



# **YEMEN: Secondary Data Analysis on Food Security and Vulnerability**

**A Secondary Data Analysis – Consolidating  
Existing Information on Food Security and  
Vulnerability**

To identify primary data needs and to assist in the preparation of the Humanitarian Response Strategy and WFP Programme Strategy, this document attempts to consolidate existing food security and vulnerability information collected from various surveys and studies conducted in Yemen, addressing a multitude of thematic areas.

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## Abbreviations

|        |   |
|--------|---|
| AFPSF  | Agricultural and Fisheries Production Support Fund                  |
| BMI    | Body Mass Index   |
| CFSP   | Community Food Security Profiling                                   |
| CFSS   | Comprehensive Food Security Survey                                  |
| CPI    | Consumer Price Index  |
| CSO    | Central Statistical Organisation                                    |
| DPPR   | Development Plan for Poverty Reduction                              |
| EC     | European Commission   |
| EFSA   | Emergency Food Security Assessment                                  |
| FAO    | Food and Agriculture Organisation of the UN                         |
| FCS    | Food Consumption Score  |
| FHS    | Family Health Survey  |
| FIVIMS | Food Insecurity and Vulnerability Information Mapping System        |
| GDP    | Gross Domestic Product  |
| GoY    | Government of Yemen   |
| GTZ    | German Agency for Technical Cooperation                             |
| HBS    | Household Budget Survey   |
| HDI    | Human Development Index   |
| LDC    | Least Developed Country   |
| IDP    | Internally Displaced People   |
| IFPRI  | International Food Policy Research Institute                        |
| IMF    | International Monetary Fund   |
| IOM    | International Office for Migration                                  |
| INGO   | International Non-Governmental Organisation                         |
| MDG    | Millennium Development Goal   |
| MENA   | Middle East and Northern Africa                                     |
| MoA    | Ministry of Agriculture   |
| MoPHP  | Ministry of Public Health and Population                            |
| MoPIC  | Ministry of Planning and International Cooperation                  |
| MUAC   | Mid-Upper Arm Circumference   |
| NGO    | Non-Governmental Organisation                                       |
| NPS    | National Poverty Survey   |
| ODA    | Overseas Development Assistance                                     |
| PRRO   | Protracted Relief and Recovery Operation                            |
| PRSP   | Poverty Reduction Strategy Paper                                    |
| PRY    | People's Republic of Yemen  |
| PWP    | Public Works Project  |
| SDA    | Secondary Data Analysis   |
| SFD    | Social Fund for Development   |
| SWF    | Social Welfare Fund   |
| UN     | United Nations  |
| UNESCO | United National Educational, Scientific and Children's Organisation |
| UNDP   | United Nations Development Programme                                |
| UNDG   | United Nations Development Group                                    |
| UNICEF | United Nations Children's Fund                                      |
| VAM    | Vulnerability and Mapping   |
| WFP    | World Food Programme  |
| WHO    | World Health Organisation   |
| YAR    | Yemen Arab Republic   |

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## Executive Summary

### *Background*

WFP in Yemen commissioned a Secondary Data Analysis (SDA) to consolidate information available from a variety of sources on food and nutrition security to provide an initial analysis that identifies areas where food insecurity indicators converge. The SDA identifies gaps in secondary information to be filled by primary data collection and makes recommendations as to how these gaps might be addressed. Results are to be used to provide guidance for WFP and partners in formulating the intervention strategy for the coming years.

### *Country Context*

Yemen ranks 153<sup>rd</sup> on the Human Development Index (HDI). Food insecurity and malnutrition are major concerns, reflected by high rates of child malnutrition and maternal mortality being amongst the highest in the world. Despite some progress made, the country still faces multi-dimensional challenges for development. High population growth (>3%) negatively impacts any made improvements. Gender inequalities are persistently high, with Yemen ranking 121<sup>st</sup> on the Gender Development Index (GDI). Eighty percent of the population lives on 16% of the total area of the country, mainly in the highlands. Despite this concentration, more than two thirds live in rural areas, scattered among small and remote villages. Access to education, basic health services and other infrastructure is extremely constrained. While Yemen remains predominantly rural, rapid rates of urbanisation are driven by rural-urban migration, population growth and returning migrants.

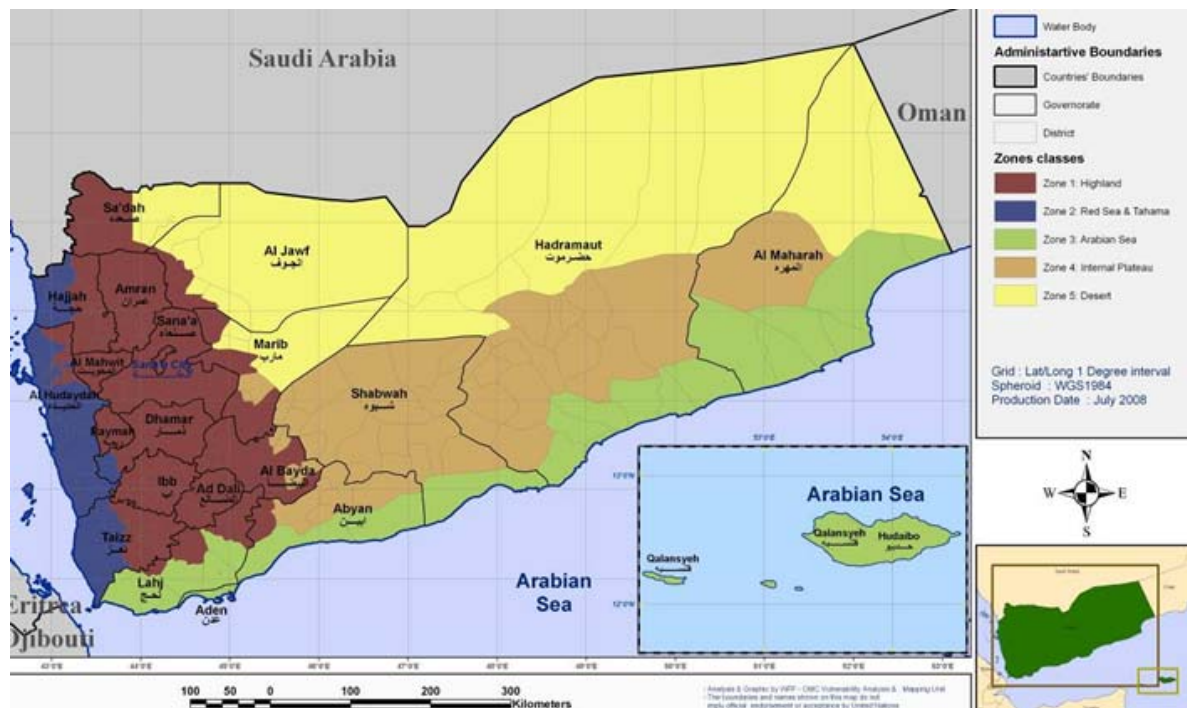
In addition to the structural constraints, Yemen faces a complex crisis which affects food security and nutrition. Yemen not only relies heavily on food imports, but substantial increases in food prices over the past two years have significantly increased the number of Yemenis that are affected by food insecurity and poverty. Food availability is affected by volatility of international market prices – for oil that creates most of government's revenue, and for food that needs to be imported. These impacts are exacerbated by conflicts in several parts of the country, recurrent drought and flooding, influx of refugees, etc. The country is heading towards a severe water crisis, created by high rates of population growth and urbanization, increasing aridity through climate change, and agricultural and urban water needs. The water crisis places a disproportionate burden on the poor, with consequences for food production, water supply and incomes. Population movement due to increasingly scarce natural resources is creating social tensions.

### *Scope and Method*

The SDA is based on the review of secondary sources and discussions with stakeholders in Yemen. It was found that only a limited number of surveys relevant to food security are representative at the national or governorate level and many are outdated. The most relevant surveys utilized in this SDA include Food Insecurity and Vulnerability Information Monitoring System (FIVIMS) 2003, Poverty Assessment 2007 based on Household Budget Survey (HBS) 2005/06, and the WFP High Food Price Survey 2008. Important differences arise from different definitions and measurements of food poverty and food security used to estimate food insecurity. FIVIMS 2003 measures food security based on household's own perceptions. Poverty Assessment 2007 follows a cost of basic needs methodology to construct poverty lines. The food poverty line represents a minimum food basket; thus defining extreme poverty. While food poverty lines imply widespread food insecurity, the results were not reported and there is no direct evidence on its extent.

Generally, making statistical comparisons across data sources is difficult and discrepancies in findings create information gaps.

*Map 1: Administrative Map of Yemen and Agro-Ecological Zones (WFP-VAM, 2008)*



#### *How many households are food insecure?*

Based on FIVIMS, close to 4 million Yemenis live in households considered food insecure, representing 22% of the total population. Of these, nearly 2.5 million individuals are food insecure with moderate hunger (14% of population), and approximately 1.4 million individuals live with severe hunger (8% of total population). In 2005-06, there were 7 million poor people in Yemen, i.e. almost 35% of the population could not fulfil their basic needs. Food poverty was estimated at 13%, representing almost 2.9 million individuals who cannot satisfy their basic food needs.

#### *Where are the food insecure households?*

FIVIMS 2003 found substantial differences in the geographic distribution of food insecure households. Prevalence of **food insecurity** ranged from 8% in Sana'a City to 44% in Shabwa. Shabwa, Sa'ada, Hajja, Ibb, Hodeida, and Al-Mahra have the highest rates of food insecurity with more than one quarter of the population affected. The study then differentiated between food insecurity with moderate and severe hunger:

- **Food insecurity with moderate hunger** is most prevalent in Shabwah, with one third of households. Other governorates with high percentages of moderate hunger are those with the highest prevalence rates of food insecurity overall, e.g. Sa'ada (21%), Hajja, (20%), Hodeida (19%), and Al-Mahra (19%). Governorates with low percentages of moderate hunger are Sana'a (5%), Sana'a City (6%), Abyan (6 %), and Aden (7%).
- Prevalence for **food insecurity with severe hunger** is at a striking 19% of households in Sa'ada. It is followed by Hajja (17%), Al-Gawf (15%), Al-Baidah (13%), Ibb (12%), and Lahej (11%). Governorates with low severe hunger include Sana'a City (2.3%), Taiz (3%), Sana'a (4%), Al-Mahweet (5%), and Hadramout (5%).

Poverty Assessment 2007 shows that **poverty** is concentrated in rural areas, accounting for 73% of the population, but for 84% of the poor. Poverty is lower in the two urban areas (Aden, Sana'a City) where 11% of the population, yet only 5% of the poor live. The poor are over-represented in rural areas, where their shares in poverty exceed population shares. In Amran, Hajja, and Taiz rural regions are the highest representation of poor. About one third of the poor live in rural areas of three governorates (Taiz, Hajja, and Hodeida), and another 16% live in rural Ibb and Amran. There are large intra-governorate differences in the incidence of poverty: 5% (Al-Mahra) and 71% (Amran) in 2005-06.

|    | Food Insecurity<br>(FIVIMS 2003) |              | Poverty (HBS<br>2005/06) |              | Wasting<br>(weight for height)<br>in Children < 5<br>(HBS 2005/06) |              | Stunting<br>(height for age)<br>in Children < 5<br>(HBS 2005/06) |              |
|----|----------------------------------|--------------|--------------------------|--------------|--|--------------|--|--------------|
| 1  | Shabwa                           | 43.5%        | Amran                    | 63.9%        | Hodeida  | 26.0%        | Al-Mahweet   | 75.7%        |
| 2  | Sa'ada                           | 39.9%        | Shabwa                   | 54.1%        | Addaleh  | 25.3%        | Amran  | 67.9%        |
| 3  | Hajja                            | 36.0%        | Al-Baidha                | 51.9%        | Taiz   | 18.0%        | Sana'a   | 67.3%        |
| 4  | Ibb                              | 29.4%        | Al-Gawf                  | 49.9%        | Hadramout  | 14.7%        | Al-Baida   | 67.3%        |
| 5  | Al-Mahrah                        | 29.3%        | Hajja                    | 47.5%        | Rayma  | 14.5%        | Ibb  | 66.8%        |
| 6  | Hodeida                          | 24.7%        | Lahej                    | 47.2%        | Lahej  | 14.4%        | Dhamar   | 66.7%        |
| 7  | Al-Baidha                        | 24.5%        | Mareb                    | 45.9%        | Aden   | 13.3%        | Rayma  | 66.5%        |
| 8  | Al-Gawf                          | 23.9%        | Abyan                    | 45.7%        | Abyan  | 12.0%        | Al-Gawf  | 65.1%        |
| 9  | Lahej                            | 23.1%        | Addaleh                  | 44.2%        | Sana'a City  | 11.7%        | Mareb  | 64.8%        |
| 10 | Taiz                             | 19.6%        | Taiz                     | 37.8%        | Hajja  | 11.3%        | Addaleh  | 64.7%        |
| 11 | Dhamar                           | 19.2%        | Hadramout                | 35.6%        | Sana'a   | 10.9%        | Sa'ada   | 62.8%        |
| 12 | Hadramout                        | 16.6%        | Rayma                    | 34.1%        | Sa'ada   | 10.5%        | Hodeida  | 54.5%        |
| 13 | Mareb                            | 16.2%        | Hodeida                  | 31.7%        | Dhamar   | 9.4%         | Lahej  | 52.7%        |
| 14 | Amran                            | 15.2%        | Al-Mahweet               | 30.8%        | Amran  | 9.1%         | Taiz   | 48.6%        |
| 15 | Al-Mahweet                       | 14.9%        | Ibb                      | 30.1%        | Shabwa   | 8.1%         | Sana'a City  | 46.5%        |
| 16 | Aden                             | 14.6%        | Dhamar                   | 25.8%        | Al-Mahweet   | 8.1%         | Shabwa   | 43.3%        |
| 17 | Addaleh                          | 13.5%        | Sana'a                   | 28.1%        | Al-Mahra   | 7.0%         | Hajja  | 41.9%        |
| 18 | Abyan                            | 12.7%        | Aden                     | 16.9%        | Ibb  | 5.8%         | Abyan  | 41.3%        |
| 19 | Sana'a                           | 9.6%         | Sa'ada                   | 16.6%        | Al-Baida   | 5.7%         | Hadramout  | 38.8%        |
| 20 | Sana'a City                      | 7.8%         | Sana'a City              | 14.9%        | Al-Gawf  | 4.7%         | Aden   | 32.8%        |
|    | Rayma                            | n.a.         | Al-Mahrah                | 8.9%         | Mareb  | 3.7%         | Al-Mahra   | 32.4%        |
|    | <b>TOTAL</b>                     | <b>21.7%</b> | <b>Total</b>             | <b>34.8%</b> | <b>Total</b>   | <b>13.2%</b> | <b>Total</b>   | <b>55.7%</b> |

A comparison between poverty and food insecurity shows discrepancies in the distribution. Both assessments have similar risk factors, but there is a difference in their rank. While there is some overlap in governorates ranked at the top with respect to food insecurity and poverty (Shabwa, Hajja), some governorates with high rates of poverty, e.g. Amran, Al-Baidha and Al-Gawf, have low rates of food insecurity. Conversely, Sa'ada, Ibb, and Al-Mahrah are amongst the most food insecure governorates, while they rank at the bottom of poverty incidence. While poverty and food insecurity are related, both address different aspects of household need and this discrepancy will require more analysis.

Based on the rapid assessment, WFP concluded that food security in the poorest governorates has deteriorated as a consequence of high prices in 2008; and found 24% of households have poor food consumption, and additional 35% were borderline. UNDP found that the proportion of people suffering from food poverty more than doubled from 13% in 2005-06 to 27% in December 2007, implying that food poverty affects 6.2 million people.

UNDP estimates that over 6% of Yemenis dropped below the poverty line due to rising food prices.

### *Who are the food insecure households?*

The most food insecure households are characterised by: (1) households with more children under twelve; (2) lower educational attainment of household head; (3) households without access to land; (4) households without livestock ownership; (5) diversity of employment beyond an agricultural activity reduces likelihood of being food insecure; (6) households growing qat are less likely to be food insecure. The most vulnerable livelihood groups are: agricultural labourers, households relying on social transfers, and households headed by female, un- or temporary employed.

Determinants of poverty are largely similar: poverty is concentrated in rural areas, among large households, households with high child-to-adult ratios, with high rates of illiteracy, smaller sizes of land, less access to irrigation and livestock, a smaller share of agricultural income, and a larger income share of remittances and wage labour. Lack of access to basic health and high malnutrition among children characterise poor households.

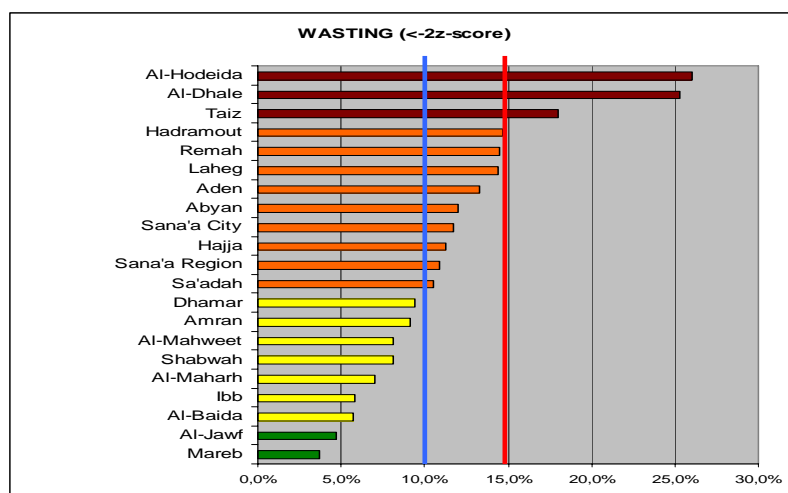
### *What are the underlying factors of food insecurity?*

The causes of food insecurity are diverse, include biophysical and socio-economic factors, and have different impacts on socio-economic groups. Root causes of food insecurity include: high population growth, reliance on food imports and oil revenues, overexploitation of limited natural resources (namely water) and lack of livelihood diversification options, especially in rural areas. Natural hazards and conflict severely affect food security, which is exacerbated by high food prices and the global economic crisis.

In Yemen, economic access to food is a major food security determinant. Since food availability is largely driven by imports, people produce a small proportion of their needs and rely heavily on other sources of income. The majority of food consumed is purchased on the market. This is interesting in light of three quarters of the population living in rural areas. More severe levels of food insecurity are associated with a reliance on salaries from temporary employment. Food insecure households have fewer options for livelihood diversification to rely on when obtaining food.

### *How many children and women are malnourished?*

Yemen is among the countries with the highest malnutrition rates. Most recent

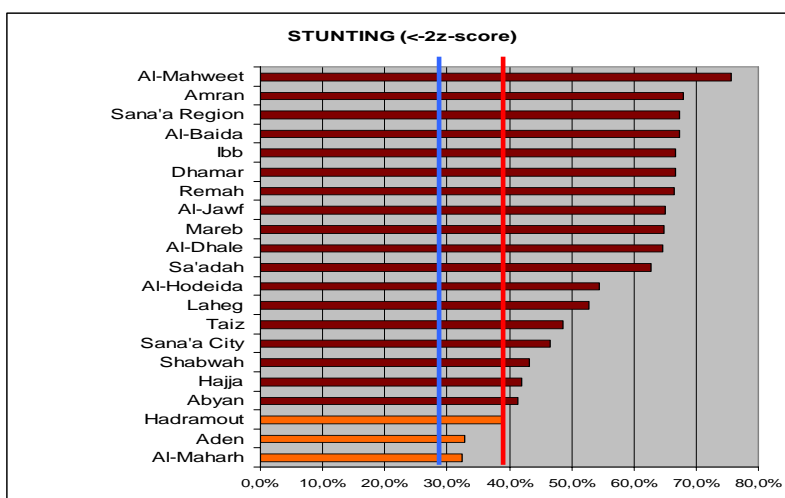


national data on malnutrition comes from the Family Health Survey (FHS) 2003 and HBS 2005/06. According to FHS, 53.1% of children under 5 are stunted (height for age), 45.6% are underweight (weight for age), and 12.4% are wasted (weight for height). HBS shows slight increases, with 55.7% stunted, 35.6% underweight, and 13.2% wasted. In three governorates critical levels of

wasting above 15% can be observed. In addition, nine governorate show serious levels of

wasting between 10-15%. With respect to stunting, all but three governorates have serious levels of stunting. FHS shows that a quarter of women of reproductive age are malnourished (Body Mass Index (BMI) below 18.5). The rate of malnutrition among pregnant and lactating women was high; 27% of pregnant and 35% of lactating women were malnourished. This increases the risk of precipitating malnutrition in the next generation. Also micronutrient deficiencies was pervasive. A significant proportion of children and women suffer from low intake of essential micronutrients including Vitamin A, iron/folate and iodine. For example, the prevalence of anaemia was 82% in children under five, 83% in lactating mothers and 73% in pregnant women. Malnutrition is highly correlated with high rates of mortality. Maternal mortality of 365 per 100,000 live births is amongst the highest in the world. Mortality of children under five is at 102 per 1,000 births.

