grown in almost all agro-ecological zones and the largest production of rice derives from the Mekong Delta region, especially paddy cultivation during the winter/spring season. In 2016, Viet Nam was classified as the fourth largest rice exporter in the world, generating US\$ 1.4 billion and contributing to 10.3 percent of total global rice export.¹⁸

Additionally, the country is the second largest producer of coffee in the world with production of 27.5 million 60 kg bags,¹⁹ and is among the largest producers of cashew nuts and black pepper, accounting for one-third of the world's market for both commodities. Additional annual production of maize, sweet potatoes, cassava, groundnuts, soybeans and sugar cane among other crops is also prevalent nationwide. The country also produces fruit such as coconuts, bananas and jackfruit, and has perennial plantations of rubber.

3.2.4 Livestock

Livestock production, especially poultry, pigs, cattle and buffalos - followed by goats and sheep, constitutes an additional source of income and animal protein intake across the country for many rural households.

Livestock accounts for 5.9 percent of GDP. Viet Nam's traditional farming base mostly consists of mixed irrigated and rain-fed crops and livestock production systems. Livestock production occurs at the hands of small farmers, which own around 40 percent of cattle stock, 75 percent of poultry population and 80 percent of pigs²⁰. Semi-intensive to intensive swine and dairy farms are also growing fast.

3.2.5 Fishery and aquaculture

Viet Nam, with a coastline stretching 3 260 km, with more than 3 000 islands and islets scattered offshore, plus up to 2 860 rivers and estuaries, has been geographically endowed with ideal conditions for a thriving fishery sector. Great fishery sector potential is embedded in water bodies of 1 700 000 ha, with 811 700 ha of freshwater, 635 400 ha of brackish waters, 125 700 ha of coves and 300 000-400 000 ha of wetland areas might be employed for aquaculture development. Fishery products together with crude oil, textile and garments are the most important exports in Viet Nam. Since the 1990s, fishery products have been the third biggest exported commodity. In 2006, this sector accounted for 6.1 percent of the country's GDP. Much of the production growth can be attributed to continued expansion in aquaculture, which increased from a 30 percent share of the sector in 1990 to 52 percent in 2010. Catfish and shrimp are by far the largest share of aquatic exports, accounting for 22 and 44 percent, respectively, of total export earnings in 2006. As many as 120 countries and territories on five continents have received fisheries products from Viet Nam.²¹

3.3. Importance of agriculture, livestock and aquaculture in the three assessed regions

Rice remains the most important cultivated annual crop across all three regions, with the Mekong Delta region considered the food basket of the country and the main export producing area.

Other annual crops such maize, sweet potatoes, cassava, vegetables, groundnuts, sugar cane and soya beans are also cultivated either for home consumption or cash generation, especially in the Central Highlands and South Central regions. Fifty percent of agricultural land in the Central Highlands is used for cultivation of perennial crops such as coffee, black pepper, cashews,

15 http://www.fao.org/nr/water/aquastat/countries_regions/vnm/index.stm

16 <http://data.worldbank.org/indicator/NV.AGR.TOTL.ZS>

17 <ftp://ftp.fao.org/docrep/fao/003/x6905e/x6905e02.pdf>

18 <http://www.worldstopexports.com/rice-exports-country/>

19 <http://www.statista.com/statistics/277137/world-coffee-production-by-leading-countries/>

20 http://www.fao.org/ag/againfo/resources/en/publications/sector_briefs/lb_VNM.pdf

21 http://www.fao.org/fileadmin/user_upload/fisheries/docs/Viet_Nam_edited.doc

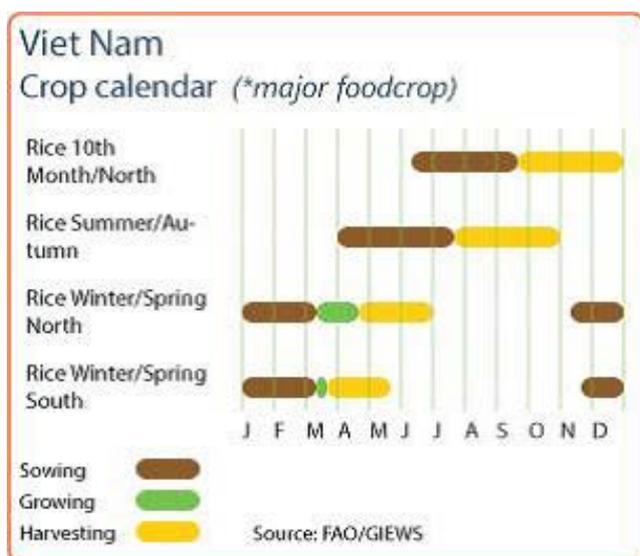


Figure 3: Overall Viet Nam crop calendar

rubber, fruit and tea.²² The South Central region follows similar patterns although perennial plantations are less important than in the Central Highlands.

On the other hand, livestock production is mainly conducted in the Central Highlands and South Central regions, with poultry, pigs and cattle production the most important. In the Mekong Delta region, livestock production including poultry, pigs and buffalos is mainly small and backyard-scale. Aquaculture constitutes an important source of income for many households mostly in the Mekong Delta region, which is responsible for 41 percent of the country's total aquaculture production.²³

3.4. Gender in agriculture in Viet Nam

3.4.1. Gender aspects in agriculture

Women are a crucial part of the agricultural labour force in Viet Nam and make an essential contribution to national economic development. Although agriculture only accounted for 21 percent of Viet Nam's GDP, 46 percent of the labour force was engaged in agriculture in 2014.²⁴ Overall, the share of the workforce engaged in agriculture is declining (62 percent in 2000 to 46 percent in 2014).

Nevertheless, agricultural employment is still more significant for women than men, especially in rural

areas. In 2014, 48 percent of the female workforce and 45 percent of the male workforce were engaged in agriculture.²⁵ In rural areas, this gender difference is even more pronounced, with 63 percent of working women engaged in agriculture as opposed to 57 percent of men.²⁶ When comparing the north and south, agriculture is not female intensive in the south and there are many women and men in agriculture in the poorest regions of Viet Nam compared to the Mekong River Delta. In the Central Highlands, three-quarters of women work in agriculture.²⁷

Productive resources are unequally distributed, with significant differences in employment options and opportunities for lifetime earnings for different groups of women and men. Women are a much larger share of unpaid contributing family workers, particularly in agriculture. However while men were more likely to have a wage, women were far more likely to be self-employed. Women are also likely to own or operate smaller farms and cultivate subsistence crops. Women have less irrigated land and cultivate smaller areas, with female-headed households cultivating rice areas almost six-times less than male-headed ones and women own less than a tenth of commercial farms.²⁸

Women also have less access to vocational training, extension services, finance, technology, markets and trader networks (70.9 percent of rural women) compared to what is available for men (59.9 percent). This limited access leads to a negative impact on women's productivity in agriculture.

3.4.2. Gender roles in agriculture

In rural Viet Nam, women tend to work extensively in agriculture on their farms and as paid or unpaid workers at other farms or agricultural enterprises. In addition, migration or transition to non-agricultural work by male agricultural workers has increased the relative number of women in rural areas as de facto household heads.²⁹ Women, particularly those in female-headed households, are more likely than men to own or operate smaller farms and cultivate subsistence crops, but have less irrigated land and cultivate smaller

22 The drought crisis in the Central Highlands of Viet Nam, CGIAR 2016

23 GSO. 2010. Statistical yearbook of Viet Nam. Statistical publishing house, Hanoi.

24 General Statistics Office (GSO). 2015. Report on Labour Force Survey 2014

25 General Statistics Office (GSO). 2015. Report on Labour Force Survey 2014.

26 FAO and UN Women. 2014. Policy Brief and Recommendations on Rural Women in Viet Nam

27 General Statistics Office (GSO). 2012. Results of the Viet Nam Household Living Standards Survey 2012

28 FAO and UN Women. 2014. Policy Brief and Recommendations on Rural Women in Viet Nam

29 FAO and UN Women. 2014. Policy Brief and Recommendations on Rural Women in Viet Nam

land holdings. Women also own less than 10 percent of commercial farms. Due to entrenched gender roles, women's decision-making power over agriculture at household and institutional levels is still limited.

As in most societies, there is a distinct gendered division of labour in agriculture, influenced largely by women's double burden of productive (paid work) and reproductive (domestic work, care for children and elderly family members) work, as well as their generally more limited access to and control over land, resources, information and technology.

While men and women share the work burden within a household, women tend to be responsible for the day-to-day management of rice, vegetables and other subsistence agriculture. They are also generally responsible for raising poultry and pigs, animals within the homestead. Animals which require more space or are used for commercial purposes are taken care of by husbands. Cash crops are also generally managed by men.

3.4.3. Ethnic minorities and the matrilineal system

Although ethnic minorities account for only 14.5 percent of the country's population, they accounted for more than half of the total poor in 2008 (representing a significant increase from 18 percent in 1993). Viet Nam has 54 officially recognized ethnic groups and the Kinh (Vietnamese) account for 87 percent of the population.³⁰ Most of the remaining 53 ethnic groups belong to eight different language groups, who mostly reside in remote, mountainous rural areas. The majority of these groups live in remote regions of the north, Central Highlands and Mekong Delta. Although they have different origins, languages and customs, they do share similarities in terms of gender disparities in poverty, educational attainment and health. In general, there are wide and persistent gender gaps within ethnic minorities and between ethnic minorities and the Kinh majority.

The majority of ethnic minority males and females are self-employed in agriculture or forestry. This is true for more than 70 percent of men and 80 percent of women.³¹ Very few are engaged in waged labour or in non-agricultural self-employment. In rural areas, while 87 percent of ethnic minority women are self-employed in agriculture, they have limited security in land tenure.³²

Some ethnic minority groups, as observed in study areas, follow the matriarchal system in Viet Nam. Under the matriarchal system, property is passed down along the woman's family line. As such, households are registered in the wife's name. Husbands live with their wives' families, the youngest daughters have the right to worship their ancestors, women have decisive roles in funerals, marriages and house-building.

3.5. Food security situation in Viet Nam

Food security in Viet Nam has been characterized with self-sufficient food availability and improved food access, but unsatisfactory food utilization in the past years. Stability of food security is challenged by climate extremes, including flood and severe droughts.

The calorie supply per capita, measuring the amount of food available for consumption in Viet Nam, has steadily increased from 2 269 kilocalories per person per day in 2000 to 2 690 kilocalories per person per day in 2009.³³ Rice dominantly provides 55 percent of total dietary energy while consumption animal protein, egg, seafood per capita have also increased in urban and rural areas between 2002 and 2010, according to Viet Nam Household Living Standard Survey. This shows, as with Table 1, an improving dietary intake nationwide.³⁴

	Meat	Seafood	Egg	Fruits
Viet Nam	4.2	3.1	6.3	2.8
Urban	1.9	1.9	2.7	2.1
Rural	5.6	3.1	7.5	3.2

Table 1: Annual growth rate of per capita consumption of major food between 2002 and 2010

Though food availability and consumption has substantially improved, the country still faces food utilization challenges which manifest themselves in high rates of undernourishment. Till 2013, 26 percent of children under five years in Viet Nam were stunted.³⁵ The intra-country differences among households in food access, dietary diversity and sanitary environment are hurdles to overcome together with other multi-sectional interventions to achieve the enhancement of all food security dimensions.

30 International Work Group for Indigenous Affairs (IWGIA). 2014. The Indigenous World 2014

31 World Bank. 2006. Viet Nam Country Gender Assessment, Hanoi, World Bank

32 World Bank. 2006. Viet Nam Country Gender Assessment, Hanoi, World Bank

33 <http://www.foodsecurityportal.org/api/calorie-supply-capita>

34 <https://www.adelaide.edu.au/global-food/documents/food-security-in-Viet-Nam-medan-dialogue.pdf>

35 http://www.who.int/pmnch/knowledge/publications/Viet-Nam_country_report.pdf

3.6. Main risks and hazards

Through changing temperatures, severe droughts, increasing precipitation and rising sea levels amongst other factors, global climate change is already modifying hazard levels and exacerbating disaster risks. Economic losses from disasters such as earthquakes, cyclones, floods and many others are now reaching an average of US\$ 250-350 billion each year worldwide.³⁶

Viet Nam is currently in the grip of an intense El Niño event. In 2015 alone, different natural hazards, mainly drought and saltwater intrusion, caused damage and losses in the agriculture, aquaculture and fisheries sectors and sub-sectors of an estimated VND 8.1 trillion (US\$ 3.6 billion). In addition natural hazards, especially floods have caused the deaths of 150 people and left 127 injured.³⁷ Figure 4 shows the main natural hazards affecting the visited regions, based on FGD results, where drought, pests and diseases as well as heat are considered the most frequent hazards across all regions. Saltwater intrusion was the major hazard experienced in the Mekong region.

Frequency of the natural hazards differs from types and regionally³⁸. Drought was the most frequently reported hazard, especially over the last two years, mainly due to the El Niño phenomenon. The impact of droughts is normally less severe in Viet Nam, but during this crisis the long duration of the drought/saltwater intrusion have caused extensive damage and losses. Although floods were

reported to be less recurrent, respondents indicated they had the most severe impacts on agriculture, livestock and aquaculture sectors and sub-sectors in past years. Even when storms regularly occurred, their impact was much more localized compared to pest and disease outbreaks, which happened at least annually, affecting larger areas or high numbers of animals/crops.



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Picture 2: Dry agricultural land in Mekong Delta Region

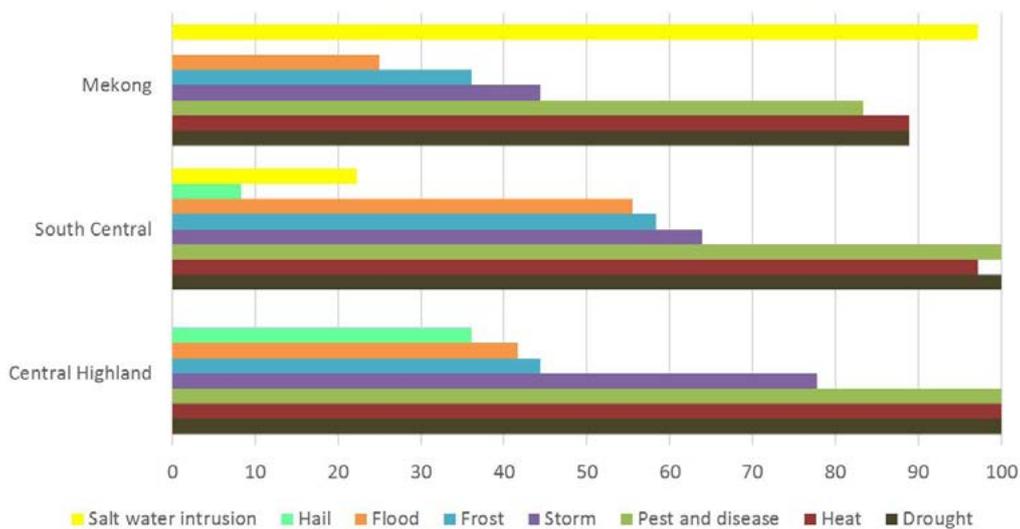


Figure 4: Main natural hazards experienced by the communities in 2015/16 based on FGDs

36 Global Assessment Report on Disaster Risk Reduction (2015)

37 Viet Nam News, Saturday 21st of May 2016, based on information of the National Steering Committee for Flood Prevention and Control.

38 The following information may be biased towards drought, due to the prolonged impacts of drought/saltwater intrusion on communities in Viet Nam over the last two years.

4. Provincial overview and impact of drought and saltwater intrusion

4.1.1. Central Highlands (Dak Lak and Gia Lai provinces)

According to KIIs³⁹ with provincial and district representatives of DARD, around 85 000 households were found to be directly affected by the drought in visited Central Highlands provinces. Findings show that 75 percent of affected households are female-headed mainly due to matrilineal arrangements being commonplace for most ethnic groups, see Table 2.

Province	Dak Lak	Gia Lai	Total
Number of households affected	60 000	26 220	86 220
Number of female headed HH affected	48 000	17 480	65 480
Number of male headed HH affected	12 000	8 740	20 740

Table 2: Number of households affected in Central Highlands based on KIIs

Due to the geographical location of these two provinces in hilly and mountainous areas, it is unsurprising that no households in Dak Lak province were reported as

having access to irrigated land. On the other hand, 23 percent of the rural population in Gia Lai (46 000 households) have access to irrigated land, mostly represented by small plots (up to 0.4 ha) fed by small dams or rivers.

Dak Lak has a reduced crop diversity and the main losses reported by the provincial DARD relate to rice, the main staple food crop. Coffee and pepper, the main generators of cash income for households, were also affected. A higher crop diversification for food crops as well as cash crops was reported in Gia Lai province. This led to a higher impact on food crops in this province compared to Dak Lak, where most losses were to perennial crops such as coffee and pepper. Table 3 illustrates losses in the two provinces.

Overall, the number of sick animals recorded in Gia Lai was 13 583 head of cattle and 437 buffalos (most likely malnourished), in addition to 1 495 pigs and 2 012 goats. The number of animals recorded as sick in Dak Lak was 347 herd of cattle, 19 goats and 1 739 poultry. No impact on aquaculture was indicated in the assessed provinces.

4.1.2. South Central (Ninh Thuan and Binh Thuan provinces)

The total number of households affected in the two visited provinces is 134 000 according to Government-collected data, representing around 20 percent of their

Province	Dak Lak			Gia Lai		
	0- 30%	30 - 70%	> 70%	0- 30%	30 - 70%	> 70%
Level of losses and area (Ha)						
Rice	2 000	4 500	2 000	114	1 559	3 948
Maize				9	126	135
Cassava				135	1 182	50
Vegetables				1	193	6
Sugarcane				1 687	4 758	87
Coffee	50 000	51 700	4 400	4 400	2 268	117
Pepper	5 000	4 400	300	747	829	73
Tobacco				10	134	7

Table 3: List of affected crops and level of losses (ha) in Central Highlands based on KIIs

³⁹ Data from KIIs were provided by the different heads of departments at provincial level. Data reflect the period until mid-May 2016.

Province	Ninh Thuan	Binh Thuan	Total
Number of households affected	84 709	49 299	134 008
Number of female headed HH affected	59 296	7 518	66 787
Number of male headed HH affected	25 413	41 781	67 194

Table 4: Number of households affected in South Central based on KIIs

total rural population. See detailed information in **Table 4**.

The total number of households with access to irrigation in both visited provinces was 123 500, some 40 and 27 percent of the rural populations in Ninh Thuan and Binh Thuan provinces, respectively. A wide range of food and cash crops were recorded in both provinces, as well as perennial crops and fruit trees. A larger area in Ninh Thuan province was affected with reported losses above 70 percent, whereas Binh Thuan had losses between 30-70 percent, see crop specific details in **Table 5**. In addition, more than 50 percent of affected households in Ninh Thuan were female-headed. In addition, due to the lack of water

in dams/artificial lakes or rivers, DARD instructed the affected communities to reduce or restrain the planting of irrigated crops due to insufficient irrigation water during the 2015/16 winter season. For example, in Ninh Thuan province about 20 135 ha of rice and 18 229 ha of maize were not planted over the last cropping season. On the other hand, provincial DARDs also encouraged households to cultivate more drought resistant or less water demanding crops like sesame, black or mungo beans and dragon fruit.

A small number of animals were lost in the provinces, with a higher number of sick animals reported in Ninh Thuan compared to Binh Thuan. This is likely due to Ninh Thuan reporting malnourished animals as sick, especially cattle, buffalos, sheep and goats.

Aquaculture is not a common source of income in these provinces. Nonetheless, some effects related to saltwater intrusion were recorded especially in Ninh Thuan province with 110 ha of shrimp cultivation damaged compared to the 9 ha in Binh Thuan. In addition, 31 ha of fish cultivation were also damaged in the same province.

Province	Ninh Thuan			Binh Thuan		
	0- 30%	30 - 70%	> 70%	0- 30%	30 - 70%	> 70%
Level of losses and area (Ha)						
Rice	2 000	1 500	2 700	249	241	213
Maize			4 500		60	83
Cassava	300	500	100	300	210	86
Pulses	400	500	1 000	150	200	
Vegetables	200	300	400		46	111
Sugarcane	500	800	1 500			
Pepper				105	20	14
Cashew				550	210	86
Fruit trees	300	450	350	210	613	155
Melaleuca / Latex				80	523	52

Table 5: List of affected crops and level of losses (ha) in South Central based on KIIs

Province	Ninh Thuan		Binh Thuan	
	Dead	Sick	Dead	Sick
Number animals				
Cattle	52	64 000	50	300
Buffalo	0	2 500	0	15
Pigs	0		40	250
Goats	409	57 800	25	100
Sheep	1 813	66 800		
Chicken			2 000	3 000
Ducks			1 500	2 000

Table 6: Animals reported dead or sick due to the drought in South Central based on KIIs

4.1.3. Mekong Delta (Kien Giang and Ben Tre provinces)

Around 13 200 households were affected in the visited provinces according to the Government, which represents around 45 percent of the total rural population in these areas. In this region, 46 percent of affected households are female-headed.

Province	Kien Giang	Ben Tre	Total
Number of households affected	31 175	100 090	131 265
Number of female headed HH affected	18 705	41 325	60 030
Number of male headed HH affected	12 470	58 765	71 235

Table 7: Number of households affected in Mekong Delta based on KIIs

Most of communities in Kien Giang and 80 percent of households in Ben Tre province have access to irrigated land, reaching 424 000 households and representing two-thirds of Kien Giang's population and one-third of Ben Tre's. Low crop diversification was found in the two provinces, as the most important cultivated crop is rice, with up to three harvests a year, followed by vegetables. In addition, some perennial crops such as

Province	Kien Giang	Ben Tre
Shrimp aquaculture (Ha) affected	130 566	
Oyster farming		22
Fish aquaculture	13 213	1203

Table 9: Areas affected by drought and/or saltwater intrusion in the aquaculture sector in Mekong Delta based on KIIs

sugarcane, coconuts and fruit trees are also cultivated. As shown in Table 8 rice was the most affected crop in terms of losses in both provinces together with vegetables in Kien Giang.

In both provinces, the aquaculture sector is considered one of the rural population's most important livelihood activities, especially in Kien Giang where high losses were reported compared to Ben Tre, as shown in Table 9. The losses were mainly caused by saltwater intrusion, leading to a lack of freshwater and high mortality rates for shrimp and fish fingerlings.

Province	Kien Giang			Ben Tre		
	0- 30%	30 - 70%	> 70%	0- 30%	30 - 70%	> 70%
Level of losses and area (Ha)						
Rice		33 951	10 436	339	2 602	17 924
Vegetables		4.8	52 130		67	379
Fruit trees				4 060	61	31
Sugarcane					111	4
Coconut trees						632

Table 8: List of affected crops and level of losses (ha) in Mekong Delta based on KIIs

5. Impact on crops and production

According to FGD results, the overall average land area owned by a household across all assessed provinces was 1-1.3 ha. Male-headed households usually own a slightly larger size of land than female-headed households, as shown in Table 10.

Average land area / HH	Central Highlands	South Central	Mekong
Men headed HH	1.2	1.3	1.1
Women Headed HH	1.0	1.0	1.1

Table 10: Average land area ownership based on FGDs, by region

Drought was reported as the main reason for crop yield losses, especially in the Central Highlands. Whereas in the South Central and the Mekong Delta regions drought was only attributed to 70 percent of losses. The

rest was caused by pests, diseases or saltwater intrusion with a higher proportion in the Mekong Delta, see Figure 5.

Due to the prolonged drought and saltwater intrusion, many households across the assessed regions could not plant or had to reduce the amount of cultivated land compared to 2015, as indicated in Figure 6. For example, in the Central Highlands more than 60 percent of interviewed households reported they could not plant any crop during the drought. In the Mekong Delta, about 50 percent of households reported they had to plant less than 25 percent compared to last year. This reduction has resulted in less production for generation of food and income.

Figure 7 provides an idea of crop production changes during the drought compared to the same period in 2015. A very small share of households in the Mekong Delta (8 percent) and Central Highlands (15 percent) stated they harvested the same quantity or more than last year. Between 50-65 percent of households experienced a reduction, in the range of 50-70

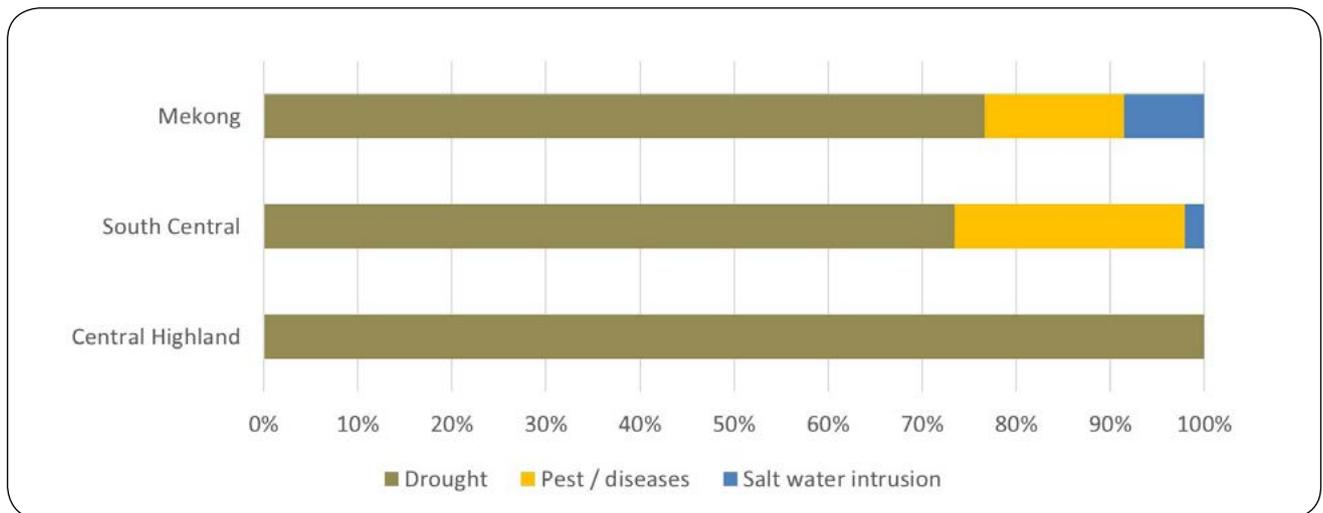


Figure 5: Reasons for yield losses overall affected cultivated areas based on HH survey, by region

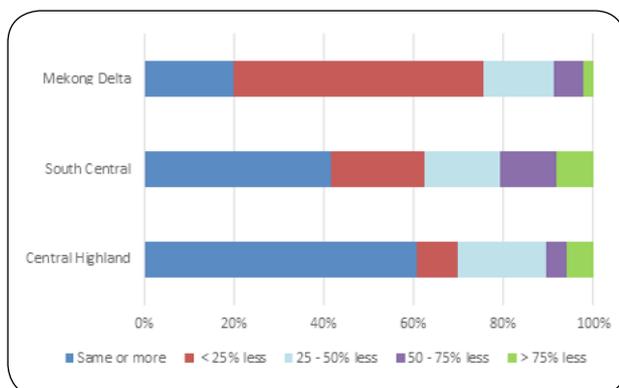


Figure 6: Change in areas cultivated compared with 2015 based on HH survey, by region

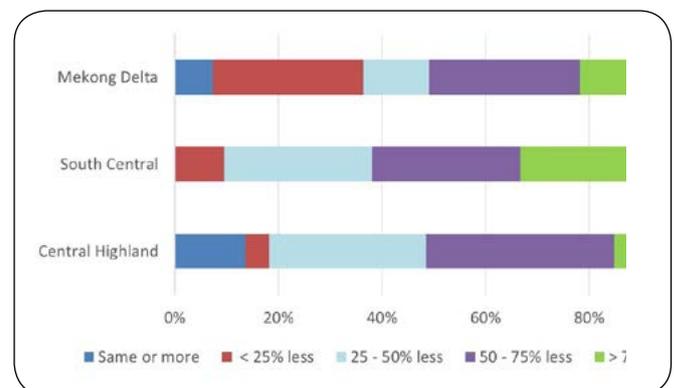


Figure 7: Change in crop production compared with 2015 based on HH survey, by region

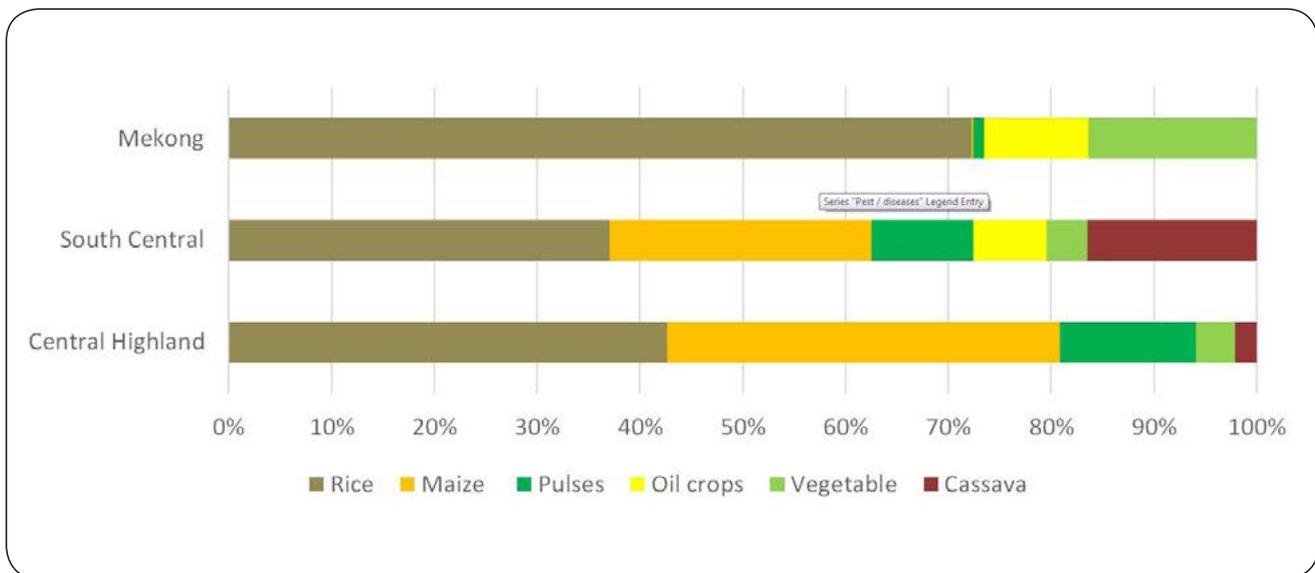


Figure 8: Share of importance of cultivated annual food crops based on FGDs, by region

percent or even more than 75 percent, especially in the South Central region.

5.1. Impact on food crops

Rice is the most cultivated crop across all three regions, followed by maize, pulses, vegetables and cassava as shown in Figure 8.

Region	Central Highlands	South Central	Mekong
Rice	90.0	82.7	99.0
Maize	74.2	92.0	50.0
Pulses	80.0	72.3	75.0
Oil crops		68.8	61.5
Vegetable	41.7	53.5	76.0
Cassava	56.7	72.9	

Table 11: Percentage of yields lost on cultivated annual food crops based on FGDs, by region⁴⁰

At the same time, rice was the most affected food crop in terms of yield reduction. In fact, across all regions the results of the FGDs illustrate that farmers lost on average 82.7-99 percent of yields. The highest losses of maize were reported in South Central (92 percent). Other crops such as pulses, vegetables, cassava and oil crops were also affected as represented in Table 11.

Due to these yield losses, most households affected by drought and saltwater intrusion could not produce sufficient food for home consumption. This will have

severe repercussions on their nutrition and food security situation. Additionally, the affected population will need to identify alternative ways of procuring food. For example, the assessment teams' informal talks with the affected population revealed that many people had already started accessing food on credit or migrating to other areas/parts of the country in search of new job opportunities, especially men.



Picture 3: A drought-affected cashew plantation

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⁴⁰ Including areas not planted last season due to lack of irrigation, as reported by DARD.

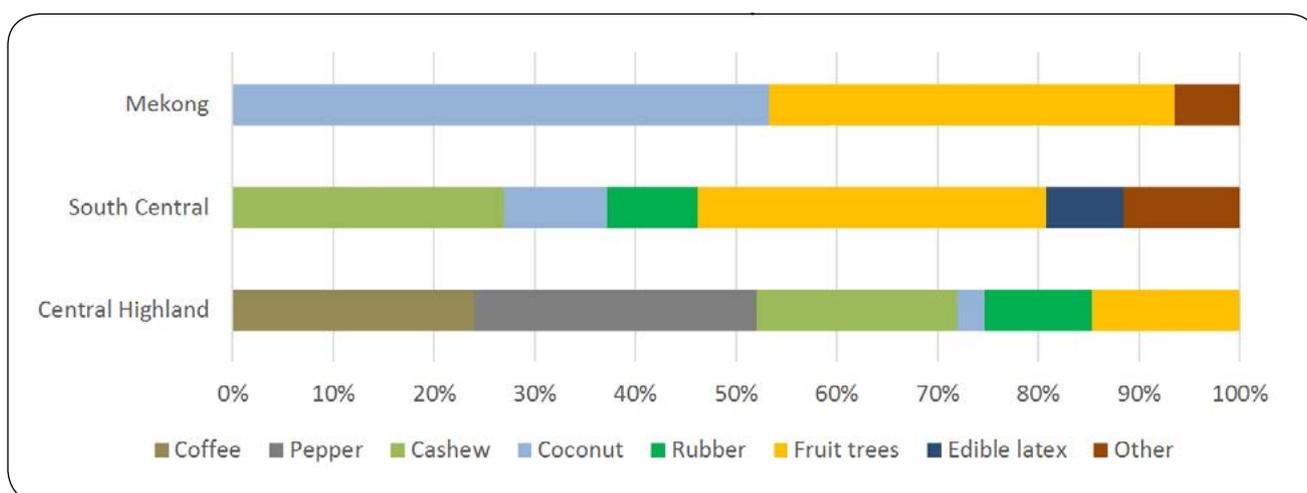


Figure 9: Share of importance of planted perennial crops based on FGDs, by region

5.2. Impact on perennial crops

On the other hand, purely commercial perennial crops such coffee, cashew nuts, pepper, rubber, edible latex (used by food processing industry) and fruit trees are also cultivated across the three regions in difference degrees of importance. The greatest crop diversity is found in the Central Highlands and South Central, compared to the Mekong Delta as indicated in **Figure 9**.

The Central Highlands and South Central regions reported the highest perennial crop losses, especially to coffee, coconuts, cashews and pepper plantations as shown in **Table 12**. In the Mekong Delta, the yield losses of coconut and fruit tree plantations were reported at 66.7 and 56.6 percent, respectively.

However, food crop yields were less impacted on than perennial crop yields. This is due to the higher drought resistance of these crops. However, farmers will face high replacement costs as many plantations were entirely destroyed and require total replacement.

Region	Central Highlands	South Central	Mekong
Coffee	81.4		
Rubber	60.0	27.1	
Coconut	85.0	46.3	66.7
Pepper	79.0		
Cashew	79.7	85.5	
Fruit trees	55.5	74.4	56.8
Edible latex		55.0	
Other		61.7	27.5

Table 12: Percentage of yield losses on cultivated perennial crops based on FGDs, by region

In addition, the upcoming coffee harvest starting in November will also be affected due to the prolonged stress

caused by the drought. Ethnic minorities and vulnerable farmers who heavily rely on coffee production will either not be able to gain anything from their plantations or have very low yields. Many will need to entirely replace lost perennial crops and wait at least two to three years before they can harvest again.⁴¹ To cope with this situation many farmers reported needing to rely more on agriculture casual labour or ask for informal loans to buy seedlings and fertilizer to resume production.



Picture 4: Dead coffee plantation due to the drought requiring total replacement, Central Highlands

5.3. Impact on cash crops

Concerning cash crops, the share of communities reported to carry out this type of cultivation is 70 percent in the Central Highlands, in contrast to 30 percent in the Mekong Delta and South Central regions. Therefore, it is not surprising that the Central Highlands had a higher crop diversity recorded than other visited regions. **Figure**

⁴¹ Earliest maturation varieties of coffee need at least two years to become fully productive.

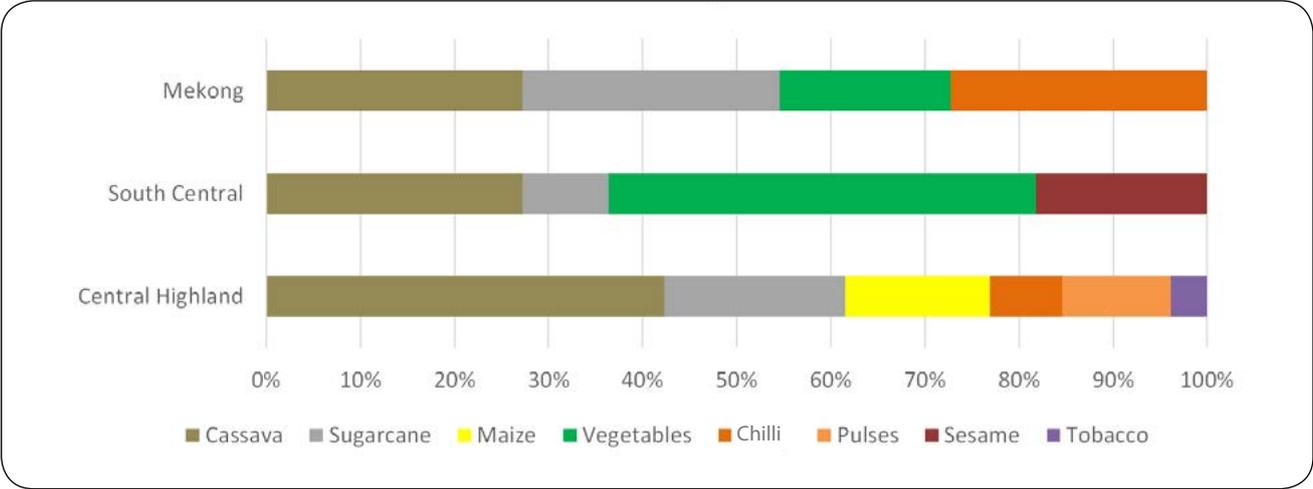


Figure 10: Share of importance of cultivated annual cash crops based on FGDs, by region

10 provides details on the most important types of cash crops cultivated.

In relation to yield losses, maize, pulses and sugarcane were reported to be the most affected with reduction levels above 70 percent, especially in the Central Highlands. However cassava, chilli and sesame often cultivated as more drought resistant crops and mainly for commercial purposes, were found to have suffered losses of 60-80 percent. The lowest yield losses were reported in the Central Highlands for tobacco, with a reduction of 35 percent. This is due to few farmers engaging in this type of production.