Inadequate access to food, inadequate maternal and child care practices, poor access to water and sanitation and health services contribute to malnutrition in Yemen. It is also expected that qat chewing has a negative impact on pregnancy and nutritional status of infants (low birth weight in infants is 32%). In Yemen critical issues of malnutrition are inadequate breastfeeding practices and high prevalence of diarrhoeal diseases. Only 12% of children are exclusively breastfed for the first six months. Diarrhoea is one of the main causes of child mortality in Yemen. The prevalence of diarrhoea among children (6-59) was 45%, exacerbated by inadequate practices of treating the sick child.



The low status of women in the family and society exacerbates food insecurity and malnutrition and therefore requires particular attention.

#### *Programme recommendations to address food insecurity and malnutrition*

Yemen faces immense challenges through a combination of structural and acute food security and nutrition problems. There is an immediate need to upscale humanitarian interventions to address the acute crisis. The challenge also is to continue coordination with ongoing interventions in the food security sector. To address food availability, access and utilisation, the following priority areas should be addressed:

- Support the ongoing process of developing a national food security strategy and endorse the draft nutrition strategy to provide policy and strategic frameworks;
- Strengthen existing coordination mechanisms in the area of food security and nutrition;
- Establish food security and nutrition baselines and monitoring systems;
- Address malnutrition of pregnant and lactating women and children under five through therapeutic and supplementary feeding of the malnourished, increased micronutrient intake and 'preventive' nutrition activities;
- Strengthening of safety nets for vulnerable groups and improved targeting;
- Enhance education opportunities with a particular focus on girls;
- Advocate for the establishment of national and sub-national food stocks;
- Diversify and strengthen non-oil sector of the economy;

- Strengthening livelihoods and resilience of vulnerable groups via increasing agricultural productivity, water use efficiency, income diversification, and employment generation.

## 1. Introduction

The World Food Programme (WFP) is currently engaged in several programme activities in Yemen, which it aims to consolidate. Thus, WFP is planning to launch a nationwide Protracted Relief and Recovery Operation (PRRO) in 2010. The PRRO will include nutrition, relief and capacity building components. To design the PRRO and avoid duplication of efforts and wastage of scarce resources, there is a need to review the considerable amount of secondary sources, i.e. studies, surveys and reports available. These provide a range of data, analysis and interpretations, covering poverty, food security, and nutrition in Yemen. A comprehensive secondary data analysis (SDA) will help determine information gaps and the need for and scope of primary data collection. The process of accessing data from other stakeholders helps promote partnerships and cooperation.

### 1.1. Objectives and Methodology of the SDA

The objectives of the SDA, based on existing information, are twofold: (1) to provide an initial analysis which identifies geographic areas where a number of food insecurity and poverty indicators converge and could potentially signify a food insecurity problem; and (2) to help identify regions to be covered by primary data collection and the information to be collected<sup>1</sup>. To address these objectives, the SDA presents an overview of the secondary information on food security that is available. It first provides a comparison of the major secondary sources, followed by a country-level perspective of the broader context and food security situation. Next, the SDA attempts to develop an initial food security analysis, while considering endowments, livelihood strategies and household access to food. This is followed by an initial nutrition analysis, as well as a risk analysis. Finally, the SDA identifies gaps in secondary information to be filled by primary data collection and makes recommendations as to how these gaps might be addressed. The SDA is based on the review of available secondary resources. Discussions with a range of stakeholders in food insecurity, malnutrition and poverty in Yemen were held – including government and donor representatives<sup>2</sup>. These were important in the context of a rapidly changing food insecurity situation due to the impacts of the rising food prices and global economic crisis. These latest challenges are not yet well documented, thus, meriting discussions with key stakeholders to help identify the expected impacts on the population, particularly on most vulnerable groups.

## 2. Comparison of Secondary Sources, Coverage and Limitations

A range of secondary sources were provided for review in the context of this SDA. The most relevant ones are summarized in Appendix 3, including objectives, coverage and limitations. Table 1 summarises the main surveys and reports with respect to the year of data collection, implementing agency, geographic coverage, sampling unit, sample size, methodology, and representativeness. While a range of surveys have been conducted, only a limited number are geographically representative at the national or governorate level – and

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<sup>1</sup> See Appendix 1 for Terms of Reference

<sup>2</sup> See Appendix 2 for List of People contacted

they are outdated and usually of limited thematic coverage. Few surveys conducted primary data collection specifically on food security; most address poverty in a broader sense. The only nationally representative food security survey is the Food Insecurity and Vulnerability Information Management System (FIVIMS) from 2003. Thus, most reports published after 2003 refer back to FIVIMS data for their food security information. With respect to poverty, the Household Budget Survey (HBS) 2005/06 forms the basis of analysis for other reports, including the Poverty Assessment 2007. Other surveys were carried out at limited geographical scale, or with respect to their sampling – i.e. not reaching a representative sample of the population. Agencies often limit primary data collection efforts to their intervention areas and programmatic priorities. The studies that have mostly been drawn on for this SDA are: FIVIMS 2003, Family Health Survey (FHS) 2003, HBS 2005/06, Poverty Assessment 2007, and High Food Price Survey 2008.

All surveys and reports that have been reviewed are based on different methodologies. Differences in sampling strategies and design, in question formulation, translation and explanation, enumerator training, respondent agenda and audience make every data collection exercise unique. Consequently, making statistical comparisons across data sources, and inferring commonalities between study results, is problematic and one has to be cautious. Nonetheless, data from different sources, while not directly comparable, may be complementary. Throughout this SDA an effort was made to present these to broaden the overall picture at national and governorate levels.

There are some areas, where two or more of the surveys overlap with respect to thematic coverage, i.e. investigating similar issues and presenting similar conclusions. This is particularly true for poverty, but less so for food security information due to the limited availability of primary data. There are no surveys, however, where exactly the same data is collected, or with similar methods and coverage. Thematic areas where there is overlap are: household incomes and expenditures; health and water; education; agricultural production and shocks. These thematic convergences were used in the food security analysis, since there is limited availability of other data sources disaggregated at governorate level that would allow for triangulation. Moreover, the two main assessments – FIVIMS 2003 and Poverty Assessment 2007 – are not directly comparable and differences in findings call for caution in supplementing information from one source with the other. FIVIMS 2003 measures food security based on household perceptions of their food security status. The Poverty Assessment 2007 measures poverty and food poverty lines. Important differences arise from different definitions and measurements of food poverty and food security used to estimate food insecurity. Discrepancies in findings across data – e.g. the distribution of food insecure and poor households – create information gaps for future primary data collection. Additional data collection is necessary to shed light on the causes and reasons of discrepancies; may they be methodological differences, sampling or data collection errors, conceptual or real differences in poverty and food insecurity on the ground. Poverty and food insecurity address different aspects of household need, focusing only on poverty will not provide an accurate assessment of the location of food insecure populations. Poverty distribution results differ from common understanding and this discrepancy will require in-depth analysis.

Table 1: Summary of Reviewed Secondary Sources (part 1)

| Study Name                                   | Year    | Agency                     | Source                  |                       | Key areas investigated |             |                      |                      |                        |                    |           |                         |                              | Sample unit |                  | Sample  |                 | Coverage |                      |             |                     |                    |                     |
|--|---------|----------------------------|-------------------------|-----------------------|------------------------|-------------|----------------------|----------------------|------------------------|--------------------|-----------|-------------------------|------------------------------|-------------|------------------|---------|-----------------|----------|----------------------|-------------|---------------------|--------------------|---------------------|
|  |         |                            | Primary data collection | Secondary data review | Food consumption       | Livelihoods | Health and nutrition | Water and sanitation | Income and expenditure | Markets and labour | Education | Agricultural production | Shocks and coping mechanisms | Household   | Community, other | Size    | Methodology     | National | Agro-ecological zone | Governorate | Number of districts | Representativeness | Reliability of data |
| 1. Household Budget Survey                   | 1998    | CSO                        | x                       |                       |                        |             |                      |                      |                        |                    |           |                         |                              | x           |                  | 9.152   | cluster         |          |                      | x           |                     | n                  | n                   |
| 2. Household Budget Survey                   | 1998    | CSO                        | x                       |                       | x                      |             |                      | x                    | x                      |                    | x         |                         |                              | x           |                  | 15.120  | cluster         |          |                      | x           |                     | y                  | y                   |
| 3. Poverty Survey                            | 1999    | CSO/ UNDP                  | x                       |                       |                        |             |                      | x                    | x                      |                    | x         |                         |                              | x           |                  | 49.450  | cluster         |          |                      | x           |                     | y                  | n                   |
| 4. Community Food Security Profiling         | 2002    | WFP                        | x                       |                       |                        | x           |                      |                      |                        |                    |           | x                       | x                            | x           | x                | 501     | cluster         |          | x                    |             | 90                  | n                  |                     |
| 5. Agricultural Census                       | 2003    | CSO                        | x                       |                       |                        |             |                      |                      |                        |                    |           | x                       |                              | x           |                  | 112.226 | random          | x        |                      | x           | 280                 | y                  | y                   |
| 6. FIVIMS                                    | 2003    | FAO                        | x                       |                       | x                      | x           |                      |                      |                        |                    | x         | x                       | x                            | x           |                  | 112.226 | random          |          | x                    | x           | 280                 | y                  | y                   |
| 7. Family Health Survey                      | 2003    | CSO                        | x                       |                       |                        |             | x                    | x                    |                        |                    |           |                         |                              | x           |                  | 13.815  | cluster         | x        |                      | x           | 332                 | y                  |                     |
| 8. Child Development Project Baseline Survey | 2001/03 | UNICEF                     | x                       |                       |                        |             | x                    | x                    |                        |                    | x         |                         |                              | x           |                  | 5.080   | cluster         | x        |                      | x           | 32                  | n                  | (y)                 |
| 9. Population Census                         | 2004    | CSO                        | x                       |                       |                        |             |                      |                      |                        |                    |           |                         |                              | x           |                  |         |                 | x        |                      | x           | 332                 | y                  | n                   |
| 10. Household Budget Survey                  | 2005/06 | CSO                        | x                       |                       |                        |             | (x)                  |                      | x                      |                    | x         |                         |                              | x           |                  | 14.400  | cluster         | x        |                      | x           | 50                  | y                  | n                   |
| 11. Food Security and Nutrition Survey       | 2006    | WFP/ UNICEF                | x                       |                       | x                      |             | x                    | x                    | x                      |                    | x         | x                       | x                            | x           |                  | 2.617   | cluster         |          |                      | x           | 5                   | n                  | y                   |
| 12. Poverty Assessment                       | 2007    | CSO/ World Bank/ UNDP      |                         | x                     |                        |             | (x)                  |                      | x                      | x                  | x         |                         |                              | x           |                  | 14.400  | cluster         | x        |                      | x           | 50                  | y                  | n                   |
| 13. Statistical Yearbook                     | 2007    | CSO                        |                         | x                     |                        |             | x                    | x                    | x                      | x                  | x         | x                       |                              | x           |                  |         |                 | x        |                      | x           |                     | y                  |                     |
| 14. High Food Price Survey                   | 2008    | WFP                        | x                       |                       | x                      |             | (x)                  |                      | x                      |                    |           |                         | x                            | x           |                  | 600     | purpose, random |          | x                    | x           | 38                  | n                  | y                   |
| 15. EFSA of Flood Impacts                    | 2008    | WFP                        | x                       |                       | x                      |             |                      |                      |                        |                    |           |                         | x                            | x           | x                | 209     | random          |          | x                    | x           | 36                  | n                  | y                   |
| 16. Rapid Needs Assessment                   | 2008    | UN/ INGOs                  | x                       |                       |                        |             | x                    | x                    |                        |                    |           |                         | x                            |             | x                |         |                 |          |                      | x           |                     | n                  |                     |
| 17. Social Welfare Fund                      | 2009    | SWF                        | x                       |                       |                        |             |                      |                      |                        |                    |           |                         |                              | x           |                  |         |                 |          |                      | x           |                     | n                  | y                   |
| 18. Nutrition Survey*                        | 2009    | UNICEF                     | x                       |                       | x                      | x           | x                    | x                    |                        |                    |           |                         | x                            |             |                  |         |                 | x        | x                    | x           |                     | y                  |                     |
| 19. National Food Security Strategy*         | 2010    | IFPRI/ EC/ World Bank/ GTZ |                         | x                     |                        |             |                      |                      |                        |                    |           |                         |                              |             |                  |         |                 |          |                      |             |                     |                    |                     |

Table 1: Summary of Reviewed Secondary Sources (part 2)

| Study Name                                   | Governorates covered |      |           |         |         |          |            |       |        |           |       |         |     |      |       |       |        |        |             |
|--|----------------------|------|-----------|---------|---------|----------|------------|-------|--------|-----------|-------|---------|-----|------|-------|-------|--------|--------|-------------|
|  | Abyan                | Aden | Al-Baidha | Addaleh | Al-Gawf | Al-Mahra | Al-Mahweet | Amran | Dhamar | Hadramout | Hajja | Hodeida | Ibb | Lahj | Mareb | Rayma | Sa'ada | Sana'a | Sana'a City |
| 1. Household Budget Survey                   | x                    | x    | x         | x       | x       | x        | x          | x     | x      | x         | x     | x       | x   | x    | x     | x     | x      | x      | x           |
| 2. Household Budget Survey                   | x                    | x    | x         | x       | x       | x        | x          | x     | x      | x         | x     | x       | x   | x    | x     | x     | x      | x      | x           |
| 3. Poverty Survey                            | x                    | x    | x         | x       | x       | x        | x          | x     | x      | x         | x     | x       | x   | x    | x     | x     | x      | x      | x           |
| 4. Community Food Security Profiling         | x                    | x    | x         | x       |         | x        | x          |       | x      | x         | x     | x       | x   | x    |       |       |        | x      | x           |
| 5. Agricultural Census                       | x                    | x    | x         | x       | x       | x        | x          | x     | x      | x         | x     | x       | x   | x    | x     | x     | x      | x      | x           |
| 6. FIVIMS                                    | x                    | x    | x         | x       | x       | x        | x          | x     | x      | x         | x     | x       | x   | x    | x     | x     | x      | x      | x           |
| 7. Family Health Survey                      | x                    | x    | x         | x       | x       | x        | x          | x     | x      | x         | x     | x       | x   | x    | x     | x     | x      | x      | x           |
| 8. Child Development Project Baseline Survey | x                    |      |           | x       |         | x        |            | x     |        |           | x     | x       | x   | x    |       |       |        | x      |             |
| 9. Population Census                         | x                    | x    | x         | x       | x       | x        | x          | x     | x      | x         | x     | x       | x   | x    | x     | x     | x      | x      | x           |
| 10. Household Budget Survey                  | x                    | x    | x         | x       | x       | x        | x          | x     | x      | x         | x     | x       | x   | x    | x     | x     | x      | x      | x           |
| 11. Food Security and Nutrition Survey       |                      |      |           | x       |         |          |            |       |        |           |       | x       | x   | x    |       |       |        |        | x           |
| 12. Poverty Assessment                       | x                    | x    | x         | x       | x       | x        | x          | x     | x      | x         | x     | x       | x   | x    | x     | x     | x      | x      | x           |
| 13. Statistical Yearbook                     | x                    | x    | x         | x       | x       | x        | x          | x     | x      | x         | x     | x       | x   | x    | x     | x     | x      | x      | x           |
| 14. High Food Price Survey                   | x                    | x    | x         | x       |         | x        | x          | x     |        | x         | x     | x       | x   | x    |       |       |        | x      | x           |
| 15. EFSA of Flood Impacts                    |                      |      |           |         |         | x        |            |       |        | x         |       |         |     |      |       |       |        |        |             |
| 16. Rapid Needs Assessment                   |                      |      |           |         |         |          |            |       |        |           |       |         |     |      |       |       | x      |        |             |
| 17. Social Welfare Fund                      |                      |      |           |         |         |          |            |       |        |           |       |         |     |      |       |       |        |        |             |
| 18. Nutrition Survey*                        |                      |      |           |         |         |          |            |       |        |           |       |         |     |      |       |       |        |        |             |
| 19. National Food Security Strategy*         |                      |      |           |         |         |          |            |       |        |           |       |         |     |      |       |       |        |        |             |

## 2.1. FIVIMS 2003

FIVIMS 2003 is the largest survey on the prevalence of household food insecurity and vulnerability to date, based on household perceptions. It is representative at the agro-ecological zone and governorate levels. FIVIMS characterised food insecurity according to a series of questions asked (see Table 2).

*Table 2: Survey Questions Used to Construct the Food Insecurity Measures (FAO 2004)*

| Survey Questions |   | Household Food Insecurity                       |
|------------------|---|---|
| Q5               | In the last 12 months, did it happen that your family could not afford to eat what you normally eat?  | No: Food Secure<br>Yes: Generally Food Insecure |
| Q7               | In the last 12 months, was there a time when you feared that you would not have enough food for your family for the next month?                       | No: Food Secure<br>Yes: Vulnerable              |
| Q9               | Did you get all the food you needed or only part of it?   | No: Food Secure<br>Yes: Food Insecure           |
| Q11              | During the past 12 months, did it happen that you or any other adult in your family did not have a meal in the day because there was not enough food? | Yes: Food Insecure with Moderate Hunger         |
| Q13              | During the last 12 months, did it happen that any of your children did not have a meal during a particular day because there was not enough food?     | Yes: Food Insecure with Moderate Hunger         |
| Q14              | During the past 12 months, did it happen that you or any other adult in your family did not eat for a whole day because there was not enough food?    | Yes: Food Insecure with Severe Hunger           |
| Q16              | During the last 12 months, did it happen that any of your children did not eat for the whole day because there was not enough food?                   | Yes: Food Insecure with Severe Hunger           |

The main limitation is that it is outdated due to recent high food price impacts on food insecurity. Relying on perceptions is subjective. Questionnaire design in stages has its limitations. The entry question set the upper limit of food security, categorising generally food insecure and food secure households. Households that responded yes to (1) are considered generally food insecure and got probing questions. The question is subjective, as a positive response does not necessarily mean that the household is food secure. Also, a very long recall period of 12 months may be unreliable. There was no triangulation of findings through other methods. These limitations might have resulted in misclassifications of households, with potentially high in- and exclusion errors. Findings are to be considered as conservative, lower-bound estimates of food insecurity, due to the way questions were asked. Another limitation is the lack of including income/expenditure data; i.e. associations between poverty and food insecurity cannot be made.

## 2.2. Poverty Assessment 2007 & HBS 2005/06

The Poverty Assessment 2007, representative at governorate level, is based on HBS 2005/06, i.e. no primary data collection was done. It follows a cost of basic needs methodology to construct household region specific poverty and food poverty lines. The HBS

estimates minimum caloric needs for different household members. The food poverty line represents a minimum household food basket constructed to reflect consumption preferences and dietary diversity plus an allowance for basic non-food needs. It represents the cost of a food basket considering calorie requirements equal to 2,200 calories per person per day for all household members, gender and age composition of households, and residential region. Individuals are classified as ultra poor if they cannot afford the cost of food energy requirements at given prices and whose consumption is below the food poverty line. In contrast, the upper poverty line represents the food poverty line plus other basic, regional specific needs, e.g. clothes, shoes, shelter, health care, education and transportation to work. Food poverty lines imply widespread food insecurity. However, the results are not reported in the Poverty Assessment 2007 and there is no direct evidence on the extent of food poverty.

Nutrition data from HBS 2005/06 has been analysed for this SDA (see section 5.1). The results largely validate the findings from FHS 2003 and are available disaggregated at governorate level.

HBSs 1998 and 2005/06 are not comparable due to changes in survey design and methodology (different sampling frame, number of strata, recall periods for expenditures). But as both are representative at governorate levels and as long as deviations are similar, directions of change in poverty during the period from 1998-2005 can be evaluated. In HBS 2005/06 additions were made to make estimates more accurate<sup>3</sup>. HBS 1998 assumed that all purchased food and non-food goods were consumed during the reference period; while HBS 2005/06 distinguishes consumption and expenditure.

A limitation with respect to food insecurity is the set of indicators, focusing on income and expenditures to determine levels of poverty. The accuracy of income data collected through quantitative surveys is of concern and these figures should be handled with care<sup>4</sup>. Also, the survey is based on recall periods on food and beverages of the last month; a long period. Non-monetary aspects of well-being are not adequately covered. There seems to be a consensus amongst statisticians that these data are not reliable. Some of the findings are questionable, as they significantly differ from expected results<sup>5</sup>.

### **2.3. High Food Price Survey 2008**

WFP conducted a rapid assessment in 2008 to understand the impact of high food prices on food security by identifying who are most affected and where are they. The assessment consisted of a literature review for nutrition, focus group discussions, a household survey with food consumption scores (FCS) covering 15 governorates and a trader survey. Results are not representative as the survey was conducted in poor districts, where only poorest households were sampled. Anthropometric measures were not collected. The results provide a snapshot of high price impacts in June 2008. Based on the assumption that food

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<sup>3</sup> including price information at community level, household assets, health, access to basic services and social infrastructures, access to credit, and labour market conditions (UNDP 2006)

<sup>4</sup> People are often not comfortable talking about income. Poor people may feel embarrassed admitting to be poor, while better off households may underreport income to potentially qualify for social assistance programs.

<sup>5</sup> According to personal communication with national food security experts

insecurity and poverty are similar, only poor households are surveyed. This can lead to a significant proportion of households being excluded, i.e. poor but food secure households, or *vice versa*, or non-poor households that have fallen into food insecurity due to high prices.

## **2.4. Statistical Yearbook 2007**

Secondary data on agricultural land use, crop production and area, land holding, and livestock production, as well as basic demographic data and information with respect to employment, is available from the Central Statistics Organisation (CSO) in the annual Statistical Yearbook. These datasets are relevant and agricultural production data may only need to be supplemented to reflect recent changes due to the impacts of recent global crises.

## **2.5. Family Health Survey (FHS) 2003**

Representative nutrition data is not available below the national level. National nutrition data comes from the FHS 2003, which is old and was not designed to collect nutrition data *per se*. While the data reflects the national situation and is the most cited, it is not available at governorate level. The data is not reliable, due to quality concerns and limited thematic coverage<sup>6</sup>. Moreover, scattered nutrition data is available at governorate level, but is target group specific and of limited geographic coverage. However, it is unquestionable that Yemen's child malnutrition rates are amongst the highest in the world. Due to the lack of accurate, updated data, there is a strong need to create a national nutrition baseline.

## **2.6. Upcoming Surveys**

The Government of Yemen (GoY) and donors are involved in addressing the shortcomings of current data availability with respect to food security and nutrition. During consultations with stakeholders in Sana'a, the SDA identified upcoming surveys. These are important to WFP, particularly with respect to planning interventions and optimising targeting strategies. As much as possible, the results should be integrated into the programme planning process. First, the *2010 National Food Security Strategy* will consist of modelling and scenario development for food security and malnutrition based on available data (World Bank & IFPRI 2008). Second, the *2010 National Nutrition Survey* (UNICEF & MoPHP 2009b; UNICEF & MoPHP 2009a), a national survey with an anthropometric nutrition and a food security household economy component. Data collection is expected to start in early 2010 and results are expected before the end of the year. Third, the *2009 Social Welfare Fund Survey* (Europeaid 2008) was undertaken nation-wide, including 1.7 million current and potential beneficiaries to confirm their eligibility and identify more beneficiaries. No results have been reported, the database is expected to be finalised in September 2009. Forth, the EC-funded Food Security Information System (FSIS) aims to establish a national FSIS in CSO and to implement a pilot in Hodeida. It involves a range of stakeholders from line ministries. The project is currently in the design of the FSIS, after establishing a strategy unit within the Ministry of Planning and International Cooperation (MoPIC). Fifth, the next Household Budget Survey is planned for 2010.

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<sup>6</sup> Personal communication with UNICEF

### 3. Country-Level Context

#### 3.1. Introduction

Yemen is located on the southern edge of the Arabian Peninsula, bordering Saudi Arabia to the North, the Red Sea to the West, Oman to the East and the Arabian Sea and the Gulf of Aden to the South. Yemen covers an area of 527,970 km<sup>2</sup>, with five major agro-ecological zones, including over two hundred islands. The Republic of Yemen, as it exists today, was established in 1990, when the Yemen Arab Republic (YAR) and the People's Republic of Yemen (PRY) united. Yemen today is by far the poorest country of the Arab states. The country ranks 153<sup>rd</sup> out of 177 countries on the Human Development Index (HDI) and is listed as one of the Least Developed Countries (LDCs). Food insecurity and malnutrition are major concerns, reflected by rates of child malnutrition and maternal mortality being amongst the highest in the world. More than half of the population is employed in the agricultural sector, which generated only little more than 14% of the Gross Domestic Product (GDP) in 2007 (World Bank 2007b). Yemen relies on imports of basic food commodities to provide for its population; over 90% of wheat and 100% of rice are imported (WFP 2008c). The substantial increases in food prices over the past two years have increased the number of Yemenis that are affected by food insecurity.

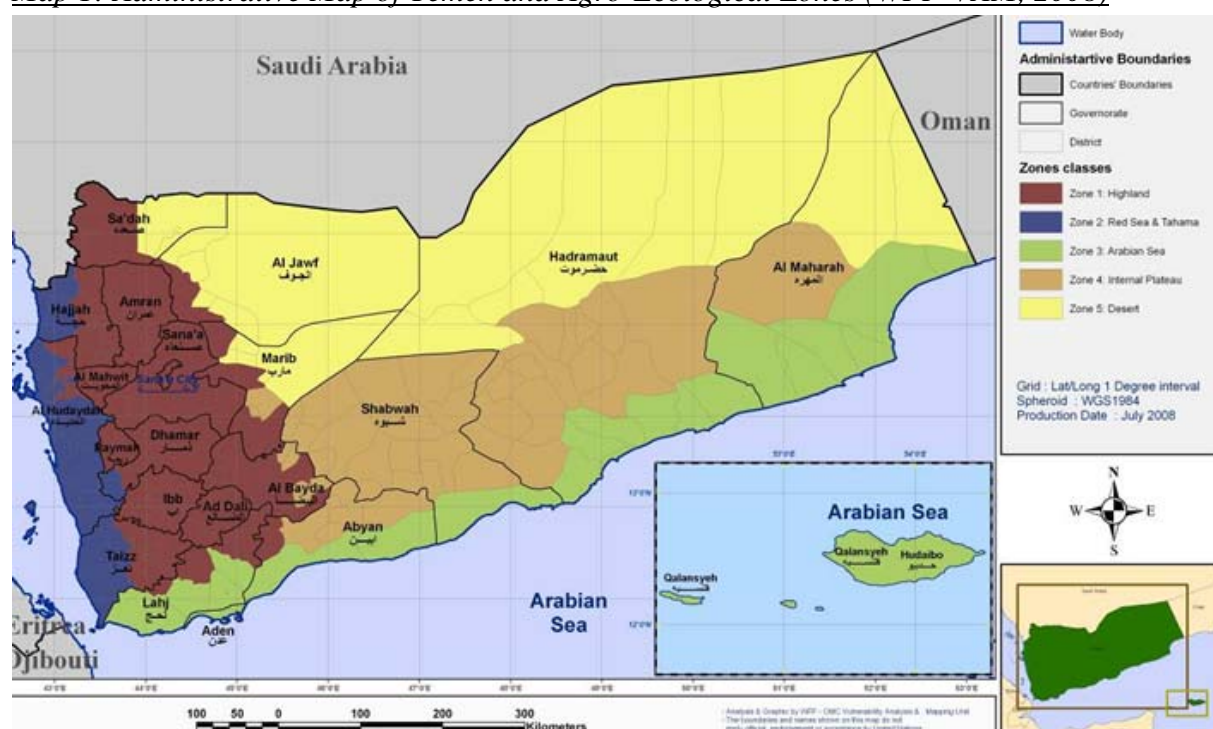
Despite some progress made, the country still faces multi-dimensional challenges for development. Improvements in infrastructure, literacy, and life expectancy since 1990 have been significant. Life expectancy has increased from about 40 years in 1975 to 60 years today, adult literacy jumped from 10 to 49%; primary school enrolment increased from 57 to 72%; female illiteracy dropped from 94.5 to 69%, and fertility rates declined from 7.9 to 6.2 births per woman (World Bank 2007a). Over the same period, the extent of paved roads in the country increased from 961 to over 6,000km. However, the pace of improvement as measured by the HDI has recently declined slightly (World Bank 2007a). However, the country continues to face multi-dimensional challenges in its endeavour for economic development, political reforms, and peace and security. The dependence on government revenues from limited oil reserves is critical as reserves are predicted to run out by 2020 (Khan & Chase 2003). The rate of population growth remains high (>3%), indicating a doubling of the population in twenty years and reaching 38 million by 2026. These population dynamics are negatively impacting improvements that have been made in water management, economic growth, education and basic health care (MoPIC & UN). The rapid depletion of groundwater resources to meet increasing demands is leading to serious conditions of water scarcity, and has accelerated out-migration from rural to urban areas. Limited human resource capacity is reflected in low rates of literacy and enrolment, with a significant imbalance of girl's enrolment. Furthermore, inequality, as measured by the Gini coefficient, increased from 33 to 37% from 1998 to 2005. Gender inequalities are persistently among the highest, with Yemen ranking 121<sup>st</sup> out of 140 countries on the Gender Development Index (World Bank 2007a).

Overall poverty decreased from 40% (1998) to 35% (2005). This decline was mostly in urban areas (World Bank 2007a). Chronic food insecurity and malnutrition continue to be a concern, reflected by high rates of child malnutrition under five at 46% and maternal mortality being one of the highest in the world (366 in 100,000 live births) (MoPIC 2005b; MoPIC 2006). High production and consumption of qat have contributed to the decline of the agricultural sector and to water scarcity, with significant socio-economic and health impacts (Kabbani & Wehelie 2005). Other concerns include high unemployment, weak infrastructure, and low administrative capacity (MoPIC 2005b; MoPIC 2006). The country's development is affected by increased terrorist attacks and civil unrest, which have impacted on economic growth, investment and tourism. Other factors include high food prices, influx of refugees, flooding, and the global economic and financial crisis. The country's uncertain economic

outlook is largely determined by the global crisis and the volatility of commodity prices (MoPIC 2009). The Millennium Development Goals (MDGs) are at the centre of Yemen's development strategies. However, it is estimated that most of the goals will not be met by 2015, with the possible exception of universal primary education; without substantial redirection of policies, additional funds and capacity building (MoPIC & UN; WFP 2006).

Yemen is divided into five agro-ecological zones: (1) the Central and Northern Highlands, (2) the Tihama Plain, (3) the Southern Coast, (4) the Middle Plateau of Shabwah and Hadramout, and (5) the Empty Quarter. Administratively, Yemen is divided into twenty-one governorates and 333 districts. The governorates are Abyan, Addaleh, Aden, Amran, Dhamar, Al-Baidha, Al-Gawf, Hadramout, Hajja, Hodeida, Ibb, Lahej, Al-Mahra, Al-Mahweet, Mareb, Rayma, Sa'ada, Sana'a, Shabwa, Taiz, and Sana'a City. Governorates are subsequently subdivided into (rural) districts and (urban) areas. There is no official administrative structure below the district, but there are several sub-divisions: sub-districts, villages, and hamlets (UN-DESA 2004). Map 1 provides a graphic view of the country and how these divisions overlap. This overlap is important in understanding how livelihood strategies, household food access and malnutrition interact within one governorate itself.

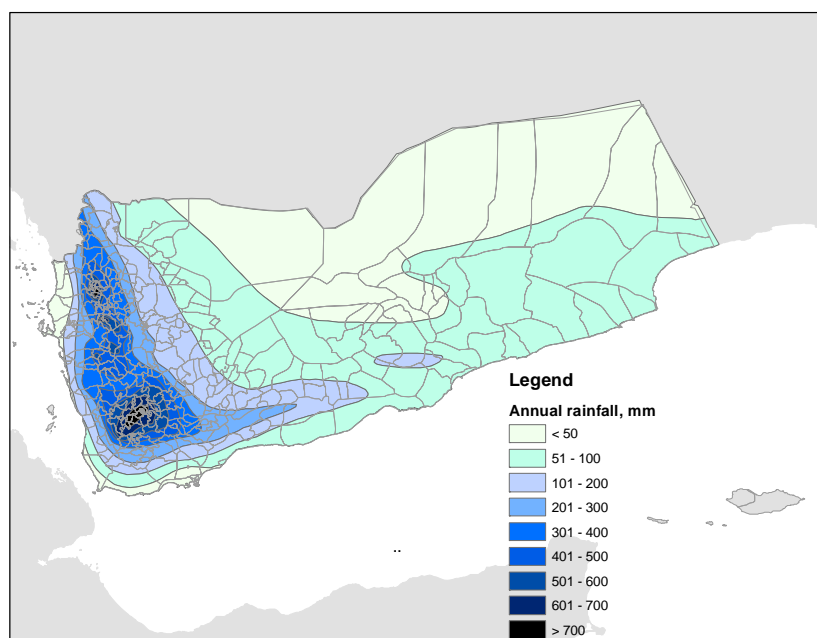
*Map 1: Administrative Map of Yemen and Agro-Ecological Zones (WFP-VAM, 2008)*



### 3.2. Geography and Climate

Yemen's topography varies widely from sea level to inter-mountain plains, steep slopes and rugged mountains up to 3,760m. Tectonic activity has created major landforms – mountain ranges, the Red Sea and the Gulf of Aden. The mountainous interior is surrounded by narrow coastal plains to the east, south, and west and by upland desert towards the north. Yemen has been named *Arabia Felix* due to the relative abundance of rainfall, compared to other parts of the Arabian Peninsula. However, it is characterised by a semi-arid to arid climate. Climate varies according to agro-ecological zone (see Map 2). Temperatures are generally high, but there is a linear relationship between elevation and temperature. The mountains are temperate year round, while the Tihama and desert are hot and dry during winter and even hotter in summer, with temperatures rising over 50°C. Differences between average monthly temperatures and average daily ranges vary across zones and are higher at higher elevations and in the arid interior.

*Map 2: Average Precipitation Distribution in Yemen (Wang 2009)*



Precipitation in Yemen is influenced by its vicinity to major water bodies (i.e. the Indian Ocean, Red Sea and Mediterranean, acting as moisture sources). The Red Sea Convergence Zone is active from March to May; its influence affects climate patterns in the higher altitudes in the west of the country. The Monsoon Inter-Tropical Convergence Zone reaches the country in July to September. Rainstorms during the winter months

(Dec-Jan) are attributed to the Mediterranean influence and are low intensity frontal rains. Precipitation is highly variable across temporal and spatial scales, with two rainy seasons in spring (Apr-May) and summer (Aug-Sep), mostly occurring in the central and southern mountains. Local variation of rainfall is attributed to topography and the local character of connective storms combined with high intensity and limited spatial extent. Escarpments that are exposed seaward, i.e. western and southern slopes, receive more rain. Precipitation ranges from less than 50 mm along the coast to 500-800 mm in the western highlands and decreases to below 50 mm inland. The highlands contain *wadis*, dry riverbeds that flow with water during periods of precipitation, creating pockets of biodiversity (MoPIC 2003; Alabsi 2006).

### 3.3. Political Context and Security

Since unification (1990), the political system of Yemen is a multi-party democracy. GoY authority is centralised in the capital Sana'a. A decentralisation process was launched in 2000 by establishing locally elected district and governorate councils to provide an institutional framework for local development. Though local governance and participation of civil society in public life remains weak (MoPIC & UN; MoPIC 2003). The country is confronted with a host of challenges: political cohesion is at risk due to conflict; economic

downturn; outbreaks of tribal conflicts; and societal transformations as a result of a stronger role for the private sector (WFP 2008d). Limited institutional capacity and inefficient administration contribute to weak governance (MoPIC 2009).

Yemen's strategic position and porous borders have created security concerns. Tribal dynamics and religious tensions intermingle with economic concerns (EC 2006). The major lines of conflict revolve around the relationship between state and tribes and between tribes themselves<sup>7</sup>, the relationship between former North and South, and the clash between tradition and modernity. Widespread poverty, inequality in the distribution of resources, rural-urban disparities, and popular disenchantment with the slow pace of reforms fuel public discontent (EC 2006). Since unification, Southerners have often expressed bitterness over unemployment and economic hardship, while political elites lack a sense of participation in political power. A secessionist movement in 1994 was subdued, but since 2007 a series of riots across the South over economic hardship have taken place. Clashes with security forces have intensified in 2009 following a series of demonstrations.

Growing discontent has spread to include other parts of society, namely in the North. In 2004, local insurgency groups in Sa'ada clashed with the Yemeni Army. Several waves of fighting continued since then, killing thousands of people. Over five rounds, the war has grown several-fold and has become increasingly complex. The prolonged conflict in Sa'ada has displaced 100,000 people by 2008 and affected the livelihoods of countless others. The majority of the governorate is not under government control and remains volatile, with renewed fighting in 2009 and an increasing number of internally displaced people (IDP). The conflict is exacerbated by tensions between tribes who have begun to take sides in the conflict. A breakdown of the situation could threaten Yemen's stability (ICG 2009).

Political instability is resulting from the conflict between the pro-Western government and a rising influence of al-Islah, an Islamist party. In Yemen, very isolated until recently, trends in globalization and urbanization challenge deep-rooted elements of traditional social order. The influence of globalisation is slowly resulting in an increased adoption of western culture. Increasing migration from rural to urban areas sharpens this clash.

Foreign relations were significantly strained during the 1990-91 Gulf War, when Yemen took a pro-Iraq stance. Disputes with Saudi Arabia over their border and the expelling Yemenis created civil war in 1994. Relations to Western states were re-established in the 1990s. Yemen joined the US-led *War on Terror*, which raised hostility among its own population (EC 2006; WFP 2008d). Yemen faces threats from militant groups from neighbouring countries (EC 2006). One of these groups is responsible for bombings of the USS Cole in 2000. A series of attacks of militants on Western tourists, embassies and oil facilities followed since 2007. Piracy in the waters between Somalia and Yemen has been on the rise. These factors have contributed to projecting a negative international image.

The impact of conflicts from the Horn of Africa, particularly Somalia – bringing a constant influx of refugees is considerable. UNHCR estimated that around 154,000 refugees,

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<sup>7</sup> Sources of tribal conflicts often lie in the distribution of land, water and oil resources.

mainly from Somalia, Iraq and Ethiopia, were in Yemen in June 2009 (UNHCR 2009)<sup>8</sup>. The GoY, in collaboration with UNHCR is currently registering all refugees in the country. For more information on risk due to conflict and refugees, see section 6.1.3/5.

### 3.4. Macro-Economic Indicators and Poverty Trends

Since unification, the economy had to deal with consequences of Yemen's support for Iraq during the 1990–91 Gulf War: Saudi Arabia expelled almost 1 million Yemeni workers, and both Saudi Arabia and Kuwait reduced economic aid to Yemen. The fall in remittances had a disastrous impact on Yemen's budget. Since 1995 Yemen has relied on multilateral aid to sustain its economy. In return, GoY attempted, with limited success, to implement reforms; reducing the civil service payroll, eliminating subsidies, lowering defence spending, and privatizing state-run industries.

Yemen is one of the poorest countries in the MENA region. It is a low-income country with an economy that relies on exploiting its small oil wealth, exporting goods from the agricultural and fisheries sectors, and receiving a large amount of overseas development assistance (ODA) and remittances. Yemen is a small oil producer. In 2004, oil accounted for 72% of revenue, more than 86% of export earnings and 13.6% of GDP. This dependence leaves Yemen's budget vulnerable to the volatility of international oil prices. But most worrying for the future is the decline in resources. At the present rate of production, reserves are not expected to last beyond 2020 (EC 2006).