These yield losses might have severe implications for the people affected. Most of the time, people who have lost food crop yields have also lost cash crop or perennial crop yields, heightening their vulnerability. They will most

likely also face shortages in food and cash. In addition, they will not be able to buy fertilizers, seeds and other inputs for the upcoming monsoon season as well as be unable to meet other primary needs, such as education and health.

Region	Central Highlands	South Central	Mekong
Cassava	61.7	88.3	58.3
Sugarcane	70	100	73.3
Maize	90		
Vegetables		64.0	65.0
Chilli	65.0		60.0
Pulses	100.0		
Sesame		65.0	
Tobacco	35.0		

Table 13: Percentage of yield losses on cultivated annual cash crops based on FGDs, by region

Mr. Y Leeh Bya - Coffee Producer

Mr. Y Leeh Bya lives in a D'Rung Diet village, Cu Mgar district, Gia Lai province (Central Highlands) with his wife and five children. He owns 0.3 ha of coffee plantation, approximately 30-years-old that can produce about 500 kg of coffee in a good season. Due to the prolonged drought, half of his coffee plantation has died and the remainder is expected to produce an insufficient amount to sustain his family. According to Mr. Y Leeh Bya, this was the worst-ever drought in his area for more than 50 years. While agriculture has suffered huge losses, the availability of drinking water has been drastically reduced and resulted in severe water scarcity in his household.



In order to have necessary income to support the family, Mr. Y Leeh Bya has started working as an agriculture casual worker in a large farm a few kilometres away from his home. This job allows his family to buy food and water, but is insufficient to cover all expenses, such as school fees and other expenditure. Mr. Y Leeh Bya has an urgent need to replace the lost coffee plantation, buy more fertilizers and dig a deeper well to access more irrigation and drinking water during the dry season. However, he is limited financial resources to meet such needs and expects the Government or international organizations to support him and other families in the area experiencing similar or even worst situations.

5.4. Needs for agriculture recovery, by affected population

The short-term needs expressed by the population during FGDs regarding crop production, mainly relate to the provision of drought-resistant crop varieties, irrigation water, changes in agricultural practices and access to low interest rate credit. See region specific and actual percentages in Table 14.

In relation to medium/long-term needs, similar ones were also requested by interviewed households but with a longer-term sustainable approach, including improved agricultural practices, extended irrigation systems (construction and rehabilitation of channels and dams), crop diversification, application of climate-smart agriculture and adaptation technology such as water saving systems, improved access to markets and low interest rate credit as well as improved mechanisations and extension services, as shown in Table 15.

SHORT TERM NEEDS (UP TO DEC. 2016)			
Region	Central Highlands	South Central	Mekong
Drought resistant varieties / seedlings	33.4	33.3	32.9
Provision of inputs / pumps	30.2	27.3	24.3
Extend irrigation system / drill wells	21.9	27.3	12.8
Improved agricultural practices	3.1	4.0	7.1
Low interest credit / cash	10.5	6.1	15.7
Prevent salt water intrusion		1.0	4.3
Crop diversification			1.4
Extension services	1.0		1.4
Drilling wells		1.0	

Table 14: Percentage of short-term needs in agriculture based on FGDs (%), by region

MEDIUM / LONG TERM NEEDS (POST DEC. 2016)			
Region	Central Highlands	South Central	Mekong
Improved agricultural practices	22.5	11.8	20.0
Extend irrigation system	12.7	23.5	16.7
Crop diversification / drought resistant varieties	4.2	3.5	16.7
Prevent salt water intrusion		2.4	8.3
Low interest credit / cash	15.5	1.2	6.7
Maintain irrigation system		4.7	6.7
Increase market access	1.4	2.4	5.0
Mechanisation	2.8	5.9	1.7
Build water reservoir / dams / drill wells	33.9	40.0	16.7
Extension services	1.4	1.2	
Agriculture inputs / water pumps	6.6	3.6	1.7

Table 15: Share of medium and long-term needs in agriculture based on FGDs (%), by region

6. Impact on water and irrigation

To ensure higher yields and levels of food security as well as surpluses for sale, access to irrigation remains an important factor for consideration in Viet Nam.

According to the FGDs, the proportion of irrigated land was 9 percent in the Central Highlands, 30 percent in South Central and up to 83 percent in the Mekong Delta. Many interviewed households considered the use of water from their wells as part of irrigation usage.

Despite the proportion of irrigated land varying from regionally, FGD respondents reported more than 90 percent of irrigation facilities were affected by the drought and salt intrusion. The main causes were reduced or no availability of water and salt intrusion in pipes and other irrigation equipment. Many people in the assessed areas have invested large amounts of capital to dig more wells to access water for irrigation as well as human and animal consumption. In some cases, people could not find water even at a depth of 100 metres and had to stop digging, thereby losing all they had invested. This clearly shows that groundwater aquifers were also heavily depleted by the drought.

The South Central region was the worst affected with all respondents reporting not having access to irrigation water since the beginning of the drought in late 2015. In the Central Highlands and Mekong Delta, more than 80 percent of respondents reported not having water at all or having serious irrigation water shortages, as shown in **Figure 11**.



Picture 5: People working on well construction in Dak Lak province, Central Highlands

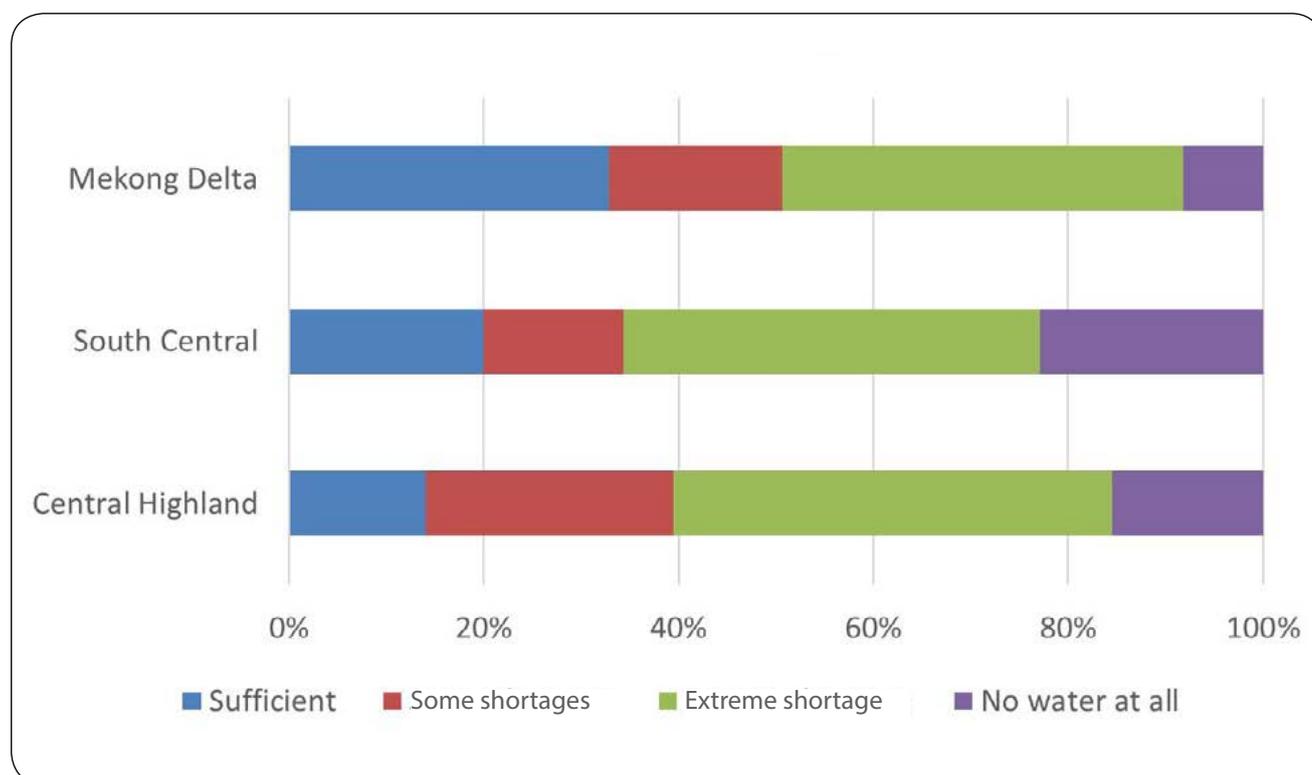


Figure 11: Percentage of irrigation water shortages based on FGDs (%), by region

6.1. Impact on water supply

Although the most severe water shortages were reported with regards to irrigation, the availability of water for animal and human consumption was also affected as shown in Figure 12.

To access additional drinking water, FGD respondents reported buying water from trucking companies, walking longer distances to other water sources and/or relying on Government or other actors' support, as indicated in Figure 13.

Buying additional water on the market has further deteriorated the resilience of affected communities as they must prioritize this vital expenditure, whilst reducing non-vital expenditure related to nutrition, health and education. Additionally women, usually responsible to walk longer distances to collect water, must spend more time for this practice and reduce time to seek jobs or engage in paid labour. The Government, UN and international NGO joint needs assessment conducted in March 2016 showed that women in the

Central Highlands' Gai Lai province spent on average two to four hours more collecting water for their households than normal.

Besides the reported lack of water, informal discussions with the assessed population revealed that in many areas water normally accessed for home consumption had been contaminated and must be treated before usage. Nonetheless, due to such scarcity many people also used this contaminated water, which might have led to an increase in water-borne diseases, particularly for women who are the primary collectors and handlers of water in households.



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Picture 6: Woman showing contaminated stored water in Mekong Delta

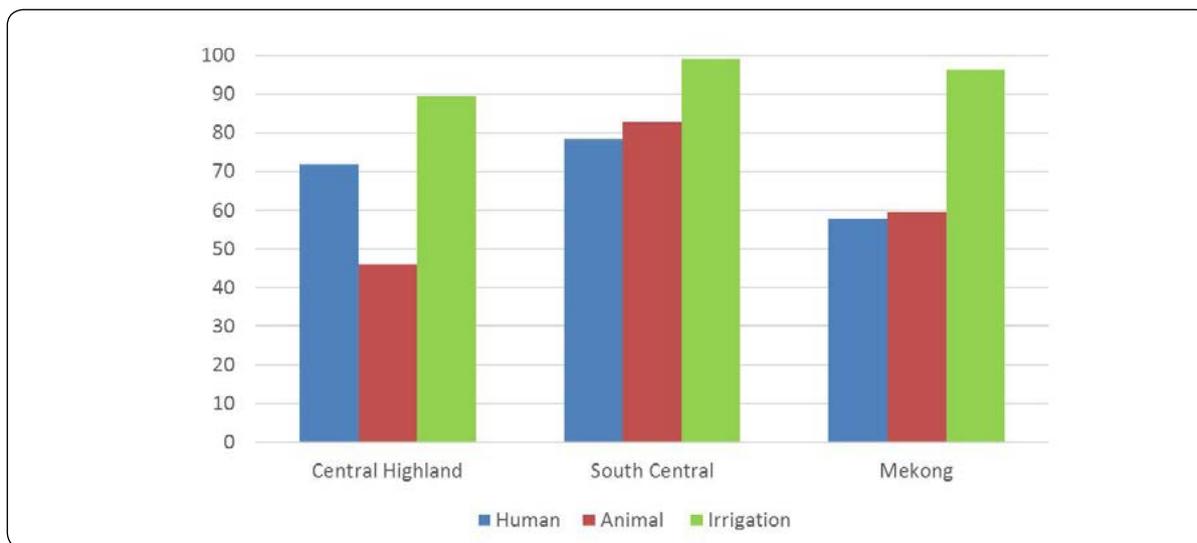


Figure 12: Share of respondents reporting water shortages based on FGDs (%), by region

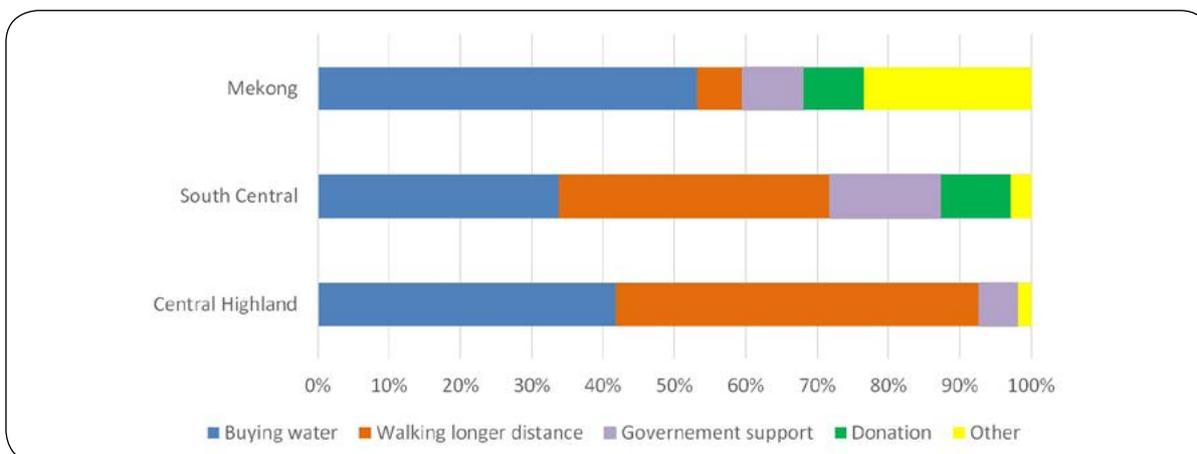


Figure 13: Reported actions taken to address water shortages based on FGDs, by region

7. Impact on livestock

In general, animals are considered to be important productive assets across all three regions assessed. Bigger livestock such as cattle are used as draught animals, especially for land preparation and transport of food commodities. Furthermore, they are also considered an important source of savings together with goats, sheep and pigs, as they can be sold at any time when cash is needed. In contrast, chickens are mainly used for production of eggs and meat. Animal products (milk, eggs, wool, skins and meat) are also an important source of food or income.

7.1. Livestock losses

Almost all households in the visited regions owned some animals, with the highest proportion poultry, followed by cattle and to a lesser extent pigs, goats and sheep, see detailed percentages in **Figure 14**. Therefore, it is not surprising that livestock rearing is considered a second source of income for households in the South Central and Central Highlands areas. In contrast, in the Mekong Delta most of the rural population conduct free-range duck and chicken production and to a lesser extent pig, cattle and goat-rearing activities.

As highlighted in the previous section of the report, the FGD results indicated the drought and to some extent saltwater intrusion had resulted in insufficient water for animal consumption. This situation had led to the death or sickness of different animals across the three assessed regions. Losses of poultry, mainly chickens and ducks, were most commonly reported by affected populations followed by pigs, sheep and goats. In contrast, cattle and buffalos were shown to have the highest rates of sicknesses - mainly due to malnourishment. In fact, the drought had reduced the amount of required pastureland and led to a lack of fodder as well as crop residues, generally an additional source of food for animals. This has impoverished the health conditions of animals and exposed them to higher risks of disease. Detailed information is provided in **Table 16**.

Table 17 highlights the share of households owning specific types of animals and those that lost them due to the drought, which started late 2015 and peaked in March-April 2016. Throughout all three regions, more than half of households had lost chickens. On the other hand, the proportion of households reporting to have lost pigs ranged between 10 and 75 percent, with highest rate reported in the Mekong Delta and the

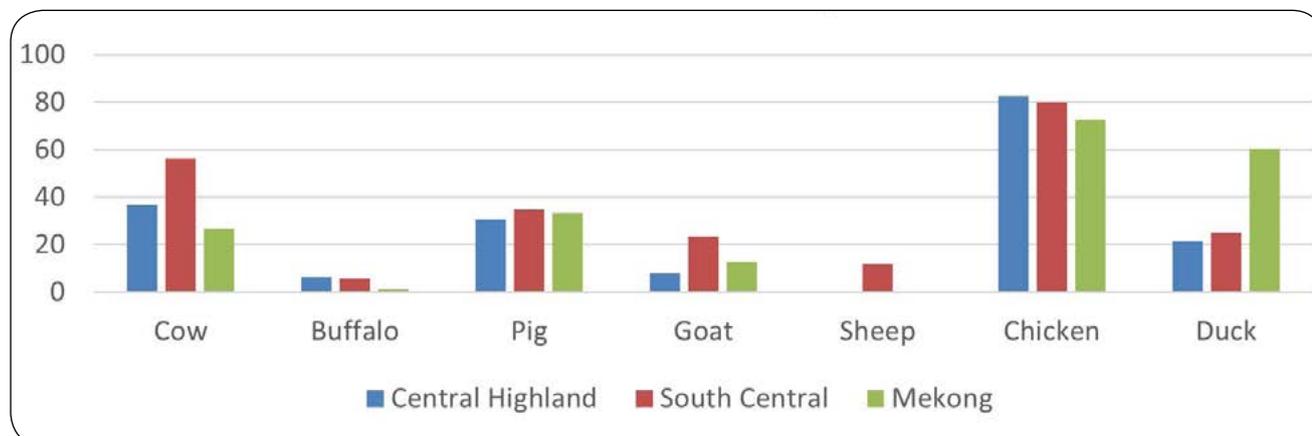


Figure 14: Percentage of short-term needs in agriculture based on FGDs (%), by region

Region	Central Highlands		South Central		Mekong	
	Animal dead	Sick animal	Animal dead	Sick animal	Animal dead	Sick animal
Cattle	7.0	16.4	7.1	56.3		40.9
Buffalo	2.2	15.6	4.4	53.2		7.5
Pig	10.6	13.7	10.5	17.0	12.4	24.6
Goat	7.5	11.4	6.4	42.9		12.4
Sheep			12.5	71.4		
Chicken	42.1	27.1	35.1	30.4	44.5	25.1
Duck	38.7	33.3	25.8	22.3	40.3	29.7

Table 16: Percentage of dead and sick animals based on FGDs, by region

Region	Central Highlands		Central South		Mekong Delta	
	Owning	Lost	Owning	Lost	Owning	Lost
Chicken	70.0	44.0	61.4	40.4	76.6	36.2
Pigs	46.0	4.0	33.3	8.8	14.9	10.6
Cattle	52.0	6.0	66.7	14.0	36.2	2.1
Goats	16.0	2.0	14.0	10.5	8.5	0.0

Table 17: Share of households reporting animals owned and lost based on HH survey, by region

lowest in the Central Highlands. For goats and cattle, a similar pattern and trend was recorded.

Figure 15 confirms that chickens were reported to be the most commonly owned and lost animals across all three assessed regions, followed by pigs.

The loss of animals, especially poultry, mainly affected vulnerable women who usually engage in chicken and duck-rearing practices compared to men who often manage larger animals. Furthermore, women are primarily responsible for taking care of animals owned by a household, particularly poultry. Chickens and ducks are also a source of food and income for a family, so any losses can also impact on the nutritional status of households. To some extent, the loss of animals might also result in less dietary intake of animal protein, which in the long-term could have negative implications for the health of populations as poultry eggs are often consumed by the household. Additionally, the economic power of households has diminished as the ability to sell animals to quickly generate income is no longer possible.

Although more than 85 percent of all respondents interviewed across the three regions reported their animals were vaccinated, most such animals were large or medium-sized (i.e. cows and buffalos). This explains why a higher mortality rate was reported for poultry. In fact, these animals were often exposed to diseases considered the main causes of death.

According to the FGD results, the main source of vaccines in the Central Highlands and South Central was the Government, whereas in the Mekong Delta the majority of people reported to have directly purchased the vaccines, see Table 18.