The service sector (53.8%) is the largest economic sector, followed by industry (27.3%) and agriculture (18.9%). Services are dominated by government services (20.5%) and transport (13.2%). Tourism has potential, but is hampered by limited infrastructure and security concerns. The industrial sector accounts for 27.3% of GDP and includes oil (13.6%) and non-oil (11.6%). The largest output is oil refining, which generates 40% of total revenue. The remainder consists of food processing, metal products, consumer goods and construction materials. Industry faces various structural problems, such as a lack of skilled labour, smuggling and dumping, low access to credit, weak infrastructure, and an unfriendly legal system (EC 2006).

For 2005, Yemen's GDP was estimated at 11.12 billion US\$, with an average annual growth rate from 1995-2005 of 4.4%, while GDP per capita was estimated at 530US\$ (WRI *et al.* 2008). Economic growth has faltered since 2000. GDP growth decelerated from 4.6% in 2001 to 2% in 2004, insufficient to offset population growth (EC 2006). A general decline in GDP growth is attributed to decreased oil production, which has negatively affected exports of goods and services, coupled with increased demand for imports (MoPIC 2009). GDP per capita is lower than the level reached before 1990. Oil GDP growth declined from 1.3% in 2001 to -5.9% in 2004. Non-oil GDP growth has decreased, along with private investment and public spending. Inflation remains high at 12%, fuelled by the rise in food prices. In 2004, public investment represented 64.2% of GDP, with private investment declining to 31.8% from 66% in 1995 (EC 2006). Estimated growth rates fall short of the Five-Year Development Plan (2006-10) targets of 7% GDP growth per year (MoPIC 2009). Currently,

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<sup>8</sup> This only includes officially recognised refugees and does not include illegal refugees.

financial support pledged by donors and the construction of a liquefied natural gas plant should offset the anticipated decline in oil revenue.

While Yemen had been able to resolve its fiscal deficit in the 1990s, it increased fivefold since 2002. Civil service salaries and fuel subsidies account for 80% in expenditure (MoPIC 2009). In 2005, expenditures for public health and education account for only 1.9% and 9.6% (WRI *et al.* 2008). A budget surplus in 2006 was largely due to a higher price of oil. However, in 2007, revenue fell, as oil production was down. Fiscal deficit was estimated at 3.4% of GDP in 2008 (MoPIC 2009). Overall expenditures are expected to increase, as the government has failed to reduce its primary expenditure, the fuel subsidy. GoY has reported a decrease in oil revenues by 76% from 2008 as a result of the global economic crisis (WRI *et al.* 2008). These features are a cause of concern as private investment can boost future growth and employment, while public spending will decrease as oil production declines (EC 2006).

Yemen's import and export values have increased and decreased in the past 10 years owing to shifts in global oil prices. Yemen's foreign trade is dominated by oil, which constituted 86% of earnings in 2004 (EC 2006). Strong demand for imports and rising world commodity prices resulted in a surge in the value of imports, which, combined with the fall in export earnings led to a sharp deterioration in the trade balance (-6.3%) in 2007. The 2008 balance of payments swung back into surplus due to the higher oil price (MoPIC 2009). Being reliant on imported goods, Yemen suffered heavily from high food prices, which pushed consumer price inflation up to an average of 19% in 2008. Rising public discontent will likely mean that the government will be slow to implement fiscal reforms, especially the subsidy reductions. The main challenges to growth are the reliance on oil in the light of a decline in oil revenues, little economic diversification, high unemployment, weak institutional capacity, and pressures of high population growth (WRI *et al.* 2008).

Yemen is a major recipient of ODA, which accounted for 336 million US\$ in 2005, contributing 2.1% to GDP, and amounting to 15.9US\$ per capita (UNCTAD 2008a). In 2002, bilateral and multilateral lenders agreed to give Yemen a four-year economic support package worth US\$2.3 billion. However, in 2005 the World Bank announced that because of the government's continued inability to effect reforms, funding would be reduced. In 2006, the World Bank adopted a new Country Assistance Strategy (2006-09); contributing US\$400 million over that time frame. In late 2006, Yemen's development partners pledged a total of US\$5 billion for 2007–10 to finance projects outlined in Yemen's five-year (2006–10) Development Plan for Poverty Reduction (DPPR).

### **3.5. Food Availability and Markets**

Food availability is defined as availability of sufficient quantities of food of appropriate quality, not its affordability. It includes food that is physically present, through all forms of domestic production, commercial imports, reserves and food aid (WFP 2009a). Yemen is a low income food deficit country and relies heavily on the import of food staples. Food availability is affected by variations in the macroeconomic and political environment, and by volatility of international market prices – for oil that creates most of government's revenue, and for food that needs to be imported. Global economic crises disrupted availability and stability of food supplies and are likely to have a significant impact in the future.

Structural shifts in agriculture resulted in less domestic food availability. Prior to the 1970s, domestic cereal production accounted for nearly all requirements. Since the 1980s there has been a shift towards high value cash crops, such as qat, vegetables and fruits. This shift from staple food production to marketable cash crops, combined with high population growth, has resulted in decreasing domestic food availability. By 1998, domestic production accounted for 26% of a cereal availability of 3.2 million tons (UNDG 2001). The high rate of

food import dependency marks a significant change. Despite this dependence on imports, the country has maintained a stable supply of cereals during the last decade. It was only in the last two years, with increases in international food prices that food insecurity has resulted in domestic problems. Social unrest associated with rising prices had destabilizing effects.

The dependence on food imports has raised concerns. The reliance on high international prices puts pressure on household and national budgets. Five exporters<sup>9</sup> supply 73% of the world's traded cereals making access dependent on events in these countries and on relationships with them (World Bank *et al.* 2009). The trade of food is important to Yemen's food security. Food constitutes 20% of the non-oil economy, while food exports constitute 80% of non-oil exports and 24% of total imports (Breisinger *et al.* 2009). Figure 1 illustrates shares of different food items. Additionally, food aid accounts for about 2.1% of total food imports in 2006 (UNCTAD 2008a).

*Figure 1: Share of Food Exports and Imports in Yemen (Breisinger et al. 2009)*

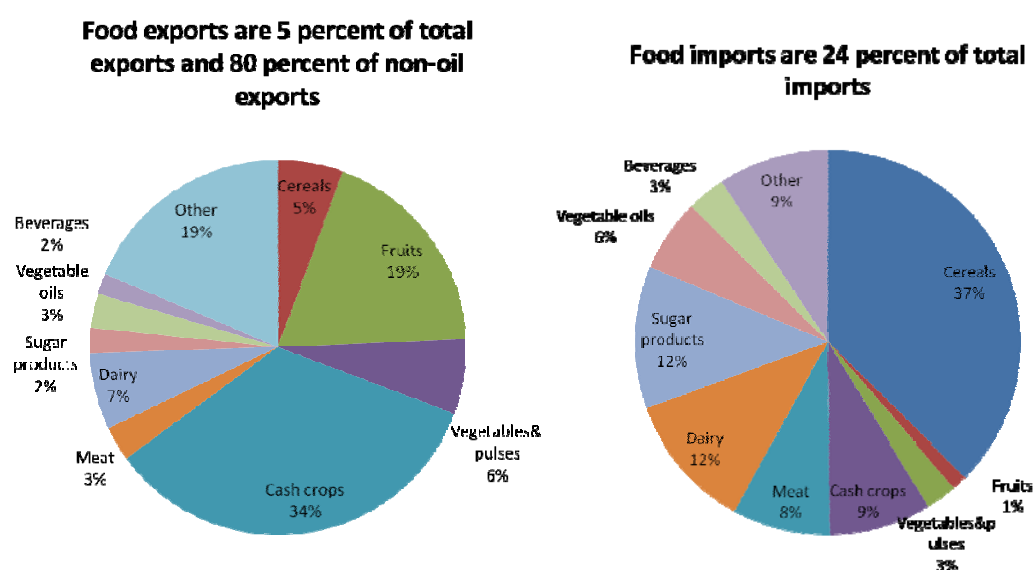


Table 3 presents the food balance for Yemen and shows the heavy reliance on the imports of basic food stuffs.

*Table 3: Food Balance (000 tonnes) 2001-03 (FAO 2006a)*

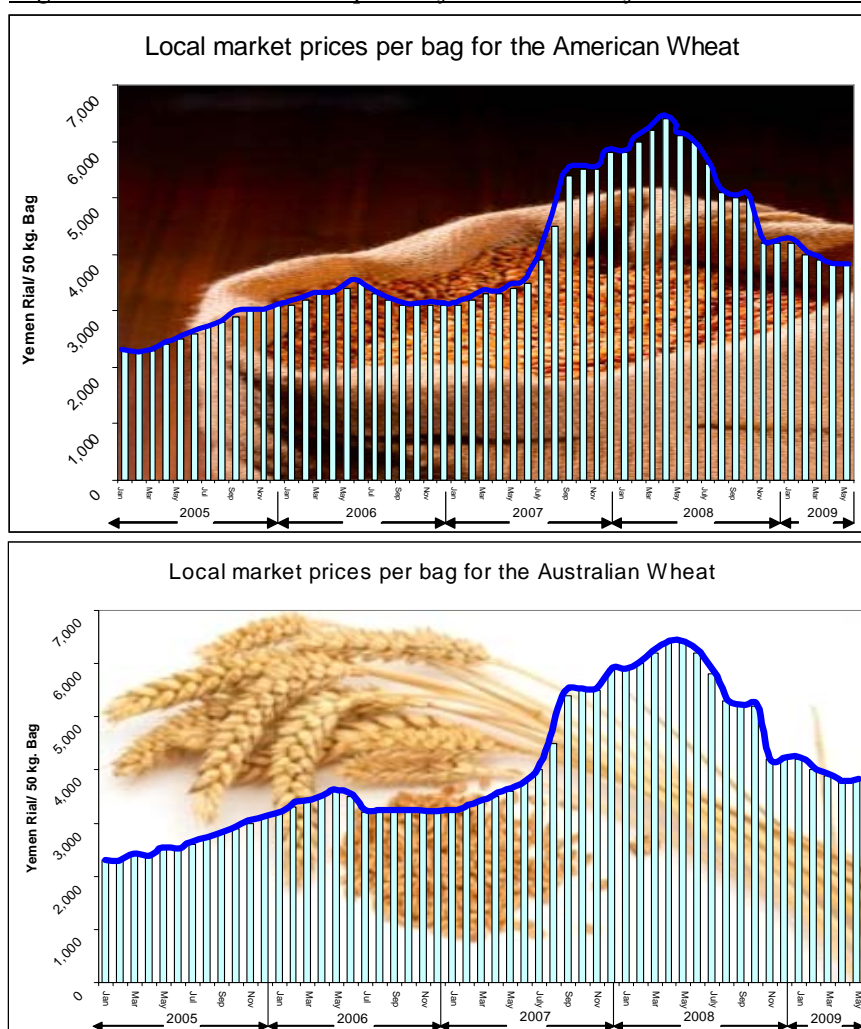
| Food groups | Production (+) | Export (-) | Imports (+) | Stock changes & other uses (-) | Consumption (=) |
|-------------|----------------|------------|-------------|--------------------------------|-----------------|
| Cereals     | 559            | 14         | 2,439       | -37                            | 3,020           |
| Veg. Oils   | 11             | 4          | 152         | 25                             | 135             |
| Sugar & sw. | 1              | 3          | 583         | 132                            | 448             |

<sup>9</sup> Argentina, Australia, Canada, the EU, and the United States

|                |     |   |     |    |     |
|----------------|-----|---|-----|----|-----|
| Roots & tubers | 211 | 1 | -   | 24 | 187 |
| Meat           | 197 | - | 86  | 0  | 283 |
| Milk           | 262 | 6 | 390 | 12 | 633 |

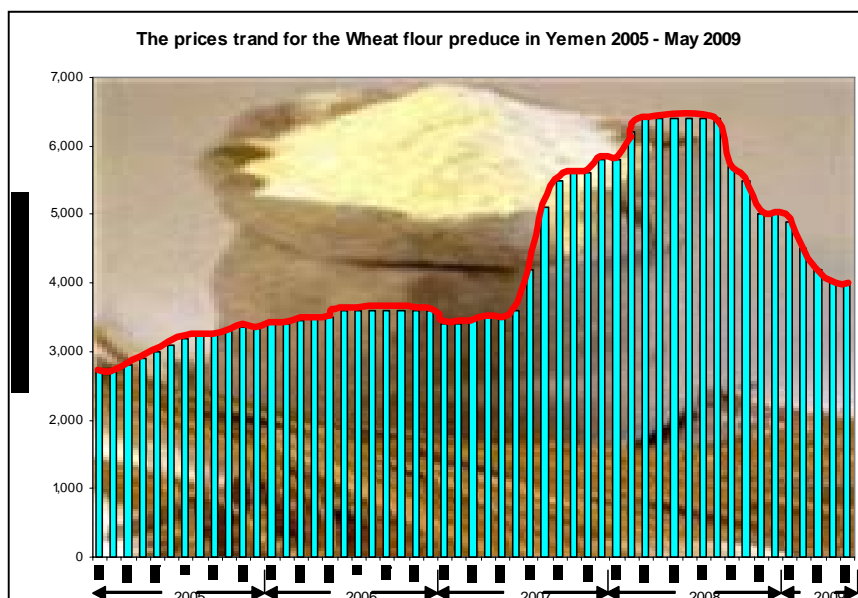
Only 3% of the land area of Yemen is cultivable. From 1985-2003 total cereal area declined by -2.4%, compared to a current fall at -0.9% per year. Average cereal production during 2001-04 amounted to 559,000 tonnes covering only 20% of domestic demand estimated at 2.7 million tons. Production declined to 417,000 tons in 2003 due to drought, low prices and low incentives (MoPIC 2005a). Consequently, in 2006 1.5 million tons of cereal were imported (Alabsi 2006). Sorghum was planted on 453,000 hectares, yielding 401,843 tonnes in 2007, followed by wheat (149,173 tonnes) and millet (82,276 tonnes) (CSO 2007). Per capita cereal consumption amounted to 159 kg in 2001, and has been highly dominated by wheat consumption (114 kg) (MoPIC 2005a).

*Figures 2-4: Local market prices for wheat and flour in Yemen since 2005 (WFP, 2009)*



Since the majority of food consumed in Yemen is purchased, markets are important. Food access is determined by household income. Market prices are an important component of purchasing power and it is important to look at price trends (WFP 2002). Prices are monitored by WFP for main staple foods available on the local market. In less than a year, retail prices of wheat have increased by 88%; in Yemen a 50kg bag of wheat increased from 3,400 to 6,400YR. Figures 2-4 show the trends for 50kg bags of wheat and wheat flour from 2005 until May 2009. As a net food importer with a self-

reliance rate of 10-25%, international price increases had a profound impact. Yemen imports 91% of wheat and 100% of rice requirements, both are staples foods. In the first months of 2009, prices have decreased slightly, though they remain high (WFP 2008a).

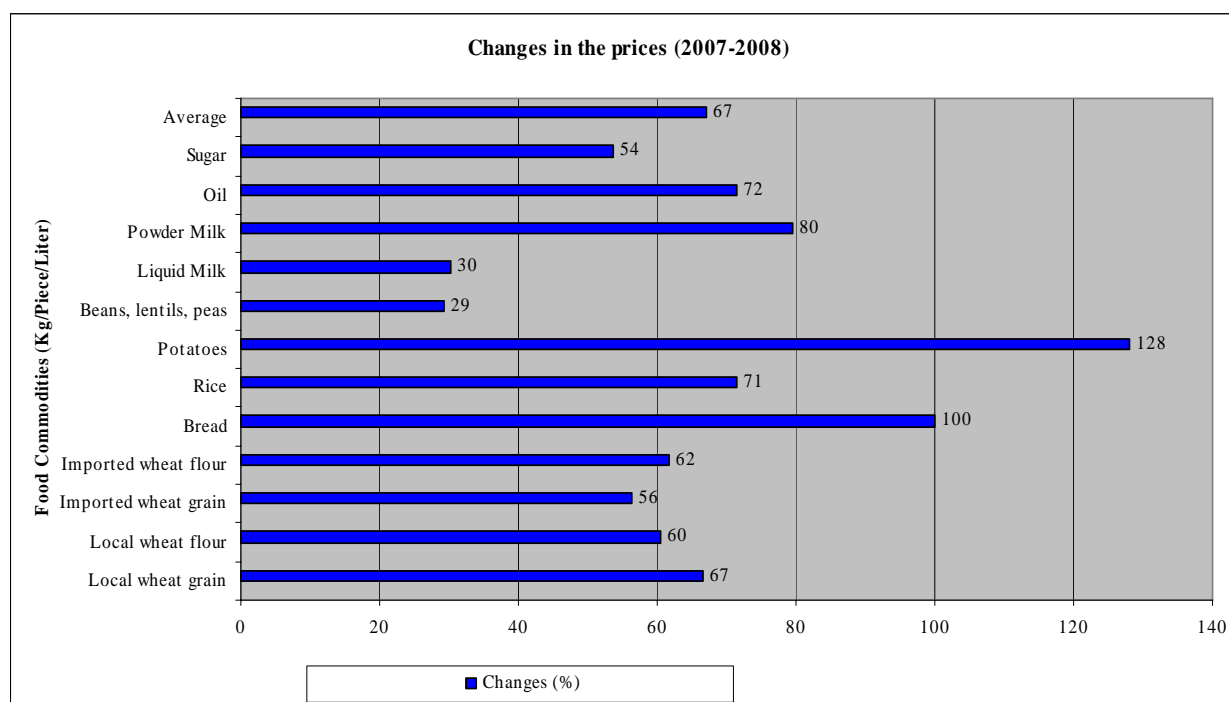


The removal of subsidies for cereals in 2002 has resulted in consumers having to pay the full cost (Alabsi 2006). This resulted in reduced guaranteed access to low market prices and easy food access (WFP 2002). In the light of high food prices, this has impacted on household food security. The phase-out of fuel subsidies in 2005 contributed to increasing price pressures in rural

areas. Food price inflation averages increased from 19% in 2004 to 35% by the end of 2005 (WFP 2006).

A regional study of the impacts indicate that Yemen is disproportionately higher affected than other MENA countries, with respect to price increases (230% over two years in Yemen compared to 45% in Iran and 14% in Iraq) (WFP 2008d). Figure 5 illustrates price changes for major food items over the period of prices increases. A market survey showed a significant change in buying – less and less expensive food items – shifting to wheat (from rice) in some areas, and generally less demand for meat and milk products (WFP 2008c).

*Figure 5: Price Changes from June 2007 to June 2008 (WFP 2008c)*



As a net food importing poor country, the impacts of high food prices have been profound (see section 6.1.2). A deterioration of food security and nutrition has most affected the poorest, food insecure and vulnerable (WFP 2008a). Market studies show that this is not due to the lack of food availability. Before the crisis, food was widely available in the

markets, even in remote locations (UNDG 2001; WFP 2002). Temporary food supply problems have been noted for some very remote locations, where inadequate food supply is linked to sharp retail price rises, suggesting high market sensitivity (WFP 2002). WFP shows that availability of food items was not affected, even in remote markets (WFP 2008c). Marketed food incurs losses due to inadequate market integration and poor infrastructure, the lack of transport and road access, handling and storage (WFP 2002). While food availability is not a constraint, prices are potentially higher in remote areas due to additional costs. This points towards food access constraints that drive food insecurity in Yemen.

### 3.6. Policy Framework

To address poverty, Yemen developed *Vision 2025* (MoPIC 2005b). It identifies development targets with respect to economic, social, cultural and political goals. The vision identifies promising sectors as: (1) Rejuvenation of Coastal Regions; (2) Accelerating Industrialization; (3) Promotion of Extraction Industries; (4) Developing and Rationalizing Agriculture; (5) Balanced Exploitation of Fisheries, (6) Exploiting Tourism Potentials; (7) Orientation towards Exports; and (8) Exploiting Geographic Location and Supporting the Role of the Free Zones. Based on *Vision 2025*, the third poverty reduction strategy *Socio-Economic Development Plan for Poverty Reduction (DPPR) 2006-2010* focuses on public sector reform with decentralization and local development planning (MoPIC 2006). Agriculture plays a central role in rural development. The *Rural and Local Development Strategy* provides a mechanism for the implementation of DPPR programs in rural areas (MoPIC 2003). It emphasises decentralized development and the utilisation of agricultural potential, via sustainable natural resources management, improved water management, and alternative cash crops to qat; to facilitate economic growth and employment in rural areas. Moreover, it focuses on human resource development through the provision of basic services, infrastructure, and social protection (MoPIC 2003).