For the relatively smaller share of people who reported not vaccinating their animals, the main reasons provided were having too small animal stocks, especially in the Central Highlands and Mekong Delta, or either too expensive or not available, especially in the South Central region.

Region	Central Highlands	South Central	Mekong
Own purchase	21.2	32.4	93.5
Government	87.9	76.5	41.9
International organization	0.0	0.0	3.2
Other provider (friends, neighbours)	0.0	5.9	0.0

Table 18: Reported main sources of vaccines based on FGDs (%), by region

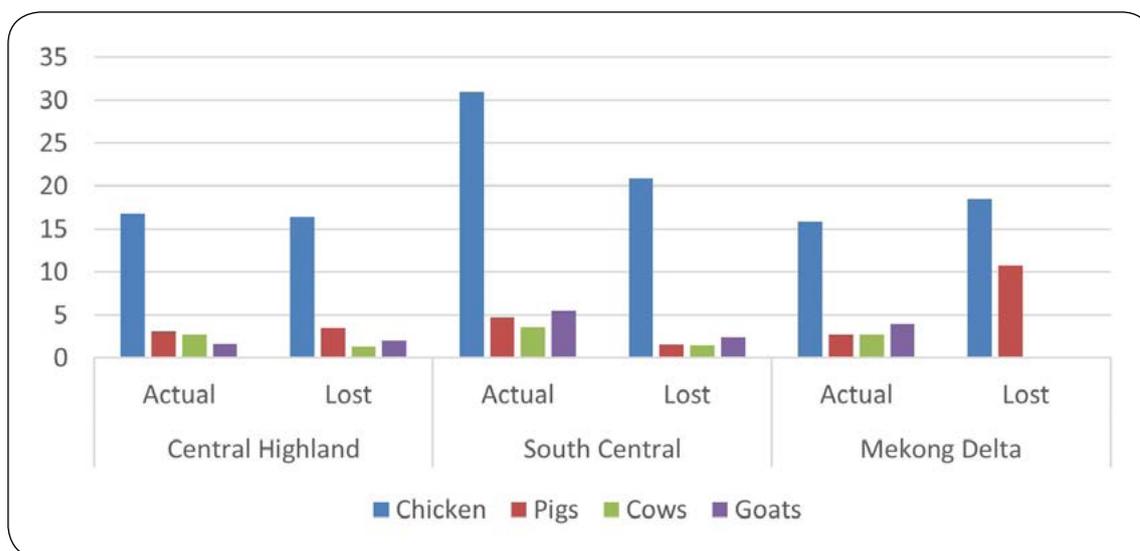


Figure 15: Average household number of animals own and lost based on HH survey, by region

7.2. Needs for livestock recovery, by affected population

In the livestock sector, the main short-term needs expressed by FGD respondents were provision of fodder and water, animal treatment (i.e. medicines), restocking as well as access to formal low interest rate credit. The need for additional animal health services was also mentioned to a lesser extent, together with provision of improved breeds, grass/fodder seeds, training on rearing methods and better access to markets. The answers received in the South Central and Central Highlands regions were similar, but in contrast to the Mekong Delta, see region-specific details in Table 19.

With regards to medium and long-term needs, the interviewed communities' main priorities were access to low interest rate credit, improved rearing methods through trainings, restocking of lost animals and provision of improved and drought-resistant breeds. To a lesser extent, improved animal health services and

treatments as well as ensured water access points and production of fodder/grass, followed by market access were also mentioned, as shown in Table 20.



Picture 7: Herd of cattle encountered during fieldwork in South Central region

SHORT TERM NEEDS (UP TO DEC. 2016)			
Region	Central Highlands	South Central	Mekong
Fodder	25.4	24.0	3.0
Animal treatment. health services	26.7	28.0	19.4
Restocking	22.5	4.0	14.9
Animal water	12.7	24.0	16.4
Low interest credit / cash	7.0		22.4
Improved varieties	4.2	10.0	13.4
Grass seeds	1.4	8.0	1.5
Improved rearing methods		2.0	7.5

Table 19: Share of short-term needs in agriculture based on FGDs, (%) by region

MEDIUM / LONG TERM NEEDS (POST-DEC. 2016)			
Region	Central Highlands	South Central	Mekong
Low interest credit	21.8	2.3	16.7
Improved rearing methods	18.2	21.6	20.0
Restocking / improved breeds	27.3	15.9	13.3
Animal health services / treatment	12.8	11.4	3.3
Drilling well / water reservoir / dams	14.5	32.9	18.3
Grass seeds	5.5	11.4	1.7
Improve market access		2.3	23.3
Fodder		2.3	3.3

Table 20: Share of medium/long-term needs in agriculture based on FGDs (%), by region

8. Impact on fisheries and aquaculture

Inland fisheries and aquaculture activities are mainly conducted in the Mekong Delta region, with nearly 70 percent and more than 86 percent of communities engaging in them, respectively. In the South Central region, a lower proportion of communities reported involvement in such activities, see Table 21.

	In-land fishery	Aquaculture
Region	% of communities	% of communities
South Central	19.4	16.7
Mekong	69.4	86.1

Table 21: Percentage of communities engaging in fisheries/aquaculture based on FGDs, by region

Inland fishing is mainly conducted in rivers, lakes and streams across the regions, through the utilization of small engine and or rowing boats as well as from shorelines. Fishing nets and traps are the most traditional way of inland fishing. On the other hand, aquaculture activities are often conducted in the backyards of households, where people own pond(s) utilized for shrimp or fish production (mainly catfish or tilapia).

Around 90 percent of inland fishing activities are done by men in South Central and Mekong Delta regions, whilst a higher percentage of women are usually involved in aquaculture activities, as represented in Table 22.

Most aquaculture activities conducted by women consist of feeding practices, drying fish and selling at markets.

The FGD results revealed that drought and saltwater intrusion had negative repercussions on fisheries and even

	In-land fishery		Aquaculture	
Region	Men	Women	Men	Women
South Central	93.6	6.4	56.7	43.3
Mekong	89.4	10.6	64.7	35.3

Table 22: Share of men and women engaged in fishery / aquaculture activities based on FGDs (%), by region

more on aquaculture activities. In fact, due to scarcity of water or only availability of brackish water to re-fill ponds, many fish farmers could not continue. Most ponds are generally supplied with drilled water. However, due to the high temperatures, water levels inside the fields for aquaculture cultivation declined with higher salinity, causing very low productivity or even leading to the death of shrimps, fish and crabs.

Additionally, more than 50 percent of respondents in the South Central and Central Highlands engaged in aquaculture expected to suffer at least a 50 percent fall in their upcoming aquaculture harvest compared to 2015, see actual shares in Figure 16.

This situation resulted in the reduction of income and diminished consumption of fish/shrimps, which might have negative implications on diet and nutritional status of the affected people. In order to resume production, many aquaculture producers must wait for the upcoming monsoon season when water should become available. Nonetheless, due to the economic losses incurred, many households will not be fully able to resume aquaculture and will be exposed to higher vulnerability.

8.1. Needs for fishery/aquaculture recovery, by affected population

Short-term needs mainly relate to the aquaculture sector and less to inland fishing activities. According to the FGDs, the most recurrent needs expressed by the affected population were provision of new fish/shrimp breeds and feed, restocking,

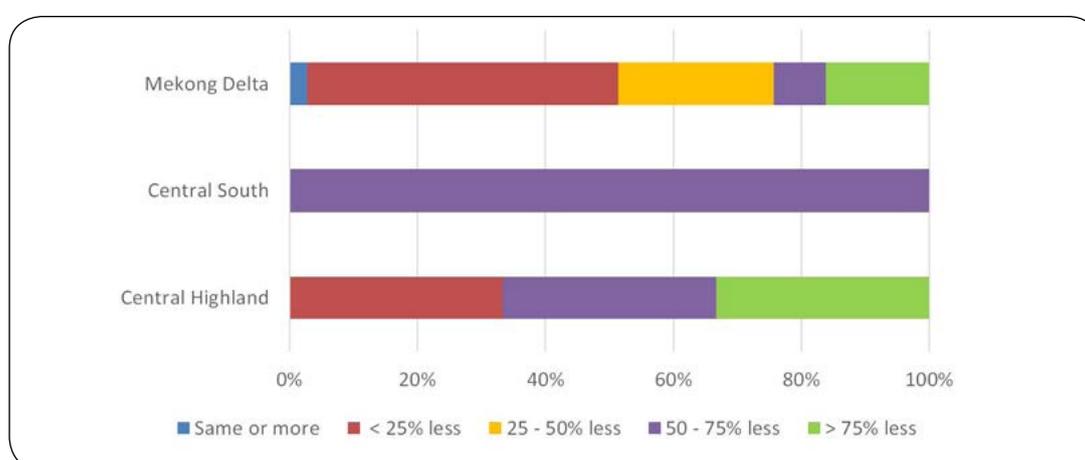


Figure 16: Estimated change in aquaculture production, compared to last year, based on HH survey, by region

Ms. Nguyen Thi Dam Farmer and Aquaculture Producer

Ms. Nguyen Thi Dam is a 49-year-old farmer. She lives with her son's family in Ngoc Thanh village, Van Khanh Dong commune, An Minh district, Kien Giang province (Mekong Delta Region). Her husband passed away a long time ago. She has worked hard to raise her children. Application of the rice-shrimp cultivation model has allowed her to produce a good amount of food and income to support her household. Last October, she had raised 40 ducks and 240,000 shrimp fingerlings within 2.6 ha of cultivation fields.



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Sadly, due to the drought and saltwater intrusion, 28 ducks and all the shrimp died after just one month of cultivation. Her life has become more difficult due to no access to water for daily use. She must buy water for her family's daily consumption, costing VND 100,000 per day for three water containments. She is now in debt by VND 50-70 million due to the loss of shrimp cultivation. Her fields remain empty. She said this event had never occurred before. She hopes the rains will come soon and the canal water system can be improved for a new batch of shrimp cultivation. This would make her life much easier.

Ms. Dam's story illustrates how the drought and high salinity intrusion have increased the vulnerability of people usually considered less prone to such disasters.

access to fresh water and low interest credit to assist re-payment of debts or enable own restocking. To a lesser extent, provision of inputs (i.e. liming material) as well as gear and support to hatchery development was also mentioned, see **Table 23**. For inland fishing activities, women expressed the need for small boats with engine(s) to commute further for fishing as well as trading within the Mekong Delta region.

Medium and long-term needs should prevent future saltwater intrusion, enhance use of advanced rearing methods and

SHORT TERM NEEDS (UP TO DEC 2016)		
Region	South Central	Mekong
New breeds	29.4	27.1
Low interest credit	5.9	24.3
Fresh water	17.6	22.9
Restocking	5.9	8.6
Inputs / feed	17.6	10.0
Improved rearing methods	5.9	4.3
Gear	11.8	2.9
Support for hatcheries	5.9	

Table 23: Share of short-term needs for fisheries/aquaculture sector based on FGDs (%), by region

provide new breeds, together with improved access to markets. Overall, different aspects related to credit access and restocking as well as provision of gear and inputs were also mentioned, see **Table 24**.

MEDIUM / LONG TERM NEEDS (POST DEC. 2016)		
Region	South Central	Mekong
Prevent salt water intrusion	25.0	21.4
Improved rearing methods	25.0	17.9
New breeds	8.3	14.3
Market access		10.7
Fresh water	16.7	7.1
Low interest credit and related issues		17.8
Inputs / feed / gear	8.3	10.8
Environmental aspects	8.3	
Restocking	8.3	

Table 24: Share of medium/long-term needs for fisheries/aquaculture based on FGDs (%), by region

9. Impact on livelihoods, income sources and casual labour

9.1. Impact on livelihoods

According to the result of the FGDs, crop production was the most important livelihood activity across all regions, followed by livestock production in Central Highlands and South Central regions. Fishery / aquaculture activity has been mainly reported in Mekong and to a lower extent in South Central region as indicated in Figure 17.

9.2. Impact on income

Overall the main sources of income in the assessed provinces are crop production, livestock rearing and agricultural labour. Especially in the Mekong Delta and

to a lesser extent in the South Central region aquaculture, mainly shrimp production, is also considered an important source of income. Crop production consists of annual and perennial crop cultivation. Livestock production is mainly focussed on poultry and pigs as seen in the previous section of this report.

Taking into consideration the reduction in crop production levels as well as losses related to livestock and aquaculture activities, the amount of household income has drastically reduced in the assessed regions. In the Mekong Delta and South Central, a higher share of households reported reductions of more than 75 percent were recorded with 35 and 38 percent, respectively. This share was reported by 10 percent of households in the Central Highlands. On the other hand, approximately 12 percent of Mekong Delta households reported not having income losses, whereas this proportion was 7 percent in the South Central and Central Highlands, see detailed information in Figure 19.

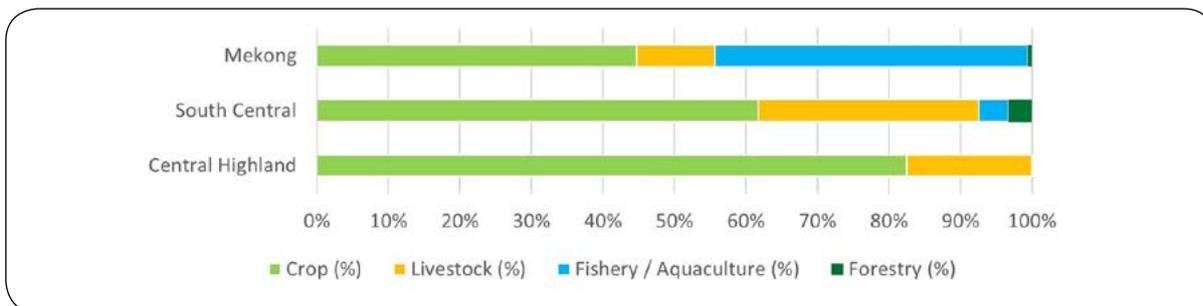


Figure 17: Main livelihood activities recorded in communities based on FGDs, by region

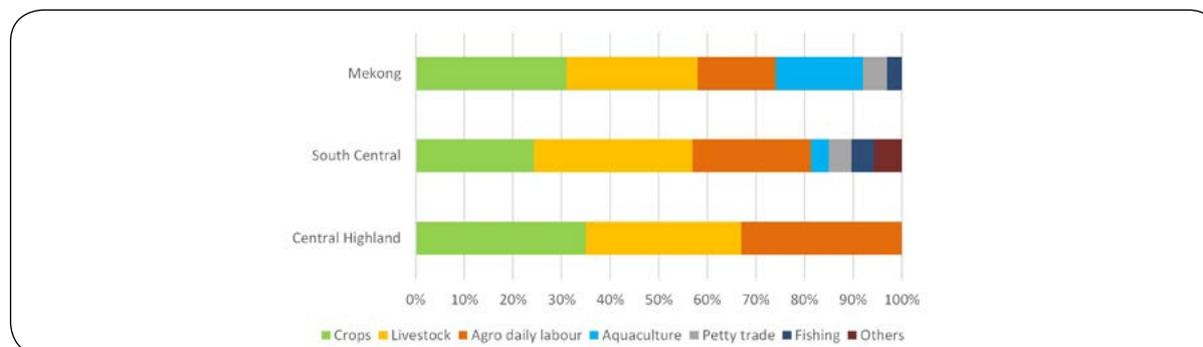


Figure 18: Main sources of income reported by communities based on FGDs, by region

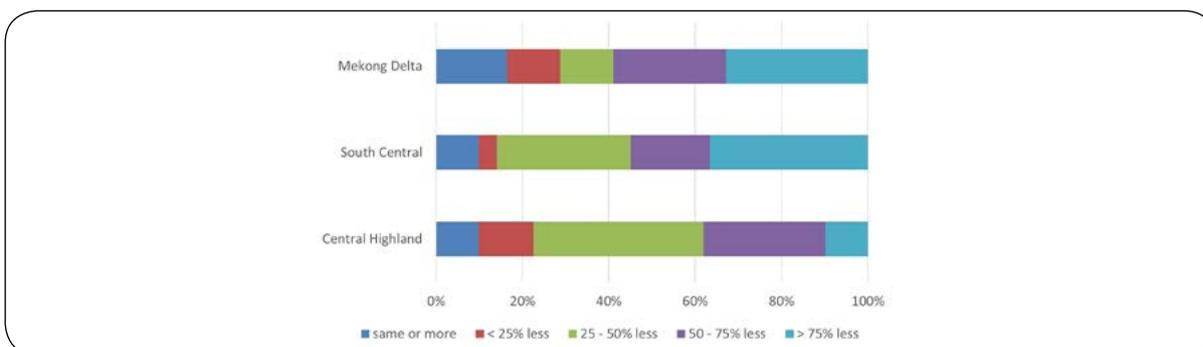


Figure 19: Changes in income based on HH survey, by region

This loss of income, coupled with diminished demand for agricultural labour due to the reduced amount of cultivated land, is already having severe implications on the livelihoods of affected populations resulting in reduced food availability and incomes at household level. The decreased availability of cash will also result in lessened

Region	Central Highlands		South Central		Mekong	
	Men	Women	Men	Women	Men	Women
Sowing / Transplanting	52.8	47.2	51.3	48.7	71.3	28.7
Weeding	41.1	58.9	39.4	60.6	32.5	67.5
Harvesting	51.7	48.3	51.8	48.2	63.1	36.9
Pesticide application	92.1	7.9	83.6	16.4	94.2	5.8
Earthwork	77.5	22.5	80.7	19.3	100	0
Fertilizer application	69.4	30.6	80	20	82	18

Table 25: Engagement of men and women in casual labour activities based on female FGDs, by region

household purchasing power, especially for food and agricultural/animal inputs (i.e. seeds, fertilizers, feed).

As most farmers in the assessed regions will need to purchase inputs to start their upcoming agricultural activities for the monsoon season as well as restore and continue animal production, this lack of cash will be a serious impediment. There is strong evidence that households short of cash are already relying on borrowed money to cover basic needs or other expenditure, increasing the proportion of households in debt.

9.3. Impact on casual labour

As reported during the FGDs, agricultural casual labour represents an important source of income for rural men

Average casual labour duration (months)			
Region	Central Highlands	South Central	Mekong
Sowing and Transplanting	0.8	2.1	0.7
Weeding	1.5	2.4	1.5
Harvesting	1.4	2.2	1.2
Pesticide application	0.6	1.8	0.8
Earth work	0.4	2.0	0.9
Fertilizer application	0.6	2.5	0.9

Table 26: Average duration of wage activities availability over a year based on FGDs, by region

Average remuneration for casual labour (VND/day) (female FGD)			
Region	Central Highlands	South Central	Mekong
Sowing and Transplanting	125,000	125,375	122,813
Weeding	125,000	133,125	105,625
Harvesting	128,056	133,750	150,000
Pesticide application	193,333	224,545	165,833
Earth work	165,000	128,571	157,143
Fertilizer application	170,000	160,000	151,000

Table 27: Wage compensation for men and women based on results of female FGDs, by region

and women in assessed areas. Ethnic minority groups equally largely rely on casual labour for income.

Separate discussions with men and women reveal they engage in different types of casual labour. Men focus on agriculture labour, especially pesticide and fertilizer application as well as earthwork such as maintenance of irrigation channels. In contrast, women are usually more involved in weeding, harvesting, sowing and transplanting.

Weeding and harvesting, followed by sowing and transplanting, were reported to be activities people engaged in for longer periods of time across all regions, as indicated in Table 26.

In terms of remuneration, it was generally observed that women received lower daily wages or compensation compared to men. Only pesticide application, in the Central Highlands and South Central regions, was reported to be better paid for female respondents than males, see Table 27.



Picture 7: Seasonal casual labourers involved in land preparation in Central Highlands

10. Impact on markets

10.1. Impact on market access and demand

Generally, the number of people visiting markets since the beginning of the drought (Oct.-Nov. 2015) was reported to have decreased across all assessed regions, as indicated in Table 28. Only in the South Central region, did some interviewed vendors report a normal number of people at markets. The largest decrease in customers was witnessed by sellers of agricultural inputs and livestock feed in the Central Highlands and food commodities in the Mekong Delta region.

Region	For food commodities	For agriculture inputs	For animal feed
Central Highlands	83%	100%	100%
South Central	67%	100%	67%
Mekong	100%	100%	83%

Table 28: Percentage of vendors reporting a decrease in customers visiting district markets, by region

In fact, the prolonged drought and lack of water made it impossible for many people to start/continue the agricultural, livestock and aquaculture activities, thus generating income. This has resulted in the lack of cash to buy food commodities and other agricultural products from the market. Despite this, some food vendors in the Central Highlands confirmed that many people were continuing to buy food on credit.

The decrease in demand for food commodities, especially rice, was also attributed to food assistance provided by Government and other organizations such as the Red Cross Society in areas affected by drought. Indeed, this was only observed in specific areas that had received this type of assistance.

10.2. Impact on market supply

The number of wholesalers and retailers selling food commodities in markets had decreased in most visited districts, especially in the Mekong Delta region. In the South Central region, however, some vendors reported the number of retailers had increased as the majority of villagers had depleted all food stocks and started purchasing from markets. On the other hand, the number of vendors selling agricultural inputs and animal feed had not changed since most owned permanent shops in the market place.

Food commodities most frequently sold across all visited regions were rice and vegetables, with the exception of maize in the South Central region, see details in Table 29. The selling of pulses was also common in the Central

Crops	Central Highlands	South Central	Mekong
Rice	100%	33%	83%
Maize	17%	50%	0%
Pulses	100%	33%	17%
Vegetable	83%	67%	100%
Tubers	17%	33%	0%
Fruits	50%	67%	83%
Meat / Eggs	50%	33%	100%
Fish	0%	67%	100%

Table 29: Percentage of vendors reporting most important sold food commodities, by region

Highlands compared to other regions, whereas fruits, meat and eggs were reportedly sold in most markets visited. The selling of fish was mainly reported in the Mekong Delta and South Central regions where fisheries/aquaculture is more developed than the Central Highlands.

The market survey findings show the drought did not have any implications for food availability at market level. According to interviewed vendors, traders can easily move food commodities across the country and when a particular district or region depletes food stocks, commodities will start being sourced from other regions and made readily available for selling in markets across the country.

In fact, it was observed that rice, together with pulses, fruits and fish are part of those commodities usually traded from food surplus to food deficit areas. Vegetables, maize, tubers, meat and eggs are usually produced in the same region where they are sold. Certainly, there are some exceptions whereby these food commodities need to be brought in from other regions, however, this is not always the case.

On the other hand, agricultural inputs and animal feed were also available across all markets visited. Vendors reported that since the beginning of the drought, the selling of agricultural inputs had decreased due to the infeasibility of continuing agricultural practices and lack of cash. Nonetheless, in normal circumstances it was mentioned that rice, maize, pulses and vegetables were the most sold type of seeds, as indicated in Table 30.

Region	Rice	Maize	Veg	Pulses	Fruit
Central Highlands	33%	100%	67%	83%	33%
Southern Region	83%	67%	67%	50%	17%
Mekong	83%	0%	67%	0%	0%

Table 30: Percentage of vendors reporting most important seed varieties sold, by region

Region	NPK	Urea	Kalium	Phosphate	DAP	Organic
Central Highlands	100%	50%	100%	33%	17%	17%
South Central	100%	100%	100%	33%	67%	17%
Mekong	50%	100%	50%	50%	83%	67%

Table 31: Percentage of vendors reporting most important fertilizers sold, by region

Table 31 shows that NPK, urea and potassium-based fertilizers were reported to be the most sold by vendors in normal circumstances.

Regarding animal feed, vendors also mentioned a reduction in sales of these products since the beginning of the drought. The main reason was again the reduced availability of cash and the high mortality of animals and fish due to the drought. Nonetheless, respondents were able to describe the main feed sold in normal circumstances. Overall poultry feed, especially for chickens, was the most sold, followed by pig and cattle/goat feed. Fish and shrimp feed was mainly sold in the Mekong, as indicated in Table 32.

Region	Cattle / Goats	Pigs	Poultry	Fishes	Shrimps
Central Highlands	33%	67%	83%	0%	0%
South Central	50%	17%	83%	0%	0%
Mekong	17%	33%	83%	33%	33%

Table 32: Percentage of vendors reporting most important animal feed sold, by region

10.3. Impact on market prices

While small price increases are normal during March/April for most food commodities, increases in prices were reported across all regions assessed, as indicated in Table 33. The increases in food commodity prices were between 5-10 percent at most if any, compared to pre-drought levels.

Region	Increase	Decrease	No change
Central Highlands	100%	0%	0%
Southern Region	83%	0%	50%
Mekong	100%	0%	33%

Table 33: Percentage of vendors reporting food commodities price increases, by region

According to interviewed vendors, reduced agricultural production caused by the drought led to increased trade of food commodities from different parts of the country, resulting in higher transportation costs and prices of food commodities.

On the other hand, prices of agricultural inputs and animal feed were reported to have decreased or remained the same in the majority of the markets visited, see details in

Table 34.

Region	Increase	Decrease	No change
Central Highlands	0%	33%	50%
Southern Region	33%	67%	50%
Mekong	33%	67%	67%

Table 34: Percentage of vendors reporting agriculture inputs and animal feed price increases, by region

The decreases were mainly due to supply companies having reduced prices to sell products as well as in accordance with guidelines/suggestions given by provincial governments.

In the coming weeks and especially during June and July, most interviewed vendors expected prices of food commodities to increase or remain the same, as indicated in

Table 35.

Region	Increase	Decrease	No change
Central Highlands	100%	0%	0%
South Central	67%	0%	67%
Mekong	33%	67%	67%

Table 35: Proportion of interviewed vendors reporting food price increases in near future

Only in the Mekong Delta region did vendors report food commodity price decreases. In fact, they confirmed that during the monsoon season, there was usually a greater availability of food commodities in markets, which translated into price decreases.

10.4. Expected market evolution

In general, interviewed vendors did not expect many changes in terms of availability of market food commodities in upcoming months. Most believed there would be few changes and amounts of food commodities would either remain the same or increase,



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Picture 8: Typical market place in Mekong Delta

especially when considering the upcoming monsoon season would enable most farmers to start agricultural production and harvesting, see **Table 36**.

Only in the South Central and to a lesser extent the Mekong Delta region did some vendors indicate a possible reduction in availability of market food commodities. In fact, some said negative repercussions from the drought would continue into the upcoming monsoon season.

Nonetheless, most vendors across all assessed regions confirmed they could meet increased demand for food, however it was difficult to predict the increase. Only a few vendors expressed difficulties to access credit if demand were to increase significantly.

Region	No change	Decrease	Increase
Central Highlands	50%	17%	33%
South Central	50%	50%	50%
Mekong	33%	33%	67%

Table 36: Proportion of interviewed vendors reporting upcoming food commodities availability

11. Impact on household food security and coping mechanisms

Households in worst affected areas were visited during the assessment to understand their food security challenges. Agriculture and aquaculture are the two pillars of employment and income in surveyed communities. Among households interviewed, 61 percent were engaged in crop farming before the drought. However, a shift from crop-based agriculture to casual labour as the main income source was observed among 10 percent of households at the time of the survey.

Among surveyed households who regularly practised crop farming, 44 percent did not cultivate any land by May 2016 and 27 percent only cultivated less than one-quarter of the area, while the rest did the same as in 2015. This has directly resulted in yield reductions among 92 percent of surveyed households.

Likewise, the extreme climatic change has afflicted the aquaculture sector causing alarming damage. Among households involved in aquatic rearing or cultivation, 50 percent had their ponds seriously affected, while 33 percent suffered from a complete wipeout in production. In total, 98 percent of study households failed to maintain the same level of production from the past year.

Consequently, lack of harvests from self-production has destabilized household income and deepened their reliance on markets. By the time of this survey, three-in-five households relied on market purchases as the dominant source of rice consumed. Now that the drought has taken its toll on almost all forms of economic activity, an overwhelming majority (88 percent) of surveyed households had reduced income, including 50 percent whose earnings downscaled to less than half during the corresponding period last year. These widespread economic losses have directly translated into challenges for households to maintain balanced and sufficient diets.

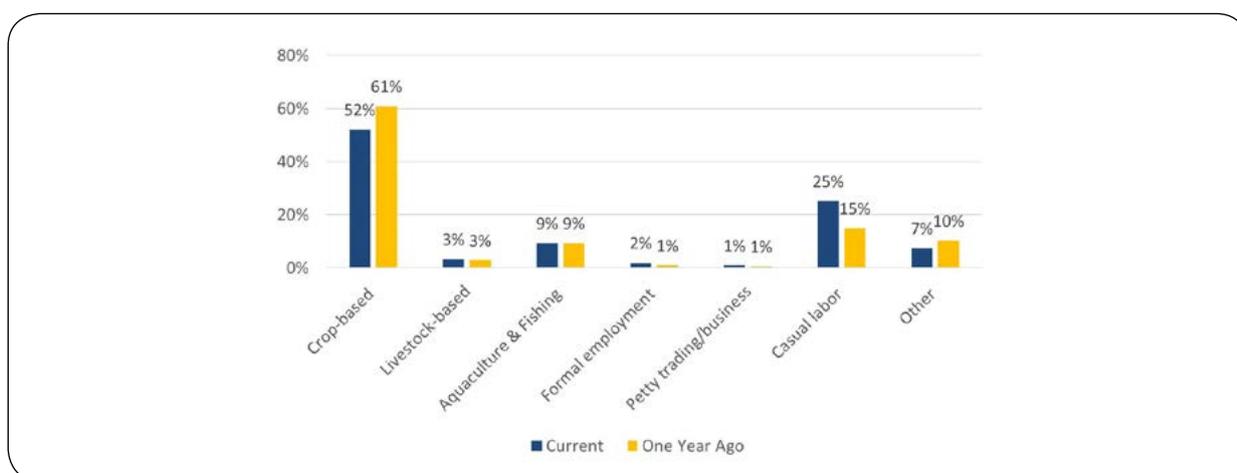


Figure 20: Percentage of main income sources among surveyed households by time

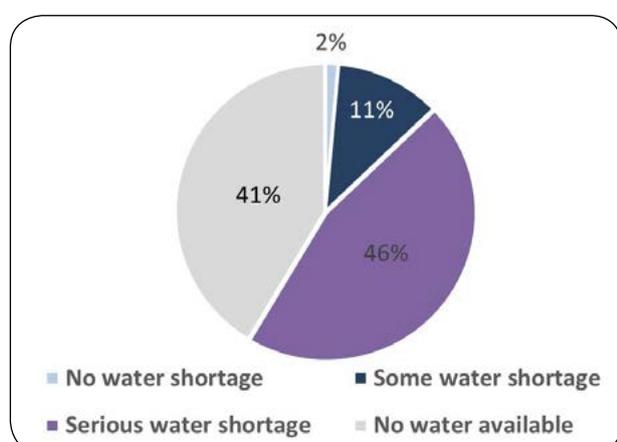


Figure 21: Share of interviewed crop-based households by water source status of irrigation systems

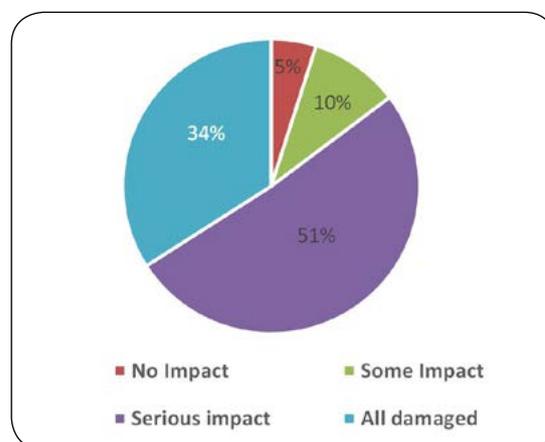


Figure 22: Share of interviewed households in aquaculture by impact of drought/saltwater intrusion

11.1 Food consumption and food access at household level

Drought and saltwater intrusion have stressed food access at household level due to reduced purchasing power, despite satisfactory food availability at markets.

The vast majority (87 percent) of households reported undisturbed rice supply in nearby markets and 88 percent consumed rice at least once in the previous day when interviewed. The average price for 1 kg of rice remained almost unchanged compared to six months ago at approximately VND 11,000 according to households, indicating food market stability.

Rice (88 percent), vegetables (86 percent), oil (74 percent) and animal proteins (73 percent) are the most commonly consumed food groups among surveyed households. Meanwhile, one-in-four households did not have any protein intake from animal meat, pulses or milk, which may indicate a potential deficiency in energy intake.

The prevalent adoption of food-based coping strategies among surveyed households illustrates their vulnerability and struggles. A noticeably high proportion (73 percent) of households chose to limit

portions when eating. More than half (58 percent) of households have borrowed food or money from friends or relatives. The common use of credit and cash loans was also observed during the survey.

Seventy-three percent of households reported food shortages to differing extents, including 40 percent with “moderate” shortages and 6 percent with “extreme” shortages. In parallel, 58 percent of respondent households did not have any food stocks at home, reflecting their lack of resilience to future immediate-term shocks.

These findings confirm the difficulties surveyed households have been exposed to. If El Niño effects linger for an extended period, compromised farming activities and lack of income may force more households to resort to severe livelihood coping strategies and adversely affect the stability of food security. The current level of household food access could deteriorate at a faster rate if the drought continues to drain households’ limited financial and food resources and hold back agriculture activities for the next crop season.

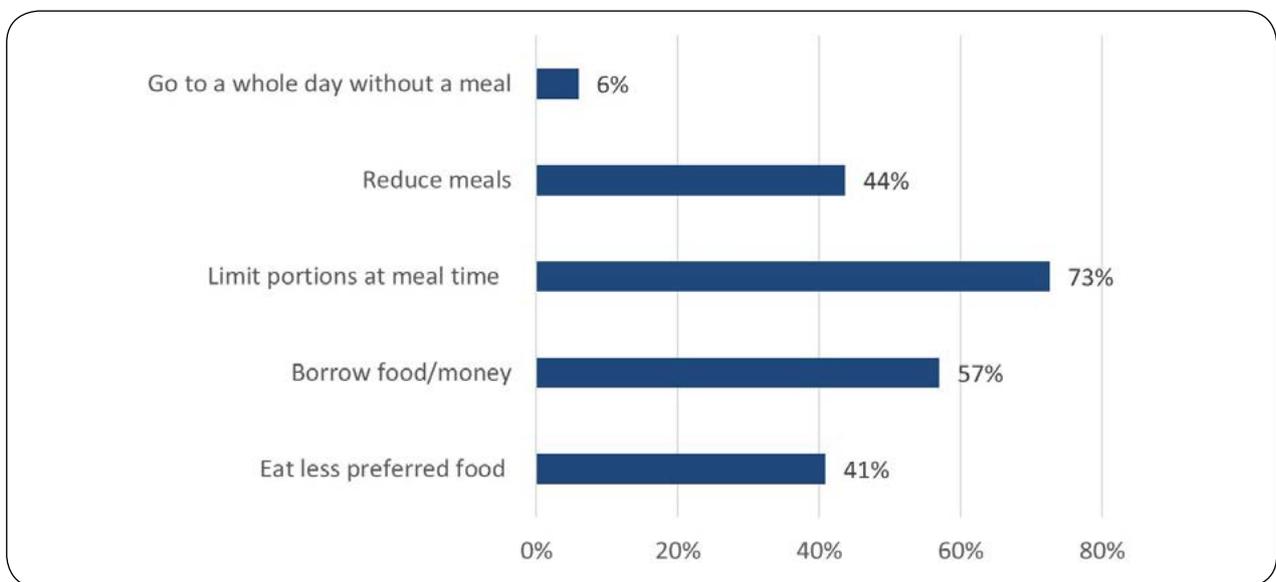


Figure 23: Prevalence of food-based coping strategy adoption among surveyed households

11.2. Livelihood-based coping mechanisms at community level

In addition, the adoption of livelihood-based coping strategies reported at community level reflects households' strained economic capacity, which has compromised their food access and daily consumption.

In visited communities, more than 70 percent of households had to sell assets to cover basic needs. Highest prevalence was reported in the South Central region, followed by the Mekong Delta and least in the Central Highlands, see actual shares in Figure 24.

Animals, food stocks and other assets (i.e. land, jewellery and to a much lesser extent agriculture tools, inputs and household items) were reported to be the most common assets exchanged for cash as indicated in Figure 25. The high adoption of livelihood-based coping strategies, including selling food stocks and other assets, further illustrates the stresses experienced by communities to meet diverse household needs and prepare for the next crop season.