Neither *DPPR* nor the *Rural and Local Development Strategy* addresses food security. In 2008, a new *Social Welfare Law* came into effect, which will guide interventions. The aim of the law is to improve access to social welfare for poor individuals and households. It introduces a poverty-oriented targeting approach and forms an indispensable pillar of the social safety net. The law introduces a selection procedure which is strictly poverty-orientated. Living below the food poverty line for economic categories and below the poverty line for social categories are yardsticks to be eligible. The law regrouped beneficiaries into two basic categories using the principal availability to the labour market as distinguisher<sup>10</sup>. The new law is seen as valuable contribution in offsetting impacts of global crisis, and government policies (e.g. the planned fuel subsidy decrease) (Europeaid 2008).

Food security has not been a primary focus of the GoY, based on the assumption that a focus on poverty alleviation will at the same time address food insecurity. It was only in the context of high food price crisis that food security has taken a more prominent role. In June 2008, the GoY initiated a consultative process on the food crisis with all development

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<sup>10</sup> Beneficiaries available to the labour market form economic categories (e.g. unemployed, women without caretaker). Elderly, orphans, permanently-fully disabled, permanently-partially disabled and temporarily-disabled are making up social categories.

partners. This process led to establishing a joint food crisis task force to ensure a common understanding of the impact of the crisis, and comprehensive, coordinated and appropriate short, medium and long-term measures to address the crisis (WFP 2008a).

The National Nutrition Survey planned for early 2010 is the first indication that food insecurity and malnutrition have been accepted as priorities. The development of a *National Food Security Strategy* (see section 2.6, Appendix 3) is currently underway, with the support of the International Food Policy Research Institute (IFPRI), European Commission (EC), World Bank, and German Agency for Technical Cooperation (GTZ) (World Bank & IFPRI 2008). It will take macro-economic considerations, non-agricultural linkages, and nutrition security challenges into account and assess investments to improve food security. The Draft will be presented in January 2010, while the Strategy Paper will be disseminated in May 2010. Involved in the food security strategy are the ministries of Agriculture, of Water, of Health, of Trade, of Finance, and the Social Welfare Fund. There are a number of national strategies that should include food security concerns, but none of them specifically integrate these into their agendas. A range of sector strategies exist that are relevant to food security and are being used in the formulation of the *National Food Security Strategy*, including *National Nutrition Strategy*, *National Water Sector Strategy* (2004), *Aden Agenda on Agriculture*, *National Strategy for Fisheries Sector Development*, *National Health Strategy*, *Basic Education Development Strategy* (2002), and others.

### 3.7. Social Welfare Programmes and Donor Interventions

Yemen has several welfare programs in place, but they are generally considered inadequate to meet the needs of Yemen's poor. Yemen's Social Safety Net to ensure social protection of its impoverished population consists of three programmes – Social Welfare Fund, Social Fund for Development, and the Public Works Project. In response to the impacts of the high food prices and global economic crises, the GoY and its partners have initiated a range of responses. These include the increase in the coverage of the safety net, as well as scaling-up delivery mechanisms to address immediate needs for food, agricultural supplies, conditional cash transfers and nutrition programmes. Furthermore, partners are to make food aid available, and expand programmes to address food poverty (WFP 2008a).

#### *The Social Welfare Fund (SWF)*

SWF is the GoY's main social assistance programme, initially established to compensate for reductions in subsidies. Since 2002, the SWF is supported by the EC via technical assistance. The objectives of the SWF are to support poor individuals and families with cash to improve their living standard. SWF provides permanent social assistance<sup>11</sup> and temporary relief<sup>12</sup> to recipients without income or income earning potential. In 2007, payments amounted to YR19 billion, providing over 1 million beneficiaries direct monthly cash payments and lump-sums for emergencies (World Bank *et al.* 2007; MoPIC 2009). Cash

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<sup>11</sup> Permanent assistance is targeted at orphans, widows, divorced women, single women, permanently disabled, elderly, poor, and families with missing head of household if they do not receive income from other sources.

<sup>12</sup> Groups targeted for the temporary relief include the temporarily disabled, and families with a missing or jailed head of household, jobless ex-prisoners.

payments are provided to beneficiaries on a quarterly basis. Payment levels have recently been doubled to a maximum of 4,000YR per family per month (Europeaid 2008). Nevertheless, the cash transfer is not adequate to ensure food security of the poorest households (WFP 2008a). Having little prior experience with this kind of programme, it has struggled with how to select beneficiaries. While administrative costs of the SWF are low, there are concerns: (1) evidence that half of the budget is reaching the poor; (2) low coverage of the poor by leakage of benefits to the non-poor<sup>13</sup>; (3) SWF scale is not enough to make a sizable impact on poverty<sup>14</sup> (World Bank *et al.* 2007). In response to the new social welfare law, World Bank funded a survey to identify the poorest and most vulnerable households to improve targeting and expand the number of beneficiaries. Safety net is expected to reach 1.7 million households. A revised targeting system increases the share of cash transfers received by the poorest beneficiaries. This would allow the Fund in theory to support nearly everybody below the poverty line (WFP 2008a).

### *The Social Fund for Development (SFD)*

The SFD was established in 1997 with World Bank funds<sup>15</sup>. It was conceived as a demand driven Social Fund aimed at raising living standards and promoting income earning opportunities for the poor. The program has three components: Community Development, Institutional Support and Capacity Building; and Small-Scale Enterprise Development<sup>16</sup> (van de Walle 2002). Through its first phases<sup>17</sup>, it has worked with local communities on health, education and infrastructure projects to improve access to basic social services, more effective delivery of social services, and giving access to micro-credit. It is currently in the forth phase (MoPIC 2009). By the end of 2007, the SFD had spent US\$596 million on 6,914 projects to reach 14.4 million beneficiaries, over half female, and created 23.6 million employment days (SFD 2007). During 2001-05, educational projects represent the largest share of investment (54%), followed by water (11%), health (7.5%) and roads (7.6%). Education, health, roads and water projects generate 73% of all direct beneficiaries, while health and water often target women. A considerably higher proportion of SFD resources is found to benefit the poorest households<sup>18</sup>, compared to other social welfare projects (World Bank *et al.* 2007).

The SFD is a major player in efforts to reduce poverty reduction, however, it suffered from limited resources compared to the large number of requests submitted by communities which reflects urgent need (MoPIC 2009). Funding comes from a range of sources, including the GoY, Arab Fund for Economic and Social Development, EC, World Bank, UNESCO, and

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<sup>13</sup> SWF transfers are collected by only 8% of those that satisfy criteria. Out of everybody that receives transfers, 70% are not the target. For recipients in lower income groups, SWF represents considerable source of income.

<sup>14</sup> Budget too low to reach all (4 million people); Amount paid corresponds to 10% of poverty line income.

<sup>15</sup> It is an autonomous agency governed by a Board of Directors chaired by the Prime Minister

<sup>16</sup> Community development: small-scale infrastructure to improve access to education, health, water harvesting services using labour intensive techniques; capacity building: support to NGOs, government, private sector and community projects that promote service delivery; small-scale enterprise development; income generation is supported through micro-credit, savings and income-generating programs to the poor.

<sup>17</sup> First phase: 1997-2000, US\$90 million; second phase: 2001-03, US\$175 million; third phase: 2004-08, US\$75 million

<sup>18</sup> 42% of SFD funds go to poorest decile, 59% to the poorest quintile

other bilateral and multilateral donors. Communities that receive support contribute by providing labour, construction materials, other in-kind contributions and cash (SFD 2007).

#### *Public Works Project (PWP)*

The Public Works Project was established in June 1996 with World Bank funding. It aims to create jobs, provide the poor with small development projects, enhance community participation and develop local contracting firms (van de Walle 2002). During 2001-05 PWP carried out 1,270 projects (67% achievement rate), about 7.4 million people benefited (over 67% female). It provided 5.3 million jobs, of which 60% employed unskilled labour (World Bank *et al.* 2007). Projects are community demand driven and include small scale infrastructure, such as education and health facilities, water supply and sanitation, road rehabilitation, vocational training and social security (van de Walle 2002). An impact assessment of PWP investments was positive and noted that it compared favourably with similar projects in other countries. The PWP experienced some difficulty in obtaining timely co-financing from communities and its projects suffered from volatile construction costs, weak local contractors and difficult access to certain remote areas (MoPIC 2009).

#### *The Agricultural and Fisheries Production Support Fund (AFPSF)*

The AFPSF was launched in 1995 in light of worries that increases in diesel prices and eventual elimination of the subsidy would affect the poorest population in rural and coastal areas, both as consumers and producers. The Fund aims to promote agriculture, livestock and fisheries through schemes that subsidize the cost of agricultural inputs, water harvesting, and production marketing schemes. The AFPSF is financed through a system whereby 2.5 YR is deposited for every litre of diesel sold, and general budget and donor grants (van de Walle 2002). During 2006/07 AFPSF implemented 182 projects at a cost of US\$ 6 million. The Fund's long-awaited restructuring has not been completed and its operations have suffered from outside intervention and a lack of qualified personnel (MoPIC 2009).

#### *Donor Activities and Coordination*

A number of multi- and bi-lateral donors are active in food security interventions. Many donor-financed projects were started in the mid-1990s to mitigate adverse effects of economic reform. Development assistance comes through multiple channels with cash, credit, food and non-food items and technical expertise. Some agencies focus on inadequate consumption, such as WFP, while others have broader development goals. Major donors in the food and nutrition security sector include WFP, UNICEF, World Bank, FAO, EC, WHO, UNDP, Save the Children, to name but a few. It is beyond the scope of this SDA to cover specific donor interventions.

There is a lack of coordination of donor activities, as national capacity to take a strong coordination role is weak. However, there is a willingness in GoY and amongst donors to increase cooperation and coordination. National ownership of ongoing or future food security interventions is crucial, while a national inter-ministerial council on food security, currently under development, should take a leading role in implementing the National Food Security Strategy. While such an institutional set up is a challenge and since food security is a cross-cutting issue, it is crucial to promote a greater role of line ministries and enhance institutional capacity. Donor activities need to be guided by a national vision and streamlined to meet national objectives – which is likely to happen within the National Food Security Strategy.

## **4. Food Security Analysis**

The previous section presented the country-level context, while this section gives a more detailed food security analysis. The World Food Summit in 1996 agreed that “Food and

Nutrition Security exists when all people, at all times, have physical and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active, productive and healthy life” (FAO 2006b). This definition outlines three pillars of food security – food availability, food access and food utilisation. Before unification, food security has not been a concept that was widely used, focus was on poverty. Food security is conceptualised as national self sufficiency. As a result, policies emphasised agricultural production, paying little attention to food access and utilisation. It was only recognised in recent years that food security in Yemen will not be achieved via own production. It has only become a concern in the light of recent crisis.

## **4.1. Asset Endowment**

### **4.1.1. Natural Capital**

#### **4.1.1.1. Agro-Ecological Zones**

The diverse terrain with diverse rainfall has created a variety of ecosystems, ranging from dry plains, coastal swamps and wetlands, to desert and scrubland. Nearly 65% of the area is dryland, unsuitable for cultivation, nearly 30% pasture, 4% forest, and 3% cultivable land. The country’s natural resources include oil and gas, agricultural land, fisheries, and rock salt, marble and minor deposits of coal, gold, lead, nickel and copper. Yemen is divided into five agro-ecological zones, distinguished based on geographical factors, rainfall, temperature and humidity, and land and water resources and quality of lands for cultivation and grazing (see Map 1) (Alabsi 2006; World Bank 2007a; WFP 2008c).

#### *Zone 1: The Central and Northern Highlands*

Zone 1 consists of rugged mountainous highlands that reach more than 3,000m, whilst the *wadis* between the mountains are only a few hundred meters above sea level. The highlands enjoy a temperate, rainy summer with an average high temperature of 21°C and a cool, moderately dry winter with temperatures occasionally dipping below 4°C. This is the most rich and fertile zone in Yemen, with regular rainfall. With more than 14 million inhabitants, over 60% of the population are living in the highlands, making this the most densely populated zone. Land holdings per households are small and fragmented. The people describe themselves as *Qabilies* or tribes people. Villages are typically made of stone houses built in defensive formations. A village is usually small made up of 10-30 households.

#### *Zone 2: The Tihama Plain*

The Tihama plain stretches along the Red Sea coast, a flat sandy plain of around 45km width extends the length of the country. This zone is distinctly different from other zones with respect to population, culture, and architecture. People are darker skinned than those in the mountains and many of their traditions can be traced back to the African continent. Houses are traditionally round, mud and thatch constructions. Historically, trade and socio-cultural exchange has taken place with the Horn of Africa. The Tihama accounts for 15% of the national population and represents one of the poorest regions in the country. Hodeida is the poorest governorate, at the same time home to almost two-thirds of the zone’s population. The climate is tropical, with temperatures occasionally exceeding 54°C. Humidity ranges from 50-70%, while rainfall averages 130mm annually and occurs in irregular, torrential storms.

#### *Zone 3: The Southern Coast from Aden to the Border with Oman*

The coastal plains overlooking the Gulf of Aden vary in width from 30-60km. The zone is centred on the port of Aden. In Aden the average temperature is 25°C in January and

32°C in June. Average annual rainfall is 127mm. The south in general is sparsely populated. Roughly 10% of the Yemen population lives in this zone. Traditionally houses are constructed from mud although now red brick is being used by the more affluent. Most of Yemen's three million malaria infected people live here or in the Tihama plain. There is a strong correlation between malaria and poverty. Malaria affects development, fertility, savings and investment, worker productivity, premature mortality and medical costs, as well as purchasing power.

#### *Zone 4: The Middle Plateau of Shabwah and Hadramout*

The Middle Plateau is characterized as desert highlands interspersed with *wadis*, or river valleys, that are dry in the summer. This zone is largely devoid of cultivation and sparsely populated. The exception is Wadi Hadramout, the upper portions of which contain alluvial soil and floodwaters and the lower portion of which is barren and largely uninhabited. The highest mountainous areas of southern Yemen receive 520-760mm of annual rainfall. Wadi Hadramout is hot, and humidity ranges from 35% in June to 64% in January. Because of aridity, this is a sparsely populated area with people being concentrated in the *wadis*. 7% of the population lives in this zone. Houses are elaborately constructed from mud.

#### *Zone 5: The Empty Quarter (Desert)*

*Rub al-Khali*, the Empty Quarter is the rolling sand sea which stretches into Saudi Arabia. It is not uncommon for the northern and eastern sections of the country to receive no rain for five years or more. Here, little agricultural activity beyond pastoralism is possible. It is inhabited by a few Bedouin, desert nomads, who rely on trade of goats and camels. Because of the scarcity of the population, their constant mobility and the inaccessibility of the area, this zone is often ignored in surveys. While this zone makes up a considerable proportion of the country, it accounts for only 1% of the population.

### **4.1.1.2. Trends in Agriculture and Fisheries**

#### *Crop and Livestock Production*

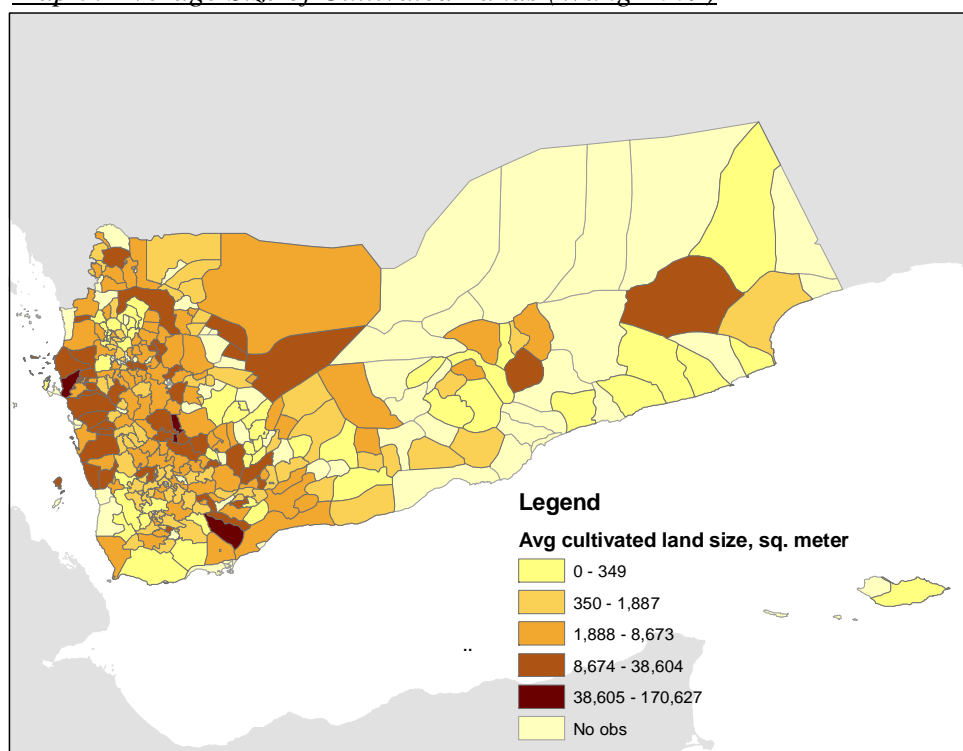
Crop and livestock production play a central role. Only 3.7% of the area is cultivable, out of which 68% was cultivated in 2000 (MoPIC 2003). However, 80% of the country's poor live in rural areas and depend on agriculture for their livelihood (MoPIC 2005a). Agriculture employs 58% of the Yemeni population (MoPIC 2003). It is a vital economic sector, contributing 16% of GDP, down from 24% in 1990 (MoPIC 2005a). It makes large contributions to economy and employment and is crucial in the country's poverty reduction strategy (MoPIC 2003; World Bank 2007a).

Cultivated area in Yemen is distributed amongst 1.2 million landholders, of which 80% are cultivating less than one hectare, while only 4% cultivate more than 5 hectares (see Map 3) (MoPIC 2005a). According to the Agricultural Census 2003, less than 4% of land is owned by women. Average land ownership ranges from 0.7 hectares in Zone 1 and 1.7 hectares in Zone 4 (WFP 2008c). In densely populated highlands (e.g. Ibb and Taiz) 70% of landholdings are less than 0.5ha; here, per capita availability of cultivable land is declining (WFP 2002). The Census reported that 65% of farmers practice mixed farming, 76% produce for own consumption, and that 51% are illiterate. Moreover, an estimated 60% of agricultural labourers are women. The WFP and UNICEF survey showed that 36% of households did not have access to agricultural land or garden plots. In addition, 23% of households are landless leaving only 41% of households with access to land for production. Ownership is primarily private (76%) or shared (21%) whereas number of households leasing land under sharecropping (*wakf*) is low (2%) (WFP & UNICEF 2006). Landlessness is particularly

prevalent for marginalised groups; e.g. in Hodeida 80% of the *Akhdam* is landless, many work as agricultural labourers or sharecroppers with low wages (WFP 2002).

Agricultural potential is determined by quantity and variability of rainfall, or by access to irrigation water (MoPIC 2003). Areas that receive less than 500mm of annual rainfall are marginal for rainfed agriculture. Yemen's ancient civilisations were based on terracing and water storage (Alabsi 2006). The highlands are the most important arable lands, being cultivated under terraces for millennia that help minimize land degradation and improve water use efficiency. Highland communities retain important agro-biodiversity and indigenous knowledge related to its utilisation. The country is renowned for its landraces of barley, wheat, sorghum, millet, lentil and cowpea (World Bank 2008).

*Map 3: Average Size of Cultivated Lands (Wang 2009)*



In terms of area, cereals (sorghum, wheat and millet) occupy the main share (59%), followed by fruits and vegetables (15%), 14% qat and 4% pulses (see Figure 6) (Breisinger *et al.* 2009). Rainfed production in any season is highly variable. Cereal yields are low, between 0.6 and 1.6 tons/ha

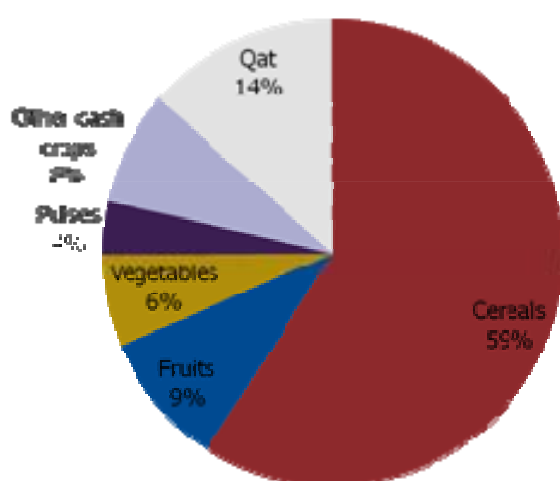
averaging 1.2 tons/ha (Alabsi 2006). Other cash crops, represent only a small percentage (~4%) of cultivated area (MoPIC 2003).