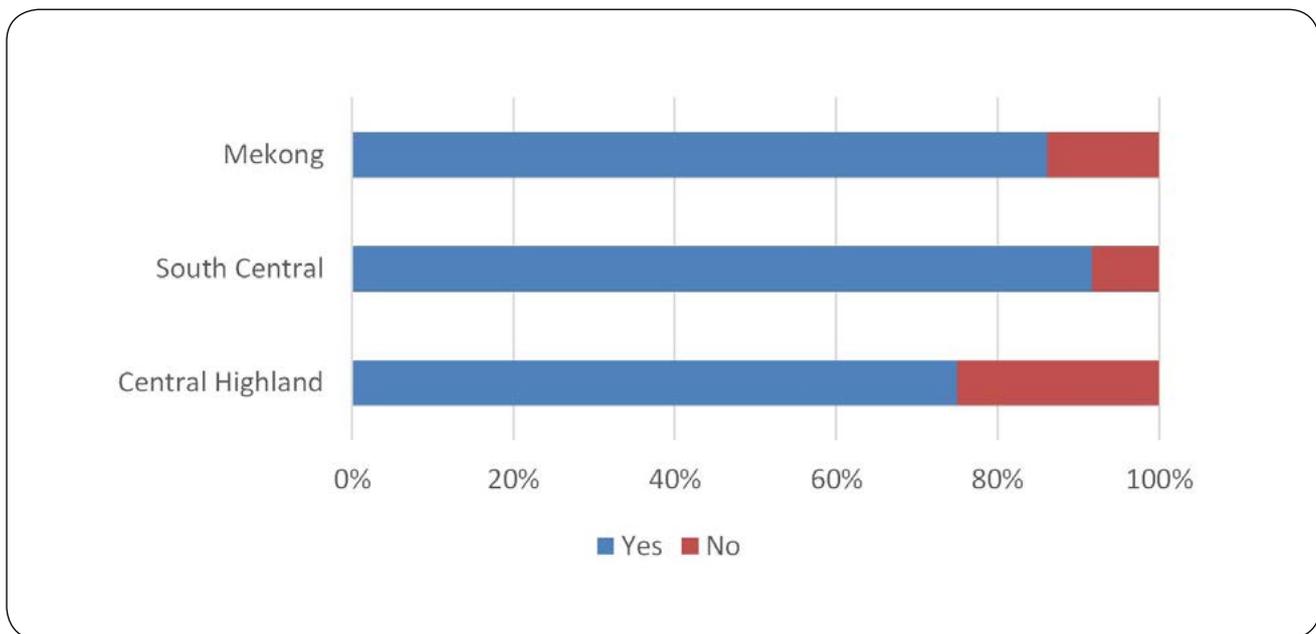


Figure 24: Share of households selling assets as a coping mechanism based on FGDs, by region

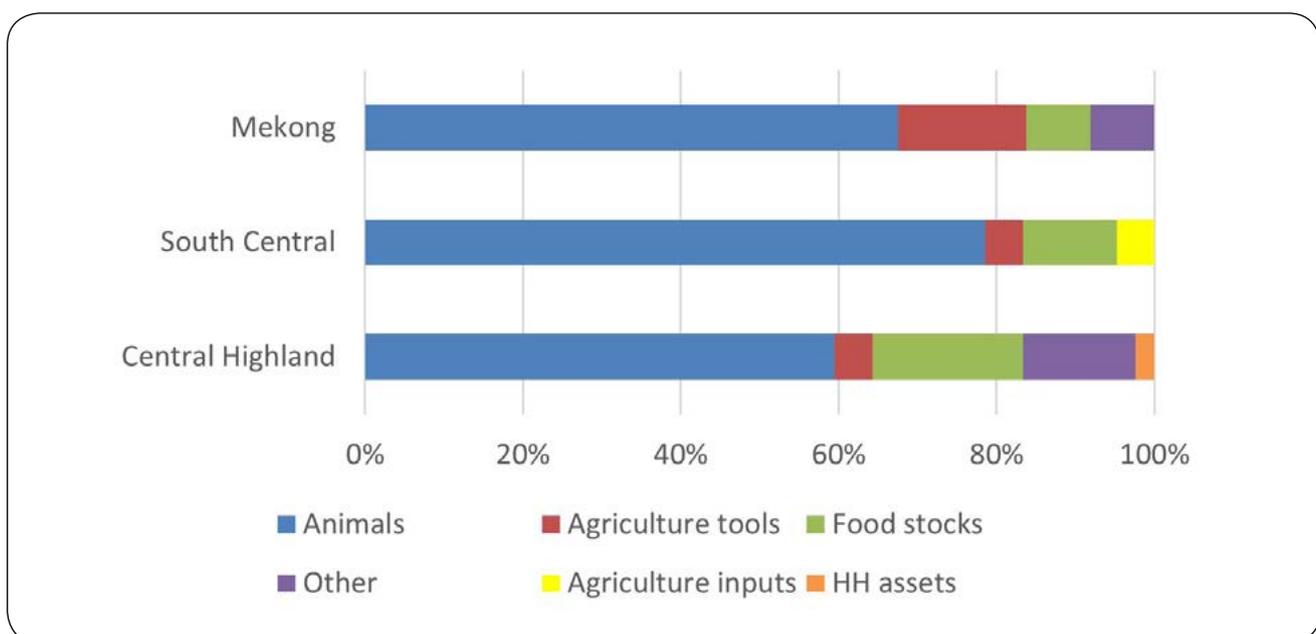


Figure 25: Type of assets sold as a coping mechanism based on FGDs, by region

12. Assistance received

12.1. Expressed during Focus Group Discussions

Almost all communities reported some form of assistance from different sources, including Government, NGOs and the Red Cross. Provision of rice and other food items were mainly reported in the Central Highlands and South Central regions together with water, especially in the Mekong Delta. Access to low interest credit as well as cash support were also common throughout the three regions, providing additional options to meet households' financial needs. To support the livestock sector, fodder and to a less extent restocking was mainly done in South Central, whereas to restore crop production, provision of seed and agricultural inputs were the main form of assistance, especially in the Central Highlands. Table 37 provides the actual shares of communities reporting different types of assistance.

Region	Central Highlands	South Central	Mekong
Rice / foodstuff	37.6	44.7	17.3
Water supply / tank	0.0	21.5	41.8
Low interest credits / Cash	34.4	9.2	30.9
Fodder / restocking	0.0	13.9	1.8
Others	0.0	4.6	3.6
Drill well	6.3	3.1	3.6
Crop seeds / agricultural inputs	21.9	3.0	1.8

Table 37: Proportion of FGD respondents reporting on assistance received from various actors, by region

The Government was the main provider of rice and water to ensure coverage of basic population needs. Assistance from charity groups was mainly found in the South Central and Mekong Delta regions, but absent in the Central Highlands. NGO support was equally found throughout the three regions, see more details in Table 38.

Region	Central Highlands	South Central	Mekong
Government	90.3	56.6	46.3
Charity group	0.0	34.2	11.1
NGO	4.8	5.3	3.7
Red cross	3.2	2.6	9.3
Individuals	0.0	1.3	24.1
Private Company	1.6	0.0	5.6

Table 38: Proportion of FGD respondents reporting on sources of assistance received, by region

12.2. Expressed at household level

Of all households interviewed, 40 percent received assistance from at least one source to compensate for losses caused by the ongoing drought. Government (74 percent) and charity groups (50 percent) were primary assistance deliverers.

Households' capacity to cope with the drought was largely dependent on their capital ownership and financial resources, which varied within a community. Among households not reached by external aid, small-scale and agriculture-based households dominated by poverty when the drought hit were found to be most vulnerable. With limited human capital and technical resources, these poorer households have mortgaged land or borrowed cash to purchase agricultural inputs. Failure in harvesting crops and generating income in the past two crop seasons (October 2015 to June 2016) have exposed them to an extreme scenario with limited coping capacity.

Almost all households (98 percent) expressed needs for additional recovery assistance. The expressed needs reflected their priority to strengthen purchasing capacity, either directly by receiving cash or indirectly by restoring infrastructure for income generating activities. Cash was the predominant choice among surveyed households (44 percent), followed by crop seeds (16 percent), irrigation scheme rehabilitation (13 percent) and in-kind food aid (13 percent).

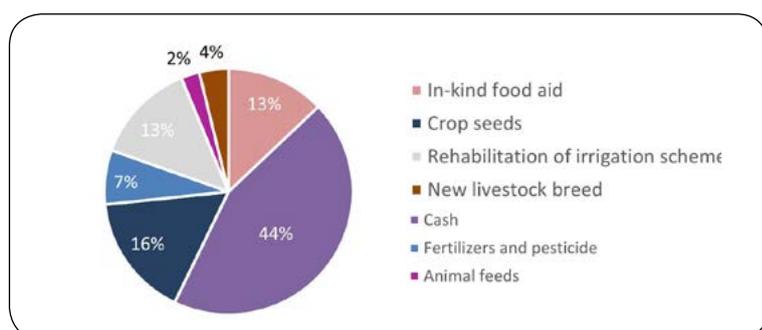


Figure 26: Percentage of interviewed households by needs for assistance

12.3. Support provided by Community-Based Organizations

The support activities provided by different Community-Based Organizations (CBOs) differ from province and organization. The following is a summary of the main activities implemented by CBOs based on the KIIs. Overall, little collaboration exists between CBOs and international organizations (i.e. UN, INGOs), except in the implementation of disaster response interventions. On the other hand, CBOs are acting as implementing partners of internationally-funded projects, quite often reaching a relatively small number of affected households in a small area of intervention.

There is increased collaboration between CBOs and national enterprises in response to the drought, where the latter are donating funds or in-kind support such food items, water containers, construction materials, fuel vouchers, agricultural inputs and animal feed. In addition, local authorities are coordinating with CBOs and other concerned stakeholders through drought response committees set up at provincial and district levels and led by DARDs.

12.4. Support provided by Farmer's Union

The Farmer's Union together with DARDs, mainly in the South Central and Central Highlands, have developed guidelines to address the drought/saltwater intrusion. These two stakeholders are disseminating guidelines together with other interested parties (district leaders, people's committees, people's councils) and are monitoring the implementation of guidance notes. This is done through information sharing and training sessions, provision of technical advice or supply of agriculture inputs, but also by facilitating the provision of low interest rate credit to farmers. The Farmer's Union also plays an important role in supporting the implementation of the Government's 2016 drought prevention plan, which also promotes medium and longer-term solutions to drought effects. These include tree planting, water shade management, disaster risk reduction and climate change adaptation. The Farmer's Union identifies and approves irrigation water recipients, in collaboration with DARDs and Water Departments. They also advocate, at agro enterprise level, the provision of free or cheaper agro inputs (mainly fertilizers) as well animal feed to support affected farmers.

In the Mekong Delta, the Farmer's Union conducted awareness campaigns to assist farmers affected by the drought and salinity intrusion situation. In this regard, Farmer's Union representatives attended different

meetings with Government authorities to propose recommendations related to improved agricultural production. However, the Farmer's Union community support was limited due to lack of resources.

12.5. Support provided by Women's Union

The Women's Union conducts campaigns and builds awareness of household water saving practices in crop diversification and highlighting water-demanding crops. This stakeholder is also providing drinking water or water containers/tanks to address specific needs for (pregnant/lactating) women and small children. The Women's Union encourages communities to share water sources and dredge small wells and monitors the development of the situation at community level. This is done by writing guidance and informing other stakeholders on the need for specific actions.

12.6. Support provided by Fatherland Front

The main focus of the Fatherland Front is to build awareness among the affected population on how to address drought effects, emphasizing technical solutions in line with provincial DARD recommendations and monitoring their implementation. The Fatherland Front promotes cooperation between households, through exchanges of experiences or labour and promotes production activities in groups or associations. In addition, the Fatherland Front is also raising funds to support the most vulnerable households to cover basic needs (i.e. food and water) as well as enhance education and access to health services. The Fatherland Front plays an important role to build up the Relief Aid Fund under Decree 64/2008/ND-CP, in support of most vulnerable/poor households.

12.7 Support provided by Red Cross

The main focus of the Red Cross is the provision of drinking water, water tanks or containers as well as drilling wells and implementing hygiene awareness campaigns. In addition, it is also involved in the distribution of agriculture inputs or other household items, along with food items to help the most vulnerable households affected by drought. In general, the relief items are either supplied by private enterprises, individuals for distribution or procured from its own resources or donations. In some cases, the Red Cross is also providing support and training on new activities for income diversification.

Mrs and Mr. Chamale Cup - Farmers

Mrs and Mr. Chamale Cup live in Da Mai Dung village - Bac Ai district - Ninh Thuan province (Southern Central Region). Their household is composed by 5 members: themselves, the husband's father and 3 children. Their eldest son is at the minority boarding school and comes at home only during the holidays.

According to them, in a normal year during the month of May, they are very busy with land preparation in order to plant once the first rains arrive. Nonetheless, this year, due to the prolonged drought and delay on-set of rains, they have not been able to start any agriculture activities.

Normally they cultivate a smaller irrigated land in the valley with rice and a larger portion in the mountains with maize, red beans, cassava and other food crops, in addition to some fruit and cashew nut trees. To get additional income, the husband and sometime the wife also engage in agriculture casual labour.

Before the drought they had 2 cows, 15 goats and 22 chicken, however due to the severe heat and unavailability of feed and water resources, since mid-last year they lost all cows, 7 goats and 10 chickens. Additionally, over the last two seasons, they have lost most of their harvest and they are mainly relaying on the collection of cow dung which is sold to generate more income, aside to some support they receive from the government and other charity groups.

At the beginning of the winter / spring season (Oct. – Nov. 2015), they borrowed money to buy again 2 cows. This will allow them to get some off springs during the year as well as simplifying all work requiring transport. Even when the credit has a low interest rate, they are worried that they will not be able to pay it back if the drought continuous. The only way of ending their debt is to sell part of their next harvest and one of the off-spring. However, if they will not be able to pay back, they will lose half of their irrigated land, as it was given as a mortgage for the received credit. Most likely the husband has to migrate to town in order to look for construction work and avoid the situation worsening.



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13. Recovery and rehabilitation interventions

The following proposed interventions are based on the assessment findings and results of various debriefing meetings held at the end of the assessment fieldwork with representatives of MARD and DARD at central and provincial levels.

The requests of the affected population were also considered as much as possible as part of this report section when in line with impacts caused by the drought and saltwater intrusion. The implementation of these interventions will be crucial to resume the livelihoods of people affected by the “El Niño” event.



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Picture 9: Not functional irrigation channels in Central Highlands

13.1. Short-term interventions (until December 2016)

Short-term interventions aim to quickly restore the affected population’s capacities to produce food and income. This will avoid a further deterioration in people’s living situations as well as decrease the indebtedness observed in assessed areas together with the depletion of additional productive assets, especially animals.

13.1.1. Crops

- Provide crops, pulses and vegetable seed packages, especially fast growing and improved varieties, including drought-tolerant varieties or less water-demanding crop species. This should be done in addition to tools and fertilizers to support the reactivation and maintenance of agricultural production.
- Monitor the incidence of pests and disease proliferation and provide required support in case

of a major outbreak through adequate service provider interventions.

- Distribute more resistant coffee and pepper varieties through improved seedlings as replacements for plantations destroyed by the drought.

13.1.2. Livestock

- Restock poultry (vaccinated), especially chickens and ducks, together with provision of additional feed, vaccines and treatments (i.e. disinfectants) to protect animals, mainly to women-headed households.
- Provide animal feed to sustain larger animal production (cattle, buffalos and pigs) and avoid further destocking.
- Distribute fodder and drought-tolerant seeds for fodder production.

13.1.3. Aquaculture / Fisheries

- Provide shrimp/fish feed and other required inputs (i.e. liming material) to small-scale aquaculture farming households.
- Restock fish and/or shrimp for the most vulnerable households that have no financial means to access them from the market or face high rates of indebtedness.

13.1.4. Food Security

- Deliver targeted food assistance to the most affected households through in-kind, voucher or cash mechanisms, especially for households which have not benefitted from Government assistance.
- Identify and map vulnerable livelihoods at the frontline of climate-related food security threats as a basis to develop the food security component of the national adaptation plan.

13.1.5. Livelihoods and other related areas

- Establish small and simple storage facilities to preserve food and agricultural inputs against upcoming heavy rains and pests, among other treats.
- Ensure enforcement of new policies issued in support of disaster-affected populations.
- Facilitate access to formal low interest rate loans to give people readily available “cash in hand” to invest in the restart of agriculture livelihood activities.
- Construct wells, small dams or establish piped water supplies in areas prone to continuation of drought and saltwater intrusion, especially for human, irrigation and livestock consumption.

13.2. Medium and long-term interventions (post-December 2016)

Medium and long-term interventions should be designed towards the reduction of drought and saltwater intrusion impacts on the agriculture and sub-sectors. In addition, these interventions should enhance crops, livestock and fisheries/aquaculture production to guarantee full recovery of affected communities with the final goal of increasing their ability to generate food, income and strengthen resilience capacities.

13.2.1. Crops

- Construct, rehabilitate and expand irrigation infrastructure as well as improved irrigation systems to reach more beneficiaries and enhance crop production and diversity.
- Conduct trainings on crop diversification, water saving practices, pest and disease control through the Integrated Pest Management (IPM) approach, organic farming, and composting among others by taking into consideration farm field school methods and similar approaches.
- Establish cooperatives and farmers associations to increase access to markets and group loans, especially for perennial crop production such as coffee, cashews, rubber and pepper.
- Increase agricultural land ownership and access, especially among women, to achieve a surplus of production and generate more income besides food for home consumption.
- Shift crop production towards climate change adapted varieties.
- Restructure crop production sector (i.e. varieties, timing) towards climate smart agriculture.
- Conduct more in-depth studies into the effects of salinity and suitable methods to reduce negative impacts caused by this phenomenon.

13.2.2. Livestock

- Provide higher productive and more drought-tolerant improved animal breeds especially in regards to cattle, pigs and goats.
- Construct water reservoirs to support livestock production.
- Introduce beekeeping as a new activity and additional sources of income.
- Conduct trainings on livestock production including disease prevention, composting, advanced rearing practices and livestock diversification (i.e. bee production).
- Enhance animal health services, especially through Government extension offices.

13.2.3. Aquaculture / Fisheries

- Provide improved breed of fish and shrimp for aquaculture production, suitable for commercialization and adaptation of climate change.
- Establish additional hatchery facilities in rural areas to improve access to shrimp and fish fishlings as well as reduce dependency on the formal market.
- Conduct trainings on aquaculture production including disease prevention, integration of rice and fish-based farming systems and marketing.
- Develop technical guidelines for better aquaculture cultivation to ensure the quality, productivity and environment protection aspects.
- Study community-based sustainable livelihood models in the context of climate change to define/select appropriate interventions in specific locations/regions.

13.2.4. Food Security

- Develop an integrated approach to enhance food security in terms of food access and food utilization at household level.
- Develop a consolidated analysis for resilience profiling, including aspects of food security status, livelihood diversity, climate sensitivity of income sources as well as of food sources in affected provinces.

13.2.5. Livelihoods and other related areas

- Establish new processing facilities for agriculture, livestock and aquaculture sectors in remote production areas to facilitate the transformation of agricultural production, guarantee the freshness and quality of products sold and generate more job opportunities.
- Improve market access by restoring roads and improve transportation facilities.
- Improve the supply chain and added value of agriculture products to increase affected people's resilience.
- Provide farm machinery and post-harvest processing equipment to increase production and income as well as reduce losses.
- Create policies to prevent forest exploitation due to replacements with perennial crop plantations, such as coffee or pepper.
- Create community awareness on early warning and disaster risk reduction systems, management and mitigation as well as adaptation to climate change conditions.
- Establish and strengthen data information management systems for disaster preparedness and early warnings.

- Strengthen regional collaboration and institutions related to Mekong River basin management to minimize the impacts of low water levels in the Mekong during a future drought situation.
- Plant local indigenous trees to alleviate the negative effects of drought and other hazards such as floods.

13.3. Response mechanisms and interventions

A combination of response interventions/mechanisms should be employed to support the affected population and enhance its resilience capacities. These mechanisms should mainly focus on the use of in-kind support as well as cash and voucher transfers and cash/food for work.

The suggested intervention mechanisms are based on the assessment findings and particularly the results of market visits and interviews carried out with food vendors and shop-keepers. As indicated in the

market section of this report, the availability of food commodities, agricultural inputs and livestock feeds was reported across all visited districts in all three regions and underlines why cash and voucher-based interventions should be taken into consideration. Indeed, further additional market assessments are needed to verify whether these types of interventions are still suitable before implementation. On the other hand, in-kind assistance will be mainly recommended for difficult to reach areas (i.e. road conditions, distances from urban areas) or where market accessibility is an issue.

In addition, to rapidly respond to the short-term needs identified by affected populations, it is very important to prioritize the response interventions as indicated in Table 39.

PRIORITIZATION OF SHORT-TERM INTERVENTIONS (UP TO DEC. 2016)				
Response interventions	Central Highlands	South Central	Mekong Delta	Intervention mechanisms
Provision of crop and vegetables seed together with tools and fertilizers	High	Medium	Low	Cash & voucher / In-kind
Distribution of improved coffee and pepper varieties (seedlings)	High	Low	N/A	Cash & voucher / In-kind
Restock of vaccinated poultry, especially chickens and ducks, together with provision of additional animal feed	Medium	Medium	Low	Cash & voucher / In-kind
Provide shrimp / fish feed and other required inputs (i.e. liming material) together with restocking of fish and shrimp	Low	Medium	High	Cash & voucher / In-kind
Facilitate access to formal low interest rate loans to restore the agriculture sector and sub-sectors	High	Medium	Medium	Direct support
Construct wells, small dams or establishment of piped water supply	High	High	Low	Cash – food for work
Provide food assistance to the most affected household	High	Medium	Low	Cash & voucher / In-kind

Table 39: Required immediate response interventions⁴²

⁴² Prioritization is based on the findings of the assessment. Further discussions with the Government and additional implementing partners should occur before implementing the suggested interventions. Targeting of the most-affected populations should also be considered as part of these discussions.