Agricultural policy is market oriented and there has been a shift to irrigated systems. Today, nearly half of the cultivated area is irrigated, largely focused on high value crops (e.g. qat, fruits, vegetables). To a lesser extent, lower value crops (cotton, wheat, maize, coffee) are irrigated. Most irrigation water is groundwater (79%), while flood and spring irrigation contribute 18% and 3% respectively (MoPIC 2003). Irrigation with groundwater pumping has made Yemen self-sufficient in fruits and vegetables. However, with water scarcity the expansion of irrigation is becoming unsustainable and unequal – land is concentrated in the hands of large farmers with financial means to invest in deeper wells. Agricultural

modernization, mainly through remittances, has led to abandonment of indigenous knowledge, while modern extension services are limited (MoPIC 2003; World Bank 2007a).

The agricultural sector grew by little more than 3% per year during 2006-08 (MoPIC 2009). Qat, coffee and grapes are important cash crops. Cultivated area under qat has increased thirteen-fold from 1970-2000 – to 33,000ha; while area under coffee and grapes increased five- and two-fold respectively<sup>19</sup> (MoPIC 2003). Qat is by far the dominant crop in terms of economic value, with 32% of output<sup>20</sup>, followed by fruit (20%) and livestock (17%) (MoPIC 2005a). Qat is the main user of groundwater, at 70% (MoPIC 2003). Cultivation of fruits and vegetables has grown as a result of increasing cultivated area. High levels of domestic demand in combination with import restrictions have encouraged increases in production of fruit, particularly apples, oranges, pomegranates, bananas and mangos. This trend reflects a shift from cereal to fruit cultivation (see Table 4). The declines in cereal production have been offset by moderate increases in the volumes of vegetables and qat, more dramatic increases in fruits, meat and fish (MoPIC 2003; MoPIC 2005a).

*Figure 6: Share of Cultivated Land (Breisinger et al. 2009)*



Livestock – mainly cattle, sheep, goats and camels – are a substantial component of agriculture. They contribute 20% to agricultural GDP. The largest numbers of livestock are kept in the highlands, where 45% of sheep, 35% of goats and about 80% of cattle are kept; depending on the distribution of fodder and agricultural activities (Alabsi 2006). Systems vary from pastoralism, agro-pastoralism to mixed crop-livestock systems and, more recently, small-scale intensive animal production units. Mixed systems make up 60% of the farms (Alabsi 2006). Animals are kept for meat, milk, sour milk, butter and draught power, as well as wool, skin and manure. Animal production makes an

important contribution to poverty alleviation, food security and gender equality. Livestock are valuable assets and sold to generate income. Widely held livestock has resulted in increased use and consumption of animal products (MoPIC 2003). While women make up around 20% of the total labour force, 85% of women are engaged in agriculture (MoPIC 2005a). Women have a significant role to play in livestock management and product processing, providing them with essential food, financial security and independence (Alabsi 2006).

*Table 4: Agricultural Production and Yield in Yemen and MENA (WRI 2003)*

|  | Yemen | MENA |
|--|-------|------|
|  |       |      |

<sup>19</sup> Area under coffee is estimated at 33,000ha and under grapes at 23,000ha in 2000 (MoPIC 2003).

<sup>20</sup> Qat cultivation has significantly increased and is today said to occupy 80% of cultivated area.

|   |       |        |
|---|-------|--------|
| Average cereal production, 1999-2001 (000 metric tons)                            | 679   | 78,527 |
| - percent change since 1979-81  | -24%  | 31%    |
| Change in per capita cereal production, 1999-2001 since 1979-81 (tons per person) | -66%  | -21%   |
| Average cereal yields (kg per ha)   | 1,094 | 2,585  |
| - percent change since 1979-81  | 5%    | 51%    |
| Percent change in average meat production, 1999-2001 since 1979-81                | 133%  | 120%   |

### *Fisheries*

Fisheries is regarded as one of the potential economic drivers. Yemen's waters contain diverse fish stock of high economic value, while actual production is below potential. The sector contributes 1.7% to GDP, fish and fish products are the second largest export, and it employs more than 53,000 people (MoPIC 2005a; UNDG 2005). Fish production has increased from 1980-2000 by 113% (WRI 2003). This trend is continuing, as production in 2003 increased by 27%, reaching 228,000 tons. However, there was a decline in production by more than 13% between 2005-07, followed by a modest recovery in 2008 (MoPIC 2009). The sector is subject to several constraints, including poor infrastructure and institutional capacity, lack of monitoring and regulatory frameworks, poor processing, and illegal fishing (MoPIC 2005a; MoPIC 2009). While a sizeable foreign commercial fleet operates, there is limited control of operations, leading to overexploitation. With sustainable management of fish stocks, fisheries is expected to become a major economic sector, creating employment and income.

#### **4.1.1.3. Major Challenges in the Agricultural Sector**

A poor natural resource base, combined with water scarcity, low agricultural productivity, explosion of qat cultivation and vulnerability to hazards pose challenges to agriculture (MoPIC 2005a). In the context of high population growth, pressure on natural resources is becoming critical. Economic development is based on natural resources, while depletion affects productivity, health, livelihoods and food security (EC 2006). Degradation of environmental resources, linked to economic development and population growth, not only represents a loss of natural capital, but undermines economic sustainability (MoPIC 2005a; UNDP 2005; EC 2006; WFP 2008d; MoPIC 2009).

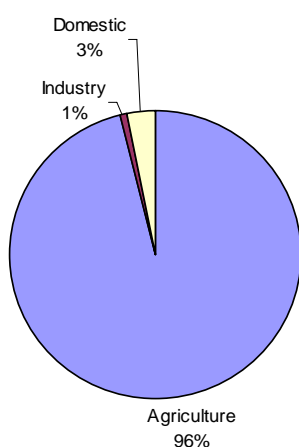
Yemen is one of the most water scarce countries in the world, lacking rainfall and surface water. It ranks low with respect to per capita water availability. High population growth and water scarcity result in a chronic imbalance between needs and available water. Table 5 shows that per capita water resources are 120-150m<sup>3</sup>, compared to 1,250m<sup>3</sup> in MENA (global average: 8,549m<sup>3</sup> (WFP 2008d)), which is already one of the driest regions in the world (MoPIC 2005a). Per capita consumption exceeds water supply (WFP 2008d). The annual deficit was 0.4km<sup>3</sup> in 1990 and expected to reach 1km<sup>3</sup> in 2010 (MoPIC 2009). The country has limited freshwater and water use drastically exceeds recharge rates, as withdrawals are 123% of renewable water resources (WRI 2003). Agriculture is by far the dominant water user, with 96% of water use (see Figure 7) (Shetty 2006), whereas qat alone accounts for around 40% (WFP 2008d).

*Table 5: Renewable Water Resources in Yemen and MENA (WRI 2003; MoPIC 2005a)*

|  | Yemen   | MENA  |
|--|---------|-------|
| Internal renewable water resources, 1977-2001 (km <sup>3</sup> ) |         |       |
| - surface water produced internally                              | 4       | 374   |
| - groundwater recharge   | 2       | 149   |
| - per capita, 2005 (m <sup>3</sup> )                             | 120-150 | 1,250 |
| Water withdrawals (1990)   |         |       |
| - per capita (m <sup>3</sup> )                                   | 253     |       |
| - as % of actual renewable water resources                       | 122,9%  |       |

Yemen is almost exclusively reliant on groundwater. It is of major importance to development and abstraction has steadily increased since 1980s. Currently, more than 80% of irrigation water comes from groundwater (MoPIC 2009). Supporting economic growth in rural areas, groundwater exploitation is taking place at an alarming rate and in a unsustainable and inequitable manner (World Bank 2006). Water resources are depleted faster than they are replenished – most withdrawals tap into fossil aquifers that are not replenished by rainfall.

*Figure 7: Water Use in Yemen by Sector (Shetty 2006)*



Increasing reliance on irrigation and water-intensive crops has led to a relentless depletion of groundwater. Irrigation water use efficiency is extremely low. Water is wasted because water prices cover only a fraction of the extraction costs. Declining groundwater tables limit agricultural expansion and need to be dealt with urgently through conservation. Maintenance of indigenous systems of water harvesting and soil management in the highlands is key to future water management. Agricultural water

availability will also decrease due to competing demands from urban areas.

Land degradation covers an estimated 50% of the area (MoPIC 2005a). An estimated 95% of Yemen's arable land is at risk for desertification, due to changing socio-economic factors and farming practices, which create increased demand for fuel, abandonment of terraces, overgrazing and depletion of tree cover and erosion (WFP 2008d). Ecosystem degradation and loss of biodiversity are also apparent.

Climate change is a concern, as models are predicting that drylands will be affected by increased frequencies of droughts, flash floods and higher temperatures, while coastal areas are at risk of inundation due to rising sea levels. Rainfed agriculture will be most vulnerable, with estimates of up to 50% reduction in crop yields by 2020. Adaptation of livelihood systems to climate change is critical, while indigenous land use systems and landraces have adaptive characteristics that may help cope with climate change impacts (World Bank 2008).

Agricultural productivity, particularly labour productivity, remains low. It is a result of land fragmentation, inappropriate inputs and water scarcity. Crop yields are below potential, compared to levels of other countries with similar environmental conditions. Yield gaps amount to, e.g. 60% for banana and 20% for oranges. High value crops and irrigation, while contributing to increased land productivity, had little impact on labour productivity<sup>21</sup> or employment and are mainly for the benefit of rich farmers (UNDP 2005). Post harvest losses are high due to poor harvesting, handling, packaging, transport and storage systems. Little value is added as a consequence of production for self-consumption. Land underutilisation is of concern, which is primarily due to lack of water or land disputes. Tenure insecurity, urban migration, and lack of legal infrastructure are impediments to effective utilisation (WFP 2002).

Qat cultivation depletes the country's water supply and crowds out other crops. However, qat cultivation is currently crucial for sustaining the rural economy. The major challenge to agricultural development is to find profitable substitutes for qat. Inevitably, any approaches to food security and rural development will have to consider qat production and consumption, making use of advantages and overcoming its negative aspects.

Land tenure and fragmentation are of concern. Land holdings are small and scattered, while 74% of holdings are smaller than 0.5ha. The average size of holding decreased by 30% between 1993-2000 (UNDP 2005). Redistribution of land in favour of a small number of large landholders resulted in growing inequality, especially for irrigated land. Smallholders face tight land constraints and sharecropping now covers 12% of the arable land, creating even larger inequality in the distribution of rural income. Large landholders benefited disproportionately from access to irrigation technology and water, agricultural credit for pumps and diesel, and from trade liberalization (UNDP 2005). Consequently, they are producing high value cash crops that are exportable. By contrast, smallholders, often oriented to subsistence and lower value crops, face stiff competition from food imports and suffer from underdeveloped infrastructure for marketing. Their incomes remain low and they have to rely on casual, seasonal labour on large farms to supplement incomes. Smallholder livelihoods remain vulnerable to food insecurity. The underlying problem is low productivity, based on low investments in physical and human capital; and unless significant investments are made in rural areas, poverty is expected to persist. This is particularly true in the light of limited opportunities for off-farm employment in rural areas.

Limited access to and quality of basic services is profound. Scattered settlements result in high costs for the provision of infrastructure. Particularly in mountains, access to education, health, water, roads, energy and telecommunications is poor. Smallholders are most affected. Agricultural inputs are often unavailable at affordable prices. Access to credit is inadequate, especially for small farmers. The extension service has limited capacity to provide support to farmers, investment into research and extension has been limited. While modern technologies are used, i.e. irrigation, knowledge needed to operate them efficiently is limited. Marketing systems are inefficient, while access to market information is poor. The lack of investment in production and marketing infrastructure is a challenge to food security

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<sup>21</sup> I.e. value added per rural worker.

in rural areas. Agriculture accounted for 1.25% of total investments in 2005 (MoPIC 2009). Government support has focused on subsidies for diesel to run tractors and water pumps, for fertiliser and feed; largely to the benefit of large landholders.

The relationship between poverty, food security and environment is well understood, as poor people more heavily rely on natural resources for their livelihood, being disproportionately affected by degradation, while at the same time poverty increases pressure on natural resources (MoPIC 2005a). Improving agricultural productivity can have a positive impact of incomes and food security (UNDG 2005). While the potential for agricultural production is significant, sustainable growth and improved food security can only be achieved through integrated natural resources management. Realising agricultural potential calls for the introduction of improved high yielding and drought tolerant varieties, better land husbandry, improved extension services and irrigation management, access to credit and inputs, and expansion of rural infrastructure. Agricultural strategies emphasize increasing irrigation efficiency and watershed management, improving rainfed systems, and finding alternatives for qat (MoPIC 2005a; MoPIC 2009). Emphasis needs to be placed on improved governance of resource management, tenure security, equitable access and a participatory process for managing resources, particularly water and pro-poor economic growth (UNDG 2005).

## **4.1.2. Human Capital**

### **4.1.2.1. Demographic Trends**

Yemen is the second most populous country on the Arabian Peninsula. Its population is predominantly Arab, while virtually all are Muslims. The population is estimated at 22.38 million with a growth rate of 3.0% (see Table 6) (WRI *et al.* 2008). The population has more than doubled since 1975 from 7.1 million and will double every 19 years, reaching 38 million by 2026 (MoPIC 2006; UNDP 2007). Yemen's population is young. In 2007, 46% of the population is estimated to be under 15, slightly more than half is 15-64 and 3% are 65 or older (UNDP 2007). For 2006, the birth rate is estimated at 39 live births per 1,000, while mortality rate is 8 deaths per 1,000 population (compared to 51 and 13 in 1990, respectively) (UNCTAD 2008a). Life expectancy remains low, compared to other LDCs, with 61.5 years (UNDP 2007). Fertility is estimated at 5.4 in 2008, down from 6.2 births per woman in 1999, largely driven by early marriage (UNDG 2005; UNCTAD 2008a). Infant mortality is high at 75 and 100 per 1,000 live births respectively in 2006 (UNCTAD 2008a).

Although population growth has slowed from 3.7% in 1995 (UNDG 2005), it is one of the main development constraints. It leads to rising demand for public services, e.g. health care and education; increases the use of scarce water and arable land; leads to urban migration and causes deteriorating living conditions in the cities; and by adding to the unemployed it adds to the number of poor. Reduction in growth is only slowly taking place, hampered by poverty, limited use of family planning and low health care coverage (MoPIC 2009).

80% of the population lives on 16% of the area, mainly in the highlands (UNDG 2005). Despite this concentration, the majority lives in rural areas, scattered among 42,000 small and inaccessible villages; with 74% living in settlements of less than 5,000 people (MoPIC 2003). Population density is 41 persons/km<sup>2</sup> in 2006 (UNCTAD 2008a). In 2008, only 31% of the population lived in urban areas, up from 14.8% in 1975 (UNFPA 2008). Rural to urban migration is increasing; by 2015 nearly 32% of the population will live in urban areas. Larger cities – Sana'a and Aden – have high annual growth rates of over 7% (MoPIC 2003). The government is struggling to develop infrastructure in inaccessible rural areas and economic opportunities to reduce the risk of rural areas becoming depopulated.

*Table 6: Resident Population in the Rural and Urban Areas of Yemen by Governorate (CSO 2007)*

| Governorate | 2004      |            |            | 2005      |            |            | 2006      |            |            | 2007**    |            |            |
|-------------|-----------|------------|------------|-----------|------------|------------|-----------|------------|------------|-----------|------------|------------|
|             | Urban     | Rural      | Total      | Urban     | Rural      | Total      | Urban     | Rural      | Total      | Urban     | Rural      | Total      |
| Abyan       | 111.519   | 322.300    | 433.819    | 114.151   | 329.906    | 444.056    | 116.844   | 337.691    | 454.535    | 120.414   | 348.006    | 468.420    |
| Aden        | 589.419   | 0          | 589.419    | 611.645   | 0          | 611.645    | 634.710   | 0          | 634.710    | 654.099   | 0          | 654.099    |
| Al-Baida    | 108.053   | 469.316    | 577.369    | 110.636   | 480.535    | 591.171    | 113.281   | 492.022    | 605.303    | 116.741   | 507.052    | 623.793    |
| Al-Daleh    | 62.246    | 408.318    | 470.564    | 64.454    | 422.799    | 487.253    | 66.739    | 437.794    | 504.533    | 68.778    | 451.167    | 519.945    |
| Al-Hodeidah | 761.057   | 1.396.495  | 2.157.552  | 785.810   | 1.441.915  | 2.227.724  | 811.367   | 1.488.811  | 2.300.179  | 836.153   | 1.534.291  | 2.370.444  |
| Al-Jawf     | 58.062    | 385.735    | 443.797    | 59.480    | 395.155    | 454.635    | 60.932    | 404.804    | 465.737    | 62.794    | 417.170    | 479.964    |
| Al-Maharah  | 37.247    | 51.347     | 88.594     | 38.927    | 53.664     | 92.591     | 40.684    | 56.085     | 96.768     | 41.926    | 57.798     | 99.724     |
| Al-Mahweet  | 36.023    | 458.534    | 494.557    | 37.053    | 471.642    | 508.694    | 38.112    | 485.124    | 523.236    | 39.276    | 499.943    | 539.219    |
| Amran       | 149.476   | 728.310    | 877.786    | 152.193   | 741.551    | 893.744    | 154.960   | 755.032    | 909.992    | 159.694   | 778.097    | 937.791    |
| Dhamar      | 185.946   | 1.144.162  | 1.330.108  | 191.594   | 1.178.917  | 1.370.511  | 197.414   | 1.214.728  | 1.412.142  | 203.445   | 1.251.835  | 1.455.280  |
| Hadramout   | 475.855   | 552.701    | 1.028.556  | 490.528   | 569.744    | 1.060.273  | 505.654   | 587.313    | 1.092.967  | 521.101   | 605.254    | 1.126.355  |
| Hajjah      | 139.578   | 1.339.990  | 1.479.568  | 143.820   | 1.380.716  | 1.524.537  | 148.191   | 1.422.680  | 1.570.872  | 152.718   | 1.466.140  | 1.618.858  |
| Ibb         | 374.833   | 1.757.028  | 2.131.861  | 384.097   | 1.800.451  | 2.184.548  | 393.589   | 1.844.948  | 2.238.537  | 406.018   | 1.900.901  | 2.306.919  |
| Laheg       | 62.595    | 660.099    | 722.694    | 64.239    | 677.438    | 741.678    | 65.927    | 695.233    | 761.160    | 67.941    | 716.471    | 784.412    |
| Mareb       | 31.857    | 206.665    | 238.522    | 32.723    | 212.284    | 245.007    | 33.613    | 218.055    | 251.668    | 34.640    | 224.716    | 259.356    |
| Reymah      | 3.830     | 390.618    | 394.448    | 3.946     | 402.428    | 406.373    | 4.065     | 414.594    | 418.659    | 4.189     | 427.259    | 431.448    |
| Sa'adah     | 107.018   | 588.015    | 695.033    | 110.944   | 609.584    | 720.528    | 115.013   | 631.944    | 746.957    | 118.526   | 651.249    | 769.775    |
| Sana'a      | 25.419    | 893.796    | 919.215    | 25.947    | 912.361    | 938.308    | 26.486    | 931.312    | 957.798    | 27.295    | 959.761    | 987.056    |
| Sana'a City | 1.707.586 | 40.248     | 1.747.834  | 1.802.316 | 42.481     | 1.844.797  | 1.902.301 | 44.837     | 1.947.139  | 1.960.412 | 46.207     | 2.006.619  |
| Shabwah     | 74.157    | 396.283    | 470.440    | 76.040    | 406.347    | 482.387    | 77.971    | 416.667    | 494.638    | 80.353    | 429.395    | 509.748    |
| Taiz        | 535.980   | 1.857.445  | 2.393.425  | 549.206   | 1.903.279  | 2.452.485  | 562.758   | 1.950.245  | 2.513.003  | 579.949   | 2.009.820  | 2.589.769  |
| Total       | 5.637.756 | 14.047.405 | 19.685.161 | 5.849.749 | 14.433.195 | 20.282.944 | 6.070.613 | 14.829.919 | 20.900.532 | 6.256.462 | 15.282.533 | 21.538.995 |

### 4.1.2.2. Illiteracy and Education

In 2005, adult literacy among the population was 54.1%, while among women and men it was 34.7% and 73.1%, respectively (UNCTAD 2008a). While literacy rates have increased over the past decades; they remain low in comparison to other LDCs, which average an adult literacy of almost 62%. In rural areas, female literacy is at 22%, compared to 60% in urban areas (World Bank 2007a). The main reason for the high illiteracy rate is low school enrolment. Net primary school enrolment in 2005/06 was 63.9%, while the ratio was 73.9% and 53.1% for boys and girls, respectively (see Table 7) (CSO 2006). In rural areas, only 33% of girls are enrolled (World Bank 2007a).

*Table 7: Enrolment Rate of 6-15 Year Olds in Primary Education (CSO 2006)*

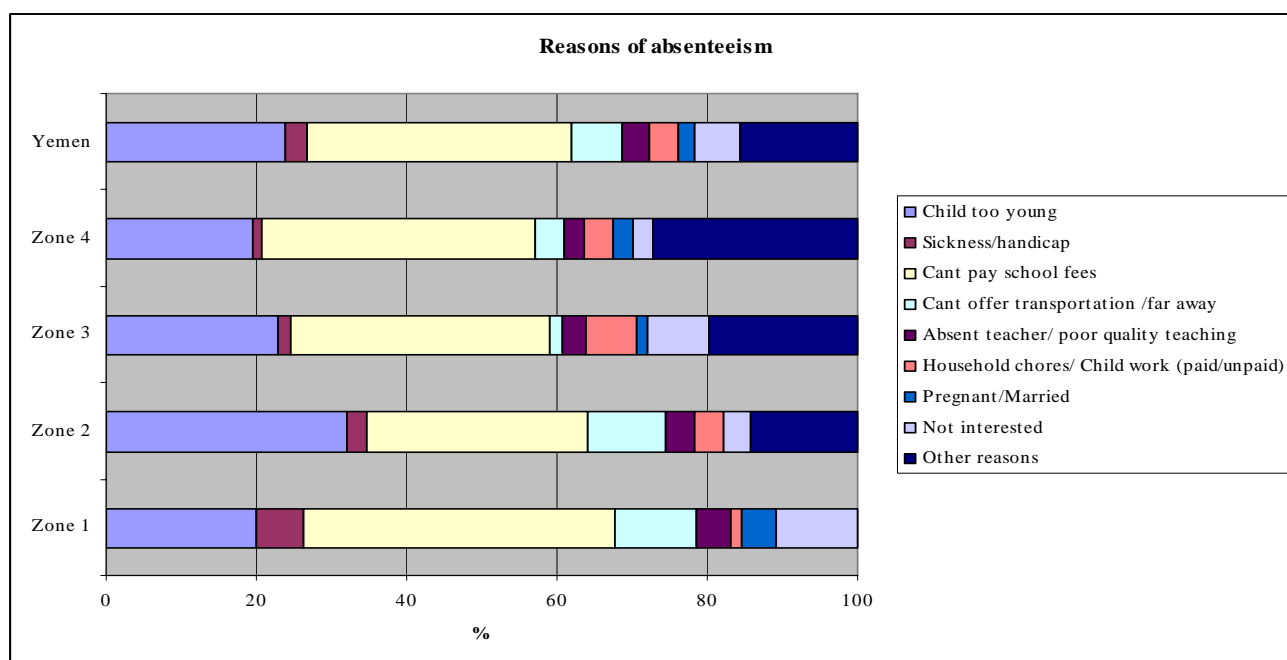
|             | Enrolment Rate (6-15 years) |         |       |
|-------------|-----------------------------|---------|-------|
|             | Males                       | Females | Total |
| Sana'a City | 83,4                        | 80,3    | 82,0  |
| Al-Mahrah   | 81,2                        | 76,1    | 78,9  |
| Aden        | 79,5                        | 74,8    | 77,3  |
| Addaleh     | 83,2                        | 69,3    | 76,4  |
| Taiz        | 80,7                        | 66,3    | 73,7  |
| Ibb         | 78,4                        | 62,8    | 71,1  |
| Abyan       | 80,7                        | 60,5    | 70,6  |
| Al-Gawf     | 81,9                        | 57,7    | 69,7  |
| Lahej       | 77,2                        | 55,6    | 67,2  |
| Hadramout   | 73,3                        | 59,5    | 66,4  |
| Al-Mahweet  | 77,3                        | 53,6    | 65,9  |
| Amran       | 84,2                        | 45,6    | 65,2  |
| Shabwa      | 77,4                        | 47,2    | 63,0  |
| Sana'a      | 74,9                        | 46,2    | 60,8  |
| Mareb       | 70,7                        | 46,6    | 59,3  |
| Dhamar      | 75,2                        | 38,3    | 57,8  |
| Rayma       | 69,9                        | 44,1    | 57,6  |
| Al-Baida    | 68,5                        | 41,1    | 56,2  |
| Hajja       | 61,6                        | 35,2    | 49,1  |
| Hodeida     | 56,9                        | 39,1    | 48,3  |
| Sada'a      | 61,1                        | 30,0    | 45,6  |
| Total       | 73,9                        | 53,1    | 63,9  |

The enrolment rate for non-poor children was 98.4% (MoPIC 2009). Despite progress – gross enrolment in basic education has increased from 58% (1997/8) to 66.5% (2003/04) – enrolment in rural areas and among girls (51.5% in 2003) (UNDG 2005) has not been to the level of aspirations of the MDGs. This is due to rapid growth in the numbers of children eligible for primary education, deteriorating quality of education and unequal distribution, and lack of female teachers (MoPIC 2009). Drop out rates and absenteeism from school are high, especially in rural areas. WFP (2008c) reported that the main reasons are poverty and current economic situation; about 35% of households reported that they could not afford school fees. In rural areas the lack of educational infrastructure is another main deterrent (see Figure 8).

Secondary attendance is crucial in human capacity development and is low at 39.2% of the school-age population enrolled, including only 26% of eligible girls (MoPIC 2009). Tertiary attendance is even lower, with 9.4% (UNCTAD 2008a). There are currently only eight public universities; enrolment has risen recently due to the expansion of

secondary enrolment and rising unemployment among graduates (MoPIC 2009). Technical and vocational training is not well developed, with only 1.8% enrolment in 2005; the goal being to expand enrolment while involving the private sector to better respond to needs of the economy (MoPIC 2009).

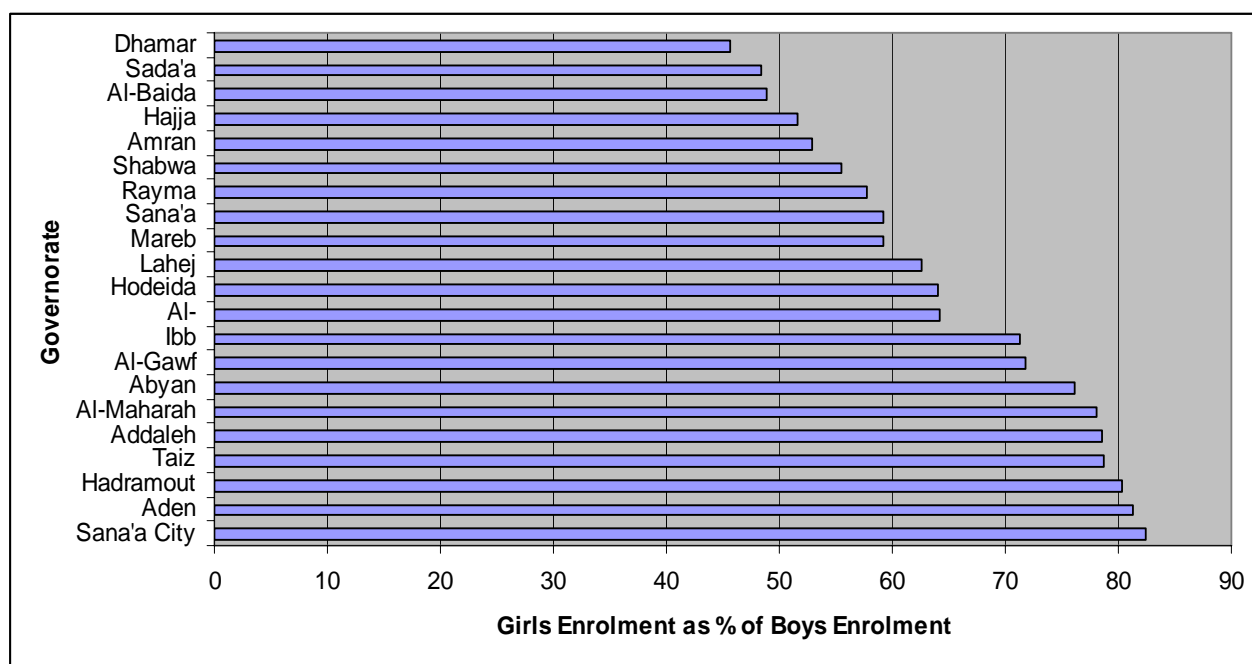
*Figure 8: Reasons for Absenteeism in Schools (WFP 2008c)*



There is a direct correlation between illiteracy and the lack of basic education. Equity in access to education is a primary concern (see Figure 9). Attitudes towards children from socially and economically disadvantaged households impact equity in access to education, as they prove a strong disincentive from school attendance. The quality of education in rural areas is a contributor to low enrolment. Gender inequality in access to education is staggering, as illiteracy rates are 72% for girls, compared with 31% for boys (WFP 2006). More girls drop out and earlier, due to cultural biases towards girls' education, early marriages due to high bride prices, and unacceptability of sending girls to school far away (World Bank 2007a). Geographic disparities in education access are also staggering: boys and urban children have greater education opportunities, and enrolment rates. For instance, enrolment rates for girls range from 13.4% (Hajja) to 71.7% (Al-Mahra); while regional disparity amongst boys is less marked: 32.2% (Hajja), 77.6% (Amran) (UNICEF 2003). Girls in urban areas are more likely to attend school than boys in rural areas (UNDG 2005). Gender disparity in access to secondary and tertiary levels is marked; as female students account for 20% and 40% in secondary education in rural and urban areas (respectively) and for 25% of university students (UNDG 2005).

Low enrolment is a reflection of the shortage of adequate infrastructure. Given rapid population growth, absolute numbers of children out of school has not improved. While more schools are being built, the system is biased towards providing urban males with education. Slow human development can be attributed to the overburdened education system. The government increased education spending, currently at 9.6% of GDP (WRI *et al.* 2008).

*Figure 9: Gender Inequality in Primary Education by Governorate (CSO 2006)*



#### 4.1.2.3. Employment

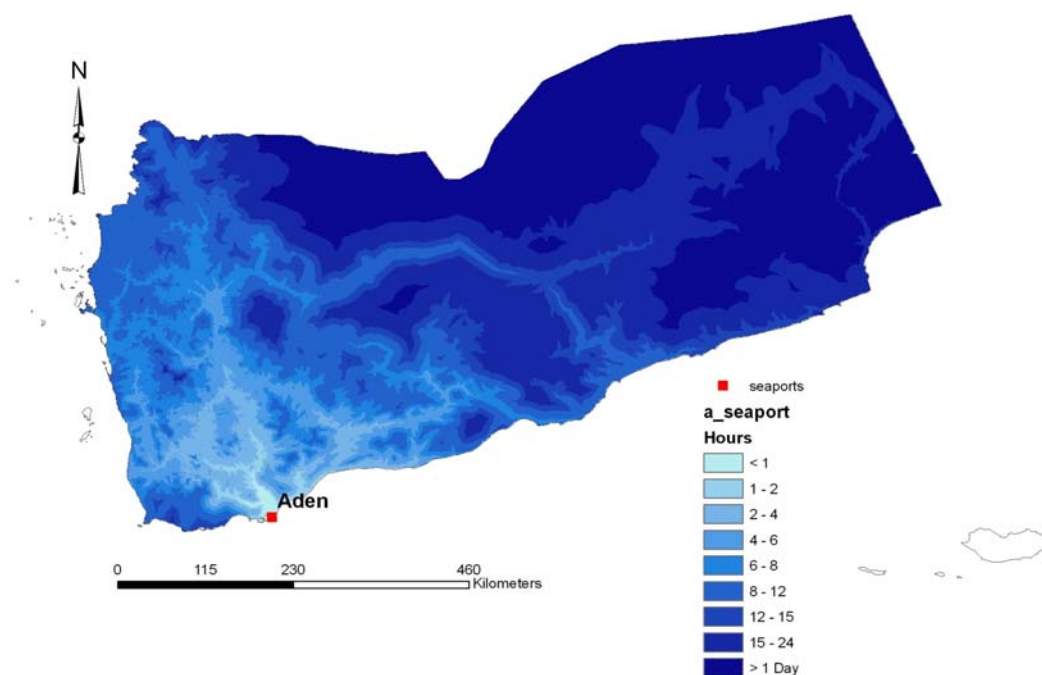
The 3rd DPPR targeted an unemployment rate of 12.0% by 2010, but it increased from 8.3% in 1998 to 16.1% in 2005-06 (World Bank *et al.* 2007). This is due to the inability of the economy to generate jobs which is reflected in widespread unemployment among newcomers to the labour market. In addition, limited investment has not led to generating employment opportunities for all types of workers (MoPIC 2009). Employment has been growing in the expanding public sectors, in construction and in informal small-scale activities. Particularly in rural areas, labour productivity is low (UNDG 2005). According to unofficial estimates, unemployment is 40%, and expected to increase further in the future as the majority of the population is under 15. The increase in the demand for labour, at 2.8% per year has been unable to keep pace with a 3.8% increase in labour supply (UNDG 2005). The labour market is estimated to have to absorb 250,000 new job seekers in the near future (EC 2006). While the public sector used to account for much of the formal employment, it can no longer provide jobs; the private sector has to create substantially more employment.

Agriculture is the main sector of employment, accounting for 54% of the labour force, followed by services (23%), industry (12%), and public administration (11%) (EC 2006). Agriculture, however, provides livelihood for three quarters of the population. Even in the fast growing urban areas where poverty declined, unemployment increased. The female labour force participation increased from 4.7% to 10.5% during 1998-2005/06. The unemployment rate for women at 45% is high; while among the poor, there is one female out of two in urban areas and two females out of three in rural areas who is unemployed (World Bank *et al.* 2007). Child labour is estimated to constitute about 16% in rural and 3% in urban areas, contributing more than 10% of the labour force (UNDG 2005).

One important observation is that there is a weak poverty-employment correlation across governorates. Figure 10 shows that poor governorates are not necessarily those with the highest unemployment. The government aims to reduce high unemployment, challenged by low participation rates in economic activity (39%); low participation of women; low educational level of workers; a low investment that has affected job creation; low levels of labour productivity; and a large informal economy (43%) (World Bank *et al.* 2007).

*Figure 10: Unemployment and Poverty by Governorate in 2006 (World Bank et al. 2007)*





Particularly in rural areas infrastructure for education and health facilities is often lacking. In Yemen, there are 14,975 schools, out of which 11,485 are primary schools, 2,552 are mixed primary and secondary schools and 323 are secondary schools (CSO 2007). Physical access to basic health services is extremely limited, with only 30% of the rural population (50% of total population) living close<sup>22</sup> to facilities (World Bank 2007a). The country has 425 hospitals with 14,970 beds and less than 4,000 primary health care units and health centres (public and private) (CSO 2007). In 1976, YAR had 234 doctors – the equivalent of 23,000 persons per doctor; by 2003, the ratio improved to 6,000 persons/doctor (World Bank 2007a).

#### 4.1.4. Economic Capital

Income is a factor that limits access of poor households to food, as opposed to food availability *per se*. Thus, poverty is a determinant of food insecurity. In 2005-06, there were seven million poor people in Yemen, i.e. almost 35% of the population could not fulfil their basic needs. Nearly 2.9 million individuals (12.5% of the population) are below the food poverty line (World Bank *et al.* 2007). Table 8 represents the change in poverty between 1998 and 2005/06. Poverty is concentrated in rural areas, accounting for 72.6% of the total population, but for 84% of the poor. In Yemen the percentage of poor modestly declined from 40.1% in 1998 to 34.8% in 2005/06, though, because of population growth the actual number of poor remained the same. Poverty declined substantially in urban areas. These benefited from the spending of oil windfall resulting in a rapid decline in the percentage of poor from 32.2% to 20.7%, despite an increase in urbanization. In rural Yemen, the percentage of poor declined from 42.4% in 1998 to 40.1% in 2005/06 (World Bank *et al.* 2007).

<sup>22</sup> With respect to distance as well as time needed to reach basic health care facilities.

*Table 8: Headcount Poverty in Yemen in 1998-2006 (UNDP 2006)*

| Poverty Line                         |                             |                             |                             |                             |
|--------------------------------------|-----------------------------|-----------------------------|-----------------------------|-----------------------------|
|                                      | 2005-06                     |                             | 1998                        |                             |
|                                      | Lower poverty line          | Upper poverty line          | Lower poverty line          | Upper poverty line          |
| YR/day                               | 179.39                      | 258.92                      | 100.11                      | 125.37                      |
| Head count ratio (poverty incidence) |                             |                             |                             |                             |
|                                      | 2005-06                     |                             | 1998                        |                             |
|                                      | National lower poverty line | National upper poverty line | National lower poverty line | National upper poverty line |
| National                             | 34.78                       | 59.76                       | 40.13                       | 64.83                       |
| Urban                                | 20.70                       | 48.62                       | 32.29                       | 58.83                       |
| Rural                                | 40.09                       | 63.96                       | 42.49                       | 66.64                       |
|                                      | Using 1\$/day               | Using 2\$/day               | Using 1\$/day               | Using 2\$/day               |
| National                             | 10.15                       | 51.02                       | 10.71                       | 46.16                       |
| Urban                                | 4.17                        | 34.68                       | 5.23                        | 35.37                       |
| Rural                                | 12.41                       | 57.19                       | 12.35                       | 49.38                       |

Access to banking services and formal credit are also extremely limited, particularly in rural areas. Overall, Yemen has less than 600 financial institutions across the country (CSO 2007). The lack of credit is especially constraining in the agricultural sector and for small-scale enterprises, as access to micro-credit facilities is very limited. While SFD and some other organisations provide access to micro-credit, the availability of these services are still limited for poor and low income households (MoPIC 2006).

#### 4.1.5. Social Capital

Historically, social organisation was based on broad social categories: (1) elites (<5%) claiming descent from Prophet Mohammed, including scholars, revered religious men or large land owners; (2) members of tribal groups (80%) who are farmers, fishermen and some nomadic pastoralists; (3) service providers (5%) including barbers, butchers, entertainers; and (4) marginalised mainly landless people, including *ahgur*, *abid*, and *akhdam*<sup>23</sup>. Although

<sup>23</sup> These are most vulnerable communities, estimated at 1 million people, 5% of the population. Majority lives in urban peripheries of Taiz, Aden, Zabid, Sana'a and Hodeida. They work as menial labourers, street sweepers,

schematic and somewhat fluid, these distinctions continue to shape social relations, political power and economic opportunities. Social categories no longer necessarily correspond with economic status. Overall, social organisation of tribes in the highlands revolves around sheiks who play important roles in conflict resolution and community mobilisation. Along the coastal areas tribal institutions are weak; people identify with locality. This is due to history that brought diverse peoples; by colonial and socialist influence (World Bank 2007a).

Yemen's social structure is based on a tribal system, through which Yemenis define their identity. In main parts of rural Yemen, state control remains weak, with tribes acting as autonomous sub-states. Tribal leaders and other socially influential personalities have great indirect political power; while patron-client relations shape the balance between state and tribes (MoPIC & UN). A range of social and economic rights are still denied to large segments of society. Cultural norms, traditions and religious practices lead to discrimination against women, girls and other vulnerable groups (EC 2006). Society is heavily influenced by traditional perceptions of gender roles and prevailing conditions do not allow women to fully participate in the country's development (MoPIC & UN).