14. Suggested targeting criteria

In order to assist the most affected and vulnerable populations, it is important to follow agreed targeting criteria which should prioritize response interventions accordingly.⁴³

The following discussion provides simple and general recommendations for further discussion with the Vietnamese Government and other implementing actors in the country, before implementation of any form of assistance.

First of all, it is important to cover all geographical areas hit by drought and saltwater intrusion by:

- Selecting the most affected provinces, based on national damage and loss data, as well as rapid assessment reports and/or approved emergency response proposals and within the same provinces select the most affected districts and communes, utilizing provincial damage and loss data from the Provincial Committee for Natural Disaster Prevention and Control (CNDPC).
- Comparing this information with vulnerability indicators and other factors utilizing socio-economic baseline data, obtained from the General Statistics Office under the provincial Department for Planning and Investment (e.g. provincial statistical yearbook) or other sources.

At household level, it will be important that assisted families meet the following criteria::

- Worst affected by drought or saltwater intrusion, experienced the greatest losses in crop, livestock or aquaculture production or among those who lost most of their animals.
- Poor and near-poor households based on income or multi-dimensional poverty indicators. If all poor households in the targeted location are already covered by other assistance, it might be possible to select near poor households.

Other criteria to be considered for household selection:

- Female-headed.
- Presence of pregnant and/or lactating women and/or children aged under 5 years.
- Presence of people living with disabilities, the chronically ill and elderly.
- Ethnic minority households.
- Located in remote locations unable to access humanitarian support.

With regard to agricultural livelihoods and food security, additional sectorial criteria must be taken into account:

- Self-subsistence farming households (with at least some arable land).
- Households having marginal purchasing power for food.
- Households whose main food supply is severely damaged.
- Households with substantial losses in income due to damaged livelihoods and agricultural productivity.

⁴³ Based on joint agreed selection criteria by the Viet Nam UN-DRMT.

15. Conclusion

Viet Nam remains in the grip of one of the worst droughts and saltwater intrusion in almost a century. As already explained by this report, natural hazards have caused severe damage and losses in the past years on the agriculture and sub-sectors.

Many communities heavily impacted on by the drought and saltwater intrusion have yet to start agricultural production due to delays to the onset of rain and/or lack of cash and agricultural inputs to start agricultural activities. With the monsoon season already started in some areas across the country, people have an urgent need to resume their agricultural production and obtain favourable yields to recover from losses experienced since the beginning of the drought.

The ability to restart and continue crop, livestock and aquaculture production will allow people to generate adequate food and income to meet basic needs and eventually generate a surplus. Selling this surplus will guarantee cash in hand to cover other primary expenses (i.e. education and health), as well as reduce the depletion of assets and increase in debt observed during the assessment.

In order to provide the required support, the national, international and local stakeholders under Government of Viet Nam leadership must work together to continue supporting the affected population and build more resilient communities. In this regard, the UN and Government of Viet Nam have endorsed the Drought Emergency Response Plan to mobilize resources to address short-term interventions.⁴⁴

Nonetheless, there is a high likelihood that events such as El Niño together with other natural hazards, generated by climate change, will continue to occur. For example, heavy rains are expected to occur during the upcoming months, leading to floods and additional negative implications on the livelihoods of the affected population. Hence, it is extremely important to provide additional short-term assistance as well as adopt more medium/long-term actions (i.e. early warning and preparedness measures). This will avoid future and additional depletion of livelihoods of Vietnamese people who mostly rely on agriculture, livestock, aquaculture and fisheries to make a living.

⁴⁴ The ERP was launched in March 2015, jointly by the MARD and UN to address immediate humanitarian needs as well as early recovery assistance and long-term solutions to the drought and saltwater intrusion.

Annex 1: List of regions, provinces, districts and villages visited

Province	District	Village	Province	District	Village
Mekong Delta Region					
Ben Tre	Binh Dai	Ca Nho	Kien Giang	An Bien	Bau Mon
		Hung Chanh			Bao Tram
		Thua Trung			Khu Pho Ba
	Giong Trom	Village 1		An Minh	Muoi Huynh
		Village 6			Ngoc Thanh
		Village 1a			Xeo Nhou B
	Ba Tri	An Phu		Vinh Thuan	Can Cu
		Ben Vua Bac			Vinh Thanh
		Giong Lon			Vinh Trinh
South Central Region					
Binh Thuan	Ham Tan	Hiep Hoa	Ninh Thuan	Bac Ai	Ma Oai
		Tan Hoa			Suoi Lo
		Village 2			Tham Du
	Ham Thuan Bac	Dan Tri		Thuan Bac	Da Mai Tren
		Dong Giang			Dong Thong
		Liem Thai			Xom Bang
	Ham Thuan Nam	Dang Thanh		Thuan Nam	Son Hai 2
		Thanh Phong			Van Lam
		Village 1			Vu Bon
Central Highlands Region					
Dak Lak	Cu M'gar	Ea Mdroh	Gia Lai	Chu Puh	Làng Kuải
		Mlang			Làng Phú Bình
		Sut Mdung			Làng Plei thoh Ga B
	Eu Sup	Different one		Chu Se	Lang Ngol 1
		Hamlet 12			Lang Ring
		Hamlet 21			Lang Vuong
	Krong Buk	A D'Rung Diet		Dak Po	Lang But
		Different one			Thon 2
		Kdro 1			Lang Jro Ktu

Annex 2: List of assessment teams members

Central Highlands	Name
FAO	Mr. Daniele Barelli
DCP	Mr. Pham Van Thi
DMC	Mr. Tran Van Thang
DLP	Mr. Do Van Hoan
translator	Ms. Dang Mai Phuong
UN Women/ Women's Union	Ms. Tran Thi Huong
Dak Lak Province staff	Mr. Nguyen Xuan Thanh
Gia Lai Province staff	Mr. Trinh Van Cuong
South Central Region	Name
FAO	Mr. Matthias Mollet
DCP	Mr. Mai The Tuan
DMC	Mr. Nguyen Thanh Nam
DLP	Mr. Mai The Hao
translator	Ms. Tran Minh Loan
Binh Thuan Province staff	Mr. Nguyen Van Sanh
Ninh Thuan Province staff	Ms. Tran Thi Minh
Mekong Delta	Name
FAO	Ms. Nguyen Thi Phuong Oanh
DCP	Ms. Tran Thi My Hanh
Dfish	Mr. Le Quang Hung
Dfish	Mr. Hoang Van Cuong
WFP	Ms. Yingci Sun
Ben Tre Women's Union	Ms. Nguyen Thi Kieu Oanh
Ben Tre Province staff	Ms. Nguyen Thi Thuy Huynh
Kien Giang Province staff	Mr. Le Quang Da
Kien Giang Women's Union	Ms. Le Thi Kieu

Annex 3: Additional provincial baseline and damage / losses information

Table 40. Share of main livelihoods, by province

Main livelihood	Ben Tre	Binh Thuan	Dak Lak	Gia Lai	Kien Giang	Ninh Thuan
Crop (%)	57.0	68.3	80.0	85.0	31.7	55.1
Livestock (%)	12.9	21.9	20.0	15.0	8.9	39.8
Fishery / Aquaculture (%)	27.3	5.0	0.0	0.0	59.4	3.3
Forestry (%)	1.1	4.8	0.0	0.0	0.0	1.8

Table 41. Average land area owned by male and female headed households by province

Average land area / Household	Ben Tre	Binh Thuan	Dak Lak	Gia Lai	Kien Giang	Ninh Thuan
Men	0.5	1.3	0.7	1.7	1.8	1.2
Women	0.5	0.9	0.6	1.4	1.8	1.1

Table 42. Share of importance of cultivated annual food crops, by province

Region	Ben Tre	Binh Thuan	Dak Lak	Gia Lai	Kien Giang	Ninh Thuan
Rice	57.8	34.5	48.3	33.6	86.6	37.1
Maize	0.3	17.4	28.1	30.8	0.0	33.6
Pulses	2.2	6.1	16.7	13.2	0.1	14.4
Oil crops	20.4	10.1	0.0	15.0	0.0	4.2
Vegetable	19.3	3.3	5.3	4.5	13.3	4.3
Cassava	0.0	28.6	1.7	29.5	0.0	6.4

Table 43. Percentage of annual food crops yield lost, by province

Region	Ben Tre	Binh Thuan	Dak Lak	Gia Lai	Kien Giang	Ninh Thuan
Rice	100.0	68.4	82.9	94.7	98.1	96.9
Maize	50.0	81.7	61.5	83.8		97.2
Pulses	66.7	43.2	64.2	93.6	100.0	91.7
Oil crops	61.5	63.5		100.0		86.7
Vegetable	81.9	30.1	38.6	30.0	69.3	75.0
Cassava		66.1	0.0	76.2		92.0

Table 44. Percentage of perennial crops yield lost, by province

Region	Ben Tre	Binh Thuan	Dak Lak	Gia Lai	Kien Giang	Ninh Thuan
Coffee			77.5	89.2		
Rubber		23.3	60.0			50.0
Coconut	58.0	51.7	85.0		73.9	30.0
Pepper			77.9	81.4		
Cashew		76.0	78.2	100.0		94.1
fruit trees	48.8	66.7	55.5		60.6	80.7
Edible latex						55.0
Other	55.0	62.5			0.0	60.0

Table 45. Percentage of yield lost on cultivated annual cash crops, by province

Region	Ben Tre	Binh Thuan	Dak Lak	Gia Lai	Kien Giang	Ninh Thuan
Cassava	58.3		61.7			88.3
Sugarcane			73	62	73	100
Maize			90			
Vegetables	65	50				85
Chilly	60			55.0		
Pulses				100.0		
Sesame						65.0
Tobacco			35			

Table 46. Percentage of population owning animals, by province

Animals	Ben Tre	Binh Thuan	Dak Lak	Gia Lai	Kien Giang	Ninh Thuan
Cow	52.7	54.2	29.7	41.7	0.9	58.1
Buffalo	0.6	8.7	10.3	1.9	0.1	2.8
Pig	18.8	21.7	41.9	19.4	47.8	47.9
Goat	25.7	14.1	6.1	10.0	0.0	32.7
Sheep	0.0	1.1	0.0	0.0	0.0	22.6
Chicken	83.9	79.2	98.3	66.7	61.7	80.3
Duck	71.4	17.9	28.9	14.2	49.3	32.6

Table 47. Percentage of animals lost, by province

Animals	Ben Tre	Binh Thuan	Dak Lak	Gia Lai	Kien Giang	Ninh Thuan
Cow	0.1	2.4	4.7	7.5	0.0	11.8
Buffalo	0.0	1.0	4.0	0.0	0.0	5.8
Pig	3.8	10.6	12.9	7.9	21.0	10.4
Goat	0.0	7.9	3.9	14.0		5.2
Sheep		0.0				13.4
Chicken	27.9	57.5	51.1	31.9	60.1	12.6
Duck	27.1	29.6	47.3	15.0	52.8	22.0

Table 48. Percentage of animals sick / malnourished, by province

Animals	Ben Tre	Binh Thuan	Dak Lak	Gia Lai	Kien Giang	Ninh Thuan
Cow	48.6	32.2	11.9	20.9	0.0	80.3
Buffalo	0.0	23.0	12.0	23.3	15.0	65.8
Pig	29.4	19.8	16.8	13.6	19.5	14.2
Goat	12.4	14.2	6.7	20.0		65.2
Sheep		0.0				76.5
Chicken	34.7	50.3	47.8	3.8	16.1	10.6
Duck	40.0	27.5	45.5	0.0	20.0	17.1

Table 49. Percentage of villages engaging in fishery / aquaculture activities, by province

Type of activity	In-land fishery	Aquaculture
Region	% of communities	% of communities
Ben Tre	83.3	83.3
Binh Thuan	16.7	22.2
Kien Giang	55.6	88.9
Ninh Thuan	22.2	11.1

Table 50. Share of men and women engaged in fishery / aquaculture activities, by province

Type of activity	In-land fishery		Aquaculture	
Region	Men	Women	Men	Women
Ben Tre	89.7	10.3	55.7	44.3
Binh Thuan	95.0	5.0	52.5	47.5
Kien Giang	89.0	11.0	73.1	26.9
Ninh Thuan	92.5	7.5	65.0	35.0

Table 51. Wages earned for agricultural activities, by province

Region	Ben Tre	Binh Thuan	Dak Lak	Gia Lai	Kien Giang	Ninh Thuan
Sowing / Transplanting	138,611	168,111	120,000	132,222	151,563	110,000
Wedding	123,611	174,444	123,333	125,556	137,308	110,588
Harvesting	161,667	183,333	133,889	133,611	174,333	108,824
Pesticide application	171,333	235,882	182,667	206,667	205,000	150,000
Earth work	156,154	160,833	177,500	150,000		120,000

Table 52. Share of total land irrigated and share affected by province

Region	Ben Tre	Binh Thuan	Dak Lak	Gia Lai	Kien Giang	Ninh Thuan
Share of irrigated land (%)	92.2	36.1	4.7	8.9	85.6	23.7
Share affected (%)	83.3	61.1	44.4	22.2	94.4	66.7

Table 53. Share of main income sources, by province

Region	Ben Tre	Binh Thuan	Dak Lak	Gia Lai	Kien Giang	Ninh Thuan
Crops	29.6	17.9	34.6	34.0	27.8	28.6
Livestock	25.9	32.1	30.8	32.1	24.1	30.4
Fishing	5.6	3.6	0.0	0.0	0.0	5.4
Aquaculture	9.3	3.6	0.0	0.0	24.1	3.6
Agro daily labour	20.4	23.2	32.7	32.1	9.3	23.2
Non-agro daily labour	5.6	8.9	1.9	1.9	5.6	0.0
Petty trade	0.0	8.9	0.0	0.0	9.3	0.0
Others	3.7	1.8	0.0	0.0	0.0	8.9

Table 54. Share of coping mechanisms, by province

Region	Ben Tre	Binh Thuan	Dak Lak	Gia Lai	Kien Giang	Ninh Thuan
Rely on less preferred food	0.0	50.0	66.7	61.1	44.4	88.9
Reduce number of meals per day	61.1	33.3	27.8	55.6	0.0	83.3
Borrowing money	94.4	100.0	100.0	77.8	77.8	61.1
Purchase food on credit	100.0	100.0	100.0	77.8	100.0	100.0
Other	11.1	33.3	0.0	0.0	22.2	5.6

Table 55. Percentage of households selling assets, by province

Region	Ben Tre	Binh Thuan	Dak Lak	Gia Lai	Kien Giang	Ninh Thuan
HH selling assets (%)	40.7	44.4	32.8	30.5	12.8	34.7

Table 56. Percentage of households reporting not having enough water, by province

Region	Ben Tre	Binh Thuan	Dak Lak	Gia Lai	Kien Giang	Ninh Thuan
Human	87.8	80.3	66.9	73.9	27.8	76.4
Animal	90.0	79.4	51.1	40.6	29.2	86.1
Irrigation	100.0	98.1	87.2	91.9	91.4	100.0

Annex 4: Checklist for provincial / district Key Informant Interview

Key Informant Interview (sub-Ministry of Agriculture and Rural Development)

Please organize a meeting with sub-MARD representatives at provincial and district level ensuring that crop, livestock and fishery officers in addition to food security and disaster management experts will be available to participate in this KII.

Name of province:

Name of district:

Name and position of respondents:

1. How many rural households have been affected by the drought and consequent impacts in your province/ district? If possible differentiate between man and women headed household and provide total proportion compared to the number of people in the province/district.

Tot. Number of HHs affected in province/district:

Tot. Number female headed households:

Tot. Number male headed households:

Proportion compared to total population (%):

2. Which have been the most affected crops /plantations and relative hectare destroyed or damaged?

List of affected crop and plantations		Ha of area damaged (yield lost 0-30 %)	Ha of area damaged (yield lost 30-70 %)	Ha of area damaged (yield lost >70 %)

3. Can you please describe the access to irrigation in this province / district?

N. HHs having access to irrigation:

Proportion of HHs in comparison to total population:

4. What are the main constrains in crop production and required interventions, especially in regards to the problem of drought and salt water intrusion?

Constrains	Solution

5. Which are the number of animal reported dead or sick due to the impact of the drought?

List of animal (species) N. dead N. sick

List of animal (species)	N. dead	N. sick

6. Which are the main constrains and interventions in animal rearing this year due to the drought?

Constrains	Solution

7. Was the aquaculture sector affected by the drought? If yes, provide the information below.

Number of fish ponds	Total size of the ponds affected (square meter)	Species of (fish, shrimps, mussels, etc.) farmed affected

8. Which have been the main implication on in-land fishery activities due to the drought and saltwater intrusion?

9. Which have been the main implication on aquaculture activities due to drought and saltwater intrusion?

10. Which are the main solutions required to restore/boost the fishery and aquaculture sectors, especially in regards to the problem of drought and salt water intrusion?

Fishery	Aquaculture

11. Can you please describe the food security situation?

N. of people currently receiving food assistance	N. of people requiring food assistance

12. Are the people living in the most affected communities engaging in negative coping mechanism in relation to food? If yes, number from the most adopted mechanism to the least.

List of coping mechanisms	Yes / No
Rely on less preferred food	
Reduce number of meal a day	
Borrowing money	
Purchase food on credit	
Other (specify)	

13. What are the main sources of income for the households in rural areas in this province? (Please tick the one that apply below).

Sources of incomex	Priorities		
	1st	2nd	3rd
Selling of cash crop			
Sale of livestock or animal products			
Fishing			
Aquaculture			
Selling of firewood / grass/ other natural resources			
Employment (government and private sector)			
Daily labour (agriculture)			
Daily labour (non-agriculture)			
Petty trade			
Migration			
Other (specify)			

14. Have market prices changed since the beginning of the drought? If yes please describe by how much in terms of percentage (increase, decrease).

MAIN Agriculture / livestock / fishery – aquaculture products	Price before drought (Oct.-Nov. 2015) in kg	Current Price (May 2016) in kg
Rice		
Cereals (specify)		
Pulses (specify)		
Vegetable (specify)		
Fruit (specify)		
Beef meat		
Goat meat		
Eggs		
Fish (specify specie)		
Other (specify)		
Paddy seeds		
Cereals seeds (specify)		
Other crop seeds (specify)		
Fertilizer (urea)		
Fertilizer (DAP)		
Other (specify)		

15. Can you please describe the market situation in your province / district in term of demand, availability of product, etc. during the drought?

Food Commodities	Agricultural inputs
Availability (high/low/same):	Availability (high/low/same):
Demand (high/low/same)	Demand (high/low/same)
Prices (high/low/same)	Availability (high/low/same):

16. Please describe any solution required to enhance market demand and supply in the province and district.

Food Commodities	Agricultural inputs
1st	1st
2nd	2nd
3rd	3rd

17. Which have been the main assistance received so far and from whom in response to the drought effects?

Type of assistance (food, agriculture input, etc.)	From	

18. What are the main solutions needed to be taken in order to avoid future negative implication on the agriculture, livestock ad fishery / aquaculture activities. (example: more drought resistant crops, varieties, increase number of goats instead of cattle, build water ponds for livestock, dams for irrigation, better control water intrusions, change fish species, etc.)

Main actions to be taken in order to reduce effects of droughts in the future			
Solution needed	Agriculture	Livestock	Fishery / aquaculture
1st			
2nd			
3rd			
4th			
5th			

Annex 5: Focus Group Discussion checklist

Agriculture, food security and livelihood needs assessment in response to the drought effects related to El Niño in Viet Nam

Focus Group Discussion (FGD) checklist

N.B. Each FGD should comprise 10-15 persons maximum and mainly include crop and fish farmers, livestock holders, fisherman and others involved in businesses related to agriculture/animal production and fishery. The groups of respondents should be separated (one group of women and another of men) resulting in two different FGDs in each community visited. Prior to starting the discussions introduce the team members. Thank the interviewees for their time. Explain the purpose of the assessment and avoid raising expectations as far as possible. Explain that participation is voluntary and that they do not need to reply to any questions that may make them feel uncomfortable.

General information

Name of the Region:

Province:

District:

Commune name:

Village name:

Type of FGD: men / women

Village: Ask village Head / Leader (from question 1 to 4)

1. How many People are living in this community:

2. How many households are in this community:

3. Which share / percentage of the households are relying on the agriculture sector and sub-sectors as their main livelihood activity?

(Crop): %, (Livestock):%, (Fisheries / Aquaculture):% ,
(Forestry).....%

4. What is the average size of agricultural land cultivated by man and women in the village (in hectare)?

Male headed household (ha):

Female headed household (ha):

Impact / Effect on Crops

5. Which are the main hazards experienced by the community?

List of hazards / disasters	Yes/No*	Recurrence (see code below)
Pest and disease		
Frost		
Hail		
Flood		
Drought		
Storm		
Heat		
Saltwater intrusion		
Other (specify)		

*If yes, choose the recurrence code: once every two years or less (1), once a year (2), two time a year or more (3)

6. What are the main staple and cash crops grown in the village currently or during last season and how it was affected in terms of area cultivated?

Main staple crops grown in the village	Share (%) of importance*	% of crop affected**
Rice		
Main cereal (specify)		
Pulses		
Oil crops		
Vegetables		
Main annual cash crops grown in the village different from above (list up to 3)	Share (%) of importance*	% of crop affected**

* Total of all crops should sum up to 100 %

** For each listed crop the proportion losses of production can be from 0 to 100%

7. What are the main plantation / perennial crops planted in the village and how it was affected in terms of area cultivated?

Main perennial crops planted in the village	Share (%) of importance*	% of crop affected**
Tea		
Coffee		
Rubber		
Oil palm		
Coconut		
Pepper		

* Total of all crops should sum up to 100 %

** For each crop losses of production can be from 0 to 100%

8. Please explain why did you experience this reduction?

(Please select only one that apply)

Drought

Pest and diseases

Lack of inputs

Other (specify)

9. Which percentage / share of the overall cultivated land has irrigation in normal situation (when no drought)? Please indicate the %

10. Were the irrigation systems affected by the drought?

- Yes
- No

11. Do people usually engage in agricultural casual labour? If yes, how long and what is the wage per day.

Casual labour activities	*Men %	*Women %	Duration in months	Price a day - VND (average)
Weeding				
Harvesting				
Planting / Trans-planting				
Other (specify)				

* Total proportion of men and women should sum up to 100 %

12. Did the community members experienced reduction in availability of agricultural casual labour since the beginning of the drought? If yes, explain why.

- Yes
- No

13. What are the main needs to restore crop production due to drought related problems (please fill the table below)? (Agricultural inputs, boulders to protect from saltwater intrusion, drainage structures, technical support form extension office, trainings, etc.). Please do not list these options, allow respondent to give their opinion and at the end list up to 3 main needs.

Main needs to restore crop production		
Priorities	Short term (Jun - Dec 2016)	Medium / long-term (after December 2016)
1st		
2nd		
3rd		

Impact/effect on livestock

14. Did people in this community lost animal due to the drought? If yes, please indicate below.

Animal lost (list them)	Percentage (%) of household owning animals in the community*	% of dead animals due to drought*	% of sick animals due to drought*

* For each animal proportion can be from 0 to 100%

15. Do the people usually vaccine animal?

- Yes
- No

16. If yes, who provide the vaccine? Please tick the one that apply.

People buy it: Government: International organization:
Others (specify):

17. If no, why you don't vaccinate animals?

Too expensive

Not available

Not needed

Others, specify

18. What are the main needs to restore livestock production due to drought related problems (please fill the table below)? (Animal restocking, provision of vaccine and vet services, water, feed, etc.). Please do not list these options, allow respondent to give their opinion and at the end list up to 3 main needs.

Main actions to be taken in order to reduce effects of droughts in the future		
Priorities	Short term (Jun - Dec 2016)	Medium / long-term (after December 2016)
1st		
2nd		
3rd		

Impact/effect on fishery and aquaculture

19. Which is the proportion (%) of people (men and women) involved in fisheries and /or aquaculture activities?

In-land fishery		Aquaculture	
Man	Women	Man	Women

20. Has the salt intrusion or drought affected the inland fishery activities?

Yes

No

21. How has the salt intrusion or drought affected the aquaculture activities (shrimps, fish, mussels, etc.)?

Yes

No

22. What are the main needs to restore fishery/aquaculture activities (please fill the table below)? (Provision of fingerlings, feed, support to hatcheries, etc.). Please do not list these options, allow respondent to give their opinion and at the end list up to 3 main needs.

Main needs to restore fishery/aquaculture production		
Priorities	Short term (Jun - Dec 2016)	Medium / long-term (after December 2016)
1st		
2nd		
3rd		

Impact/effect on livelihood and food security

23. What are the main sources of income for the households in this community?

(Please tick the three that apply below).

Sources of income	Priorities		
	1st	2nd	3rd
Selling of cash crop			
Sale of livestock or animal products			
Fishing			
Aquaculture			
Selling of firewood / grass/ other natural resources			
Employment (government or private sector)			
Daily labour (agriculture)			
Daily labour (non-agriculture)			
Petty trade			
Other (specify)			

24. Did the households of this community engaged in any negative coping mechanism since the drought?

List of copying mechanisms	Yes/No
Rely on less preferred food	
Reduce number of meal a day	
Borrowing money	
Purchase food on credit	
Other (specify)	

25. Which share of the households have no access to enough water for*:

**Human use (drinking, bathing, washing).....%, livestock:%,
irrigation:%**

* Each answer can be from 0 to 100%

26. How the people in this community are coping with the lack of water? You can select multiple answers.

- Buying additional water
- Walking larger distance to get it
- Receiving water from Government
- Receiving water from other institutions
- Others, specify

27. Are there households in your community, who had been selling-off assets (animals, tools, HH items, etc.) in order to cover their basic needs (especially for water and food expenditure)?

- Yes
- No

28. If yes, what is the share / percentage of households who did so:%

29. If yes, which assets are they selling? (you can select more than one answer)

Animals

Agriculture tools

Agricultural inputs stocks

HHs assets (TV, tables, etc.)

Food stocks

Others items (specify)

30. Do you normally have access to market?

Yes

No

31. What are the main needs to restore livelihood activities (please fill the table below)? (Provision of cash & voucher, access to credit facilities, income diversification, market accessibility, etc.).

Main needs to restore livelihood		
Priorities	Short term (Jun - Dec 2016)	Medium / long-term (after December 2016)
1st		
2nd		
3rd		

Assistance received

32. Have you received any other support in response to the drought in the village? If yes, what and from whom (i.e. government, NGOs, religious institutions, relatives, etc.)?

Type of support received	From whom

Additional Info:

Annex 6: Focus Group Discussion checklist

Checklist for Group Discussion with Social Associations, Unions, Groups

Before starting the discussion introduce the team explain the purpose of the visit in this province which is to collect information in order to understand the impact/effect of the drought on the agriculture sector and sub-sectors including on the food security and livelihood situation in order to inform the Government and suggest response interventions to support the community affected. Please explain that each group will have maximum 5 minutes to respond to each question.

1. What your organization has been doing to respond to the drought situation in the province (mainly in relation to agriculture sector including crop, livestock and fishery / aquaculture)?

Farmer's Union:

Women's Union:

FatherLand front:

Red Cross:

2. Do you have any collaboration with international organizations (UN agencies, Red Cross, NGOs, etc.) to respond to the drought? If yes, please describe with who and what you did or you are doing.

Farmer's Union:

Collaboration (Who):

What:

Women's Union:

Collaboration (Who):

What:

Annex 7: Checklist for Market Key Informant

Checklist for Market key Informant (vendor food commodities)

Province name:

District name:

Market name:

Name, position and contact of the enumerators:

Organization:

Frequency of market days / week:

A. General overview

1. Which are the key food commodities (crops) sold in this market? Please list them in order of importance based on quantities.

1st	2nd	3rd	4th	5th

2. Where the key 5 food commodities (crops) mentioned above are procured from? Please tick the most important one that applies.

Commodity Name	From this province	From this district	From other places in the country (specify)	Abroad (please specify)	Source farmers (1), middle man (2), trader (3), other, specify (4)

B. Market Demand

3. How has the number of people coming to the marketplace changed since the start of the drought (Oct. / Nov. 2015)?

Decreased	No Change	Increased

4. Has the demand for the 5 key food commodities changed since the drought started (Oct. / Nov. 2015)?

Commodity name (same as above)	Change in demand? Yes (1) / No (0)	Main reason

C. Market Supply

5. Has the number of retailers selling the 5 food key commodities in the market place changed since the drought started (Oct. / Nov. 2015)?

Commodity name (same as above)	Has the number: increased (1), same (2), reduced (3)	Main Reason

6. Has the number of wholesalers selling the 5 food key commodities in the market place changed since the drought started (Oct. / Nov. 2015)?

Commodity name (same as above)	Has the number: increased (1), same (2), reduced (3)	Main Reason

7. What do we expect to happen to relevant food commodities in the next 6 months (diminishing or increasing, same as before, please explain why)?

Commodity	Same as during drought	Less than during drought	More than during drought	Main reason

D. Market constraints and market response capacity

8. If households will have more money, could you cover their demand of the key 5 food commodities if required?

Commodity name (same as above)	Can you supply: yes (1) / no (0)?	Main Reason, if not

E. Price information

9. How does the price for the major 5 key food commodities food commodity normally change during the year (as the season changes)?

(Note: whether prices are high (H), normal (N) or low (L))

Commodity	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

10. What has happened to the prices of the 5 key food commodities since the drought have started in compared to now? (tick the one that apply)

Commodity Name (same as above)	Price went up	Price went down	Price is the same	Main reason: Less commodity available (1), more commodity available (2), less demand (3), more demand (4), other, specify (5)

11. How do you expect the prices of food commodities to change in the coming weeks? (explain)

Commodity	Increase	Decrease	No change	Main reason: Less commodity available (1), more commodity available (2), less demand (3), more demand (4), other, specify (5)

Checklist for Market key Informant

(Vendor agricultural inputs and animal feed/ medicine)

Province name:

District name:

Market name:

Name, position and contact of the enumerators:

Organization:

Type of respondent:

Type of market (e.g. local, provincial, urban centre, etc.):

Frequency of market days:

A. General overview

1. Which are the main crop seeds sold in this market? Please list them in order of importance.

1st	2nd	3rd	4th	5th

2. Which are the main type of fertilizers sold in this market? Please list them in order of importance.

1st	2nd	3rd	4th	5th

3. Which are the main type of animal feed sold in this market? Please list them in order of importance.

1st	2nd	3rd	4th	5th

B. Market Demand

4. Where do the people come from to purchase agricultural and animal feed in this market?

From the near villages

From all district

From all province

Other places (specify)

5. How has the number of people coming to the market place to buy agricultural and animal inputs changed since the start of the drought (Oct. / Nov. 2015)?

Decreased by	No Change	Increased by

6. Has the demand for agricultural inputs, and animal feed changed since the drought started (Oct. / Nov. 2015)?

Commodity name	Change in demand? Yes (1) / No (0)	Main Reason
Seeds (as above)		
Fertilizer		
Urea		
DAP		
NPK		
Animal feed (as above)		

C. Market Supply

7. Has the number of vendors of agricultural inputs and animal feed in the market place changed since the drought started (Oct. / Nov. 2015)?

Commodity name	Has the number increased (1), same (2), reduced (3)	Main Reason
Seeds		
Fertilizer		
Animal feed		

D. Market constraints and market response capacity

8. If households will have more money, could you cover their demand of the key 5 food commodities if required?

Name	Can you supply: yes (1) / no (0)?	Main Reason, if not
Seeds		
Fertilizer		
Animal feed		

E. Price information

9. What has happened to the overall prices of the agricultural inputs, and animal feed since the disaster? (indicate actual price change)

Commodity name	Price went up	Price is the same	Price went down
Seeds (as above)			
Fertilizer			
Urea			
DAP			
NPK			
Animal feed (as above)			

10. According to you which are the main reasons for this price changes?
(Specify whether they increase or decrease).

Annex 8: Checklist for household survey

Vietnam Drought 2016 - Household Checklist

GI	GENERAL INFORMATION	FS	FOOD SECURITY
GI-1 Site information		FS-1 Food Consumption	
1. Province		1. During the day before the survey, did members of your household eat the following food items, prepared and/or consumed at home, and what was their source?	
2. District		Food item	Yes=1 ; No=0
3. Commune			Main food source (use food source codes below)
4. Village		Cereals, tubers and bread (finger millet, potato, sweet potato, cassava etc.)	
5. Date of interview (day/month/year)		Pulses (beans etc.)	
GI-2 Enumerator information		Fish, meat and eggs	
Name of field monitor		Dairy (curd, liquid milk, powder milk etc.)	
Organization		Coconut products, palm oil, vegetable oil, fats etc.	
Contact No.		Vegetables (including leaves)	
		Fruits	
		Sugar /honey/ muscovado	
HI HOUSEHOLD INFORMATION		Food source codes:	
HI-1 Household demographics		1 = Own production (farming, fishing, hunting, gathering) 4 = Borrowed	
1. Gender of HH head		5 = Received as gift	
<input type="radio"/> Male <input type="radio"/> Female		6 = Food aid	
2. Number of people in the households?		7 = Other, specify: _____	
3. Number of people in the HH who contribute to household income		FS-2 Coping Strategies	
HI-2 Household welfare		1. During the past 7 days, have the members in your household adopted the following coping mechanisms? (Yes=1; No=0)	
1. Currently, what is your HH's main source of income?		Eating less-preferred foods	
<input type="radio"/> Crop-based <input type="radio"/> Livestock-based			
<input type="radio"/> Fishing <input type="radio"/> Formal employment		Borrowing food/money from friends and relatives	
<input type="radio"/> Vending own produce <input type="radio"/> Petty trading / business			
<input type="radio"/> Casual labour <input type="radio"/> Other, specify _____		Limiting portions at mealtime	
2. Last year, around this time what was your HH's main source of income?		Reducing the number of meals per day	
<input type="radio"/> Crop-based <input type="radio"/> Livestock-based			
<input type="radio"/> Fishing <input type="radio"/> Formal employment		Going a whole day without a meal (anyone in the household excluding fasting)	
<input type="radio"/> Vending own produce <input type="radio"/> Petty trading/business			
<input type="radio"/> Casual labour <input type="radio"/> Other, specify _____			
3. Compared to the same time last year, how has your household income changed?		LA LIVELIHOOD AND ASSET LOSS	
<input type="checkbox"/> Same or more <input type="checkbox"/> <25% less		LA-1 Crop production	
<input type="checkbox"/> 25% - 50% less <input type="checkbox"/> 50+% - 75% less		1. Is your household engaged in crop production? (If no, skip next 2 questions)	
<input type="checkbox"/> >75% less		<input type="radio"/> Yes <input type="radio"/> No	
		2. How much of the arable land you own is cultivated this season compared to the season last year?	
		<input type="radio"/> None <input type="radio"/> <25% of last year	
		<input type="radio"/> 25%-50% <input type="radio"/> 50%+-75%	
		<input type="radio"/> >75%	
		3. How much produce are you expecting to harvest this year compared to last year?	
		<input type="radio"/> Same or more <input type="radio"/> <25% of last year's	
		<input type="radio"/> 25% - 50% <input type="radio"/> 50+% - 75%	
		<input type="radio"/> 75+% - 100%	
		4. Does your household have any food stock?	
		<input type="radio"/> Yes <input type="radio"/> No	
		5. If yes, how long can the stock feed the household?	
		<input type="radio"/> Less than one week	
		<input type="radio"/> 1-2 weeks	
		<input type="radio"/> 2-4 weeks	
		<input type="radio"/> More than one month	
		5. Does your household usually use irrigation system? (If no, skip next question)	
		<input type="radio"/> Yes <input type="radio"/> No	
		6. How is your irrigation system affected due to the drought?	
		<input type="radio"/> No impact <input type="radio"/> Some impact	
		<input type="radio"/> Serious impact <input type="radio"/> All damaged	
CE ACCESS TO COMMUNITY ENDOWMENTS			
CE-1 Access to Water			
1. Does your household have access to drinking water?			
<input type="radio"/> Sufficient <input type="radio"/> Some shortage <input type="radio"/> Extreme shortage <input type="radio"/> No water available			
CE-2 Access to Food			
2. Does your household have access to sufficient food?			
<input type="radio"/> Sufficient <input type="radio"/> Some shortage <input type="radio"/> Moderate shortage			
<input type="radio"/> Extreme shortage			
3. What is the supply of rice in your nearest market/shop?			
<input type="radio"/> Normal <input type="radio"/> Less <input type="radio"/> Much less <input type="radio"/> None			
4. What is the current price of rice (variety that you normally consume) compared to pre-drought period?			
Price of 1 kg of rice - Now:			
Price of 1 kg of rice - 6 months ago:			

Vietnam Drought 2016 - Household Checklist

LA-2 Livestock		
1. Does your household own livestock (If no, skip next question)	<input type="radio"/> Yes <input type="radio"/> No	
2. If yes, what do you own?	Livestock	Number
	<input type="radio"/> Chicken	
	<input type="radio"/> Pig	
	<input type="radio"/> Cow	
	<input type="radio"/> Goat	
	<input type="radio"/> others, specify _____	
3. Did you lose any of the livestock due to drought?	Livestock	Number
	<input type="radio"/> Chicken	
	<input type="radio"/> Pig	
	<input type="radio"/> Cow	
	<input type="radio"/> Goat	
	<input type="radio"/> others, specify _____	
LA-3 Aquaculture		
1. Is your household engaged in aquaculture? (If no, skip next 2 questions)	<input type="radio"/> Yes <input type="radio"/> No	
2. Is your pond / aquaculture facilities affected due to the drought / salt water intrusion?	<input type="radio"/> No impact <input type="radio"/> Some impact <input type="radio"/> Serious impact <input type="radio"/> All damaged	
3. How much fish/shrimp are you expecting to harvest this year compared to last year?	<input type="radio"/> Same or more <input type="radio"/> <25% of last year's <input type="radio"/> 25% - 50% <input type="radio"/> 50+% - 75% <input type="radio"/> 75+% - 100%	

A ASSISTANCE	
1. In the past 3 months, have you received any food assistance because of the drought?	
<input type="radio"/> Yes <input type="radio"/> No	
2. If yes, from whom did you receive the assistance (Multiple answers possible)	
<input type="radio"/> Government <input type="radio"/> International organizations <input type="radio"/> NGOs <input type="radio"/> Others, _____ <input type="radio"/> I don't know	
3. Does your household need assistance to cope with the drought impact?	
<input type="radio"/> Yes <input type="radio"/> No	
4. If yes, what type of assistance is most needed?	
Food assistance	
Cash	
Crop seeds	
Fertilizers and pesticides	
Rehabilitation of irrigation schemes	
Animal feed	
Others, please specify	