Public and private transfers are important sources of income, particularly for poor households. Within the national safety net program, several institutions provide transfers to poor and vulnerable households. SWF provides cash payments to over one million beneficiaries, expecting to reach more than 1.7 million households this year. SFD promotes community development projects and has reached 14.4 million beneficiaries by 2007 (SFD 2007). Yemen is a major recipient of remittances in LDCs, with a share of 9.7% in 2006 (UNCTAD 2008a). Remittance contribute significantly to gross national income (10.2% in 2005) (WRI *et al.* 2008). The oil boom of the 1970s provided opportunities for inhabitants who immigrated to the Gulf countries. They sent remittances to rural communities at a time when government investments were limited. Communities invested in local infrastructure and economic activities (World Bank 2007a). Remittance inflows (through official channels) have remained stable around \$1.2 billion in the last 8 years, some 8% of GDP in 2005; with a slight decline in per capita inflows due to population growth. The global economic crisis will potentially lead to a decline in remittances in 2009, although estimates are not yet available.

## **4.2. Livelihood Strategies**

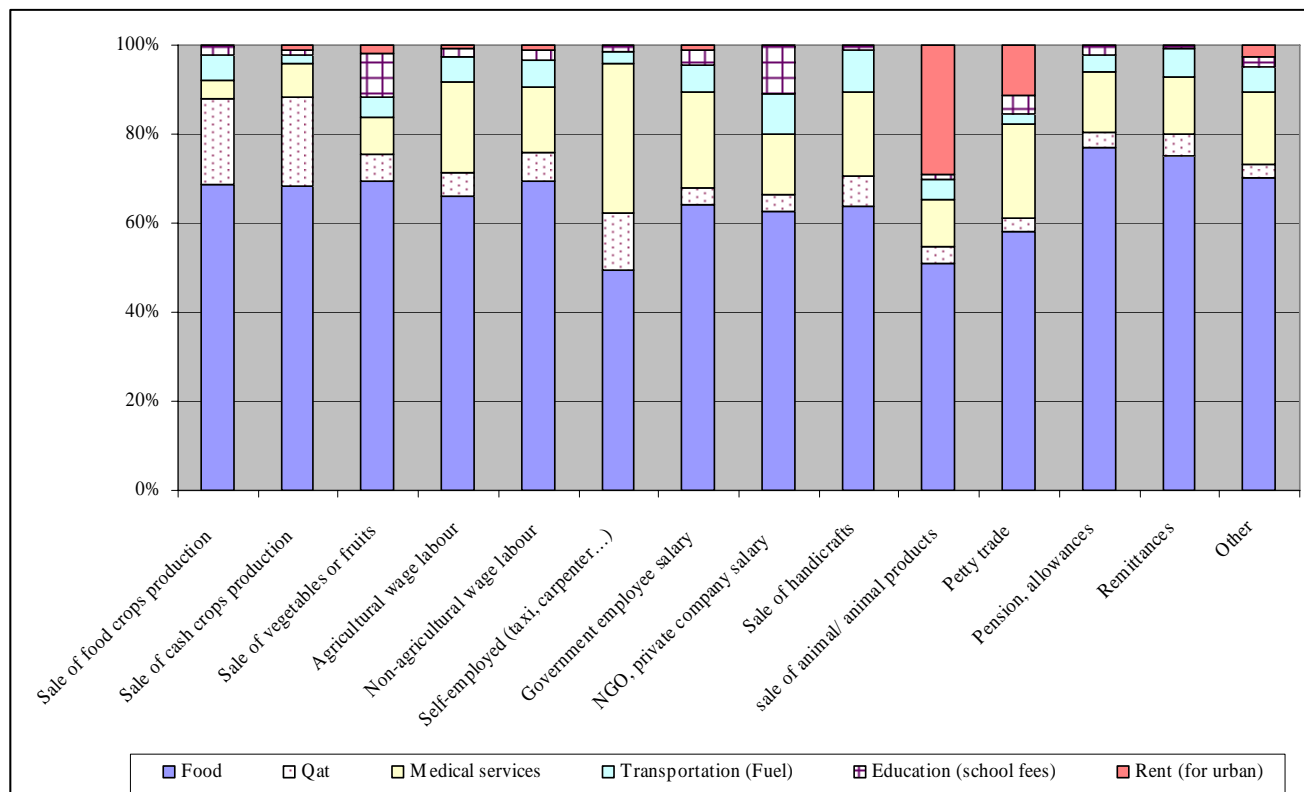
Few rural households can make a living on agriculture alone due to low productivity and incomes (MoPIC 2003). A recent World Bank analysis showed that in rural areas 36% of households have multiple sources of income, while 20% are farmers, followed by private sector wages (13%), government wages (10%), trade (9%), remittances (8%) and agricultural wages (4%) (World Bank 2009). Livelihood diversification to reduce risk is important. Most smallholders seek off-farm employment as casual labourers. Migration, seasonal or permanent, is an important strategy, particularly for poor families. Child trafficking to Saudi Arabia is a new phenomenon, to contribute to household income (World Bank 2007a). The

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cobblers, construction workers, while women and children are begging. The group has no national political representation, suffers from discrimination, and high rates of illiteracy (90%) (World Bank *et al.* 2007).

share of food in daily expenses is highest for those relying on pensions, allowances and remittances (see Figure 11) (WFP 2008c).

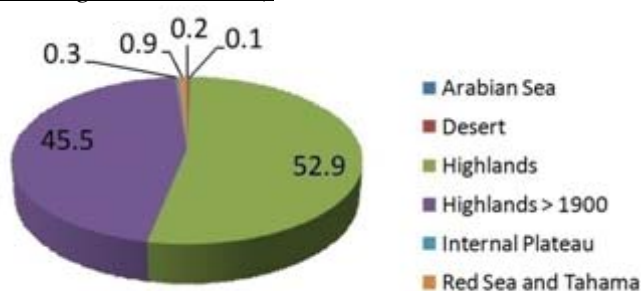
*Figure 11: Expenditure by Source of Income (WFP 2008c)*



While Yemen is predominantly rural, rapid rates of urbanisation are driven by rural to urban migration, high population growth and the return of migrants. Small towns increased in importance due to their linkages to rural areas. The cash economy has created livelihood opportunities and promoted social inclusion of marginalised groups. Rural-urban linkages create livelihood strategies that interact to create mutual dependencies (World Bank 2007a). There is considerable interaction between the two spheres in terms of the transfer of money, good, services and people, however Yemen remains a very traditional society. Urban households rely on urban agriculture, livestock keeping and peri-urban areas as sources of fuelwood. They continue to have land in their place of origin, many urban workers engage in seasonal agricultural labour, while absentee land ownership is common, often deriving considerable incomes from their rural lands (World Bank 2007a).

Qat is locally produced and consumption is a central element of Yemeni culture. The complexity of the qat issue and its link to agricultural production and socio-economic conditions are highlighted. Qat is by far the most important cash crop, accounting for 40% of production, 10% of cultivated land and 30% of water use. Cultivation of qat continues to expand at the expense of food crops, as it is far more profitable (MoPIC 2009).

*Figure 12: Percentage of area planted with qat by agro-ecological zone, compared to cereal (Breisinger et al. 2009)*



Qat accounts for 6% of GDP and one-third of agricultural GDP. With 20-30% of the population financially dependent on qat via farming, distribution or sale, it creates more employment than the public

sector (World Bank *et al.* 2007; MoPIC 2009). Qat requires little labour, has low production costs, can be harvested throughout the year, is disease and pest tolerant, has an efficient marketing channel, little competition and provides a steady source of income. Domestic demand is strong. It is the one product that was not affected by the economic crisis – it is less risky, more lucrative and safer than any other. Qat profits are unlikely to be shared evenly in households, since men are most active in terms of marketing and control over cash from qat sale rests largely with men (WFP 2002). The increasing share of qat (see Figure 12) in cultivable land is adversely affecting water use and ability of national agriculture to contribute to food security. 80% of qat production is irrigated to boost productivity, contributing to water scarcity (MoPIC 2009).

The following section 5 illustrates major livelihood strategies and food security status by agro-ecological zone (see also Appendix 5) (WFP 2003).

### *Zone 1: The Central and Northern Highlands*

Terrace cultivation on steep mountains is an old method of soil conservation and water harvesting and is the typical form of subsistence farming. Land use is adapted to the rugged terrain, as terracing creates fertile plots through intensive inputs of labour and indigenous knowledge that maximise utilisation of little rainfall. Most agriculture is rainfed, while major crops are sorghum, wheat, barley and lentils in the rainy season (Jun-Aug). Small gardens with onions, chives and white radish are supported through irrigation from hand dug wells. Pastures provide good conditions for cattle and sheep in this zone. Livestock are fed with cut fodder during the rainy season and are left to graze stubble after harvest. Due to lack of roads and difficult terrain, travel is limited and agricultural produce sold on weekly markets nearby.

This zone includes Yemen's main rainfed areas, where most cereals, pulses, qat, vegetables, fruits, coffee, cotton, and almonds are grown. Livestock production – cattle, goats and sheep – is a major activity. Today, the economy continues to rely on agriculture and livestock, and remittances from workers who have migrated to towns in Yemen or abroad. Rainfed agriculture has declined since the 1970s from 85% of production to 45% in 2003, due to the introduction of modern irrigation technology, financed by remittances. Irrigation is applied to high value crops such as *qat*. Qat accounted for 25% of agricultural labour in 1999, by far the highest source of rural employment in the zone. Qat production provides households with cash income, which is almost three times that of coffee, another main crop. Qat is replacing food crops and also increased at the expense of livestock. With the lack of sorghum or other cereals that produce fodder, households can no longer maintain livestock. There have been reports that people are shifting from cereal production to extensive livestock systems in this zone because of reduced precipitation due to climate change.

A transition to irrigation in valleys, combined with male migration has resulted in the abandonment of terraces. Low efficiency due to the use of inappropriate techniques is resulting in water loss and loss of productive agricultural land, increasing vulnerability to food insecurity. Male migration in search of employment led to a decline in the household-based system of subsistence. This has led to the feminization of subsistence agriculture, placing women at a disadvantage. Women used to play an active role in agriculture and had significant economic power, physical mobility and voice in the household. Now, women are left behind and continue to work on land that has become marginal. Men that remain are involved in qat production, which offers a limited role for women. Women remain in the subsistence economy or are hired as agricultural labourers at low wages (World Bank 2007a). Opportunities for commerce have been created, especially since the reliance of rural households on imported food is increasing. New business opportunities emerged, e.g. selling basic supplies, financed with remittances from abroad. The markets have shifted from weekly markets of local produce, to permanent roadside market towns with small shops and services.

## *Zone 2: The Tihama Plain*

People traditionally relied on agricultural production, fishing and limited maritime trade for subsistence. Agriculture was based on seasonal flood irrigation under customary allocation systems. Land was owned by few land owners, while the majority of farmers were engaged in sharecropping (*waqf*). Major crops were sorghum, millet and dates for subsistence, while sesame and tobacco were cash crops. The Tihama is known for its livestock rearing because of fodder availability. Goats and cows are raised here. With the introduction of new agricultural technologies, particularly water storage for irrigation, new areas were brought into agricultural use. New cash crops, such as melons, bananas, cotton, papaya and mangos were marketed domestically or exported. Land consolidation in the hands of few wealthy farmers was the result. Poor small farmers have sold their land, now working as wage labourers. Relatively large holdings of over 5 hectares are common, owned by a handful of absentee landowners. A few wealthy farmers are able to irrigate their land with pumps, but for most this is too expensive (World Bank 2007a). Many poor farmers have migrated to urban areas, where they are assimilated into the *Akdham* social category.

Small-scale fishing is becoming increasingly important, with the expansion of the road network and cooling systems for transportation. In the coastal zones small-scale fisheries make a significant contribution to food security. It is a labour-intensive production system based on harvesting of fish by small units, mainly during the peak season from April to September. Practiced by 60,000-70,000<sup>24</sup> fishermen, it provides livelihood to about 400,000 people (Bonfiglioli & Hariri 2004). According Bonfigliolo and Hariri (2004), small-scale fisheries is characterised by low levels of income and investment, capital and energy inputs, strong dependence on external service providers, strong seasonality, modest levels of production and low levels of technology. Artisanal boat building is a traditional skill; renown throughout the region and an important source of livelihood. This trade has been in decline since fibreglass boat factories have been established.

Other sources of livelihood are limited to where groundwater is accessible for agriculture. A complex system of relations connects fishers with agricultural and agro-pastoral communities. Ownership of assets, i.e. boats, motors, nets, etc., dictates fishing strategies and determines social differentiation. Fishers rely on a network of auctioneers, traders, and retailers for marketing. Livelihoods of small fishers are affected by environmental degradation, inappropriate technologies, lack of skills and lack of enforcement of regulations. The study found that an average fishing household is reasonably resilient and relies on a number of strategies to minimise risk. These households are characterised by an annual income of 173,000-205,000YR, depending on boat size; facing large fluctuations of monthly incomes depending on season and fish species; and spending 65% of income on food. However, less than one third of small-scale fishers fall into this category. Below average households are in a weak position and lack boats, fishing equipment, investments, etc. Their vulnerability to external shocks is high and food security status low. The majority of households belong into this category, particularly along the Red Sea Coast. However, fishers generally represent a small portion of the population in Yemen (Bonfiglioli & Hariri 2004).

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<sup>24</sup> Around 20,000 in this zone, the remainder in Zone 3

A major coping strategy in this zone is migration. Since opportunities for legal migration abroad are declining, increasing numbers of people cross the border into Saudi Arabia illegally, in search for low-skill service jobs. In contrast to other parts of the country, women from Tihama migrate seasonally in search for agricultural labour. Moreover, child trafficking is a recent phenomenon in Tihama (World Bank 2007a).

### *Zone 3: The Southern Coast from Aden to the Border with Oman*

Historically, most land was owned by *sheikhs* who controlled land and water rights. 80% was cultivated by tenants who produced cotton and tobacco. While fishing was an important source of livelihood, the trade was dominated by *sheikhs* and fish merchants, who owned the means of productions. With the socialist regime, most *sheikhs* fled and land reforms included confiscation of land from rural elites, limiting land holdings to 20 *feddan*<sup>25</sup> of irrigated and 40 of rainfed land per person, establishment of agricultural cooperatives, etc. Land was redistributed to landless households, mainly from low status groups. Emphasis was on creating of infrastructure and agricultural processing factories.

After the collapse of the socialist regime, previous hierarchies were re-established and the gap between rich and poor widened. Large communal farms were privatized and are now owned by a small number of people living in Sana'a. Poor farmers who previously had land rights became landless again (World Bank 2007a). Some of these people continue to work on the land as wage labours; or were forced to leave and make a living as transient farmers or unskilled construction workers. Spate irrigation is still used near Aden, where cotton is grown. There is limited livestock because of the scarcity of fodder, but camels are herded. Fishing is an important source of livelihood<sup>26</sup>. Large land owners with access to irrigation cultivate fruits and vegetables, while small farmers often rely on maize, barley and sorghum from rainfed plots (WFP 2003). Yemenis abroad are returning to invest in the south. Employment opportunities are created by a revitalised economy, construction boom and increase in land prices. The construction sector offers work that is better paid than farming. Women are disadvantaged, losing opportunities they had during the socialist time.

### *Zone 4: The Middle Plateau of Shabwah and Hadramout*

Agriculture is generally rain and flood fed. 3,000 years of flood control, through spate irrigation, has built up the land resource (up to 15m of sediment in Wadi Dora in Shabwa). In the *wadis* of the Eastern Plateau (Al Gawf, Mareb, Shabwa, Wadi Hadramout), spate irrigation sustained wealthy Pre-Islamic Kingdoms (Ma'in, Qataban, Shaba and Hadramout) with strong trading ties, and still continues to support 20% of the population. Today however, wealthy land owners irrigate with pumps from wells. Previously, in addition to agriculture, this zone was home to pastoralists, who, today, are increasingly sedentary. Migration from this zone has always been important. Migrants to Saudi Arabia, for instance, have acquired enormous wealth. Today, trade is no longer a source of wealth, and the population relies heavily on remittances. The cultivation of palm trees for dates, banana, mango, as well as honey production are important. The discovery of oil in this zone has brought limited benefits

<sup>25</sup> Roughly equivalent to one acre

<sup>26</sup> See in Zone 2 for information on livelihoods of small-scale fishermen

to the local economy, as few jobs were created. An important source of livelihood is smuggling of contraband goods.

#### *Zone 5: The Empty Quarter (Desert)*

Here, little agricultural activity beyond pastoralism is possible. It is inhabited by a few Bedouin who rely on trade of goats and camels. This zone is often ignored in surveys. Pastoralism is the most viable means of utilising scarce and variable resources for subsistence. Pastoralists stay in traditional grazing areas during the summer of times of less dryness and wander to mountain pastures during drought.

### **4.3. Households Access to Food**

Food access refers to the household's ability to acquire food regularly through one or a combination of home production and stocks, purchases, barter, gifts, borrowing, and food aid (WFP 2009a). Food insecurity is not only determined by food availability, but by access to adequate resources (entitlements) for acquiring food for a nutritious diet. Entitlements are defined as the set of commodity bundles over which a person can establish command given the legal, political, economic and social arrangements of the community in which they live. To be food secure, people must have access to adequate food at all times, i.e. not risk losing food access as a consequence of shocks (FAO 2006b). There are no direct indicators to describe household food access, instead proxies are used from FIVIMS 2003, Poverty Assessment 2007 (if available) and the WFP High Food Price Study 2008. Access to food is one of the major determinants of food insecurity in Yemen.

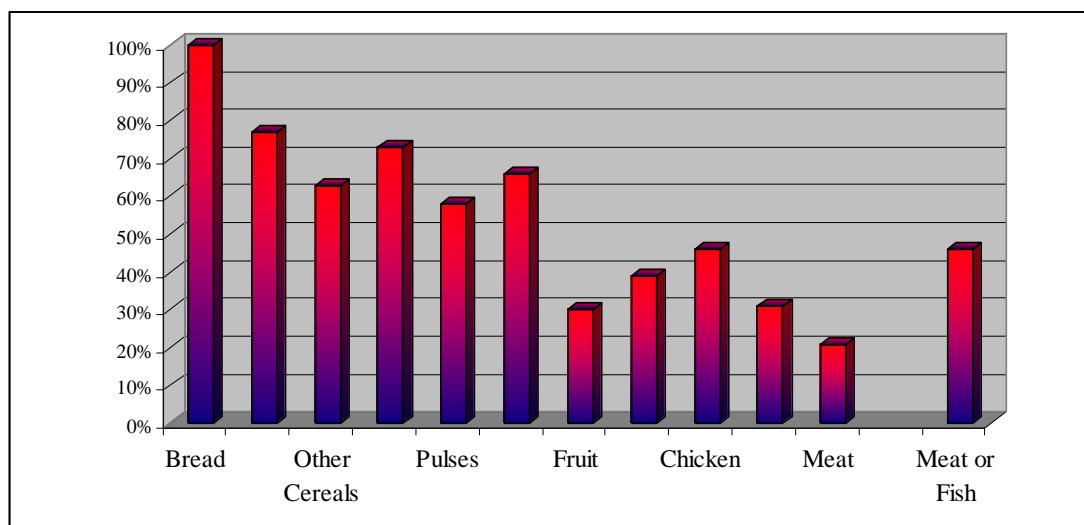
#### **4.3.1. Food Consumption**

As the food security situation worsens, households tend to eat fewer meals and rely on less costly foods. The average number of meals is correlated with total caloric consumption; it is not necessarily correlated with micronutrient intake. Therefore, emphasis is placed on dietary diversity. Inadequate consumption is a primary factor of chronic malnutrition. High rates of poverty and low purchasing power for food negatively impacts nutritional status. Acute malnutrition can be caused by recent inadequate food intake (WFP 2002). Average daily per capita calorie supply is estimated at 2,002 kilocalories in 1999 (WRI 2003). FIVIMS (2003) illustrated that most households eat three meals per day, regardless of food insecurity status. However, food insecure households with severe hunger are more likely to reduce consumption to 1-2 meals. This indicates that households are largely able to avoid cutting the number of meals until faced with severe hunger. Mostly, food insecure households tend to cut back on types of food they normally eat (FAO 2004).

Cereals (wheat and rice) are dominant staples. Next to wheat and rice, domestically grown sorghum is used in rural areas as the supplement for producing bread. FIVIMS (2003) found that virtually all households include bread in their diet, followed by rice and dairy (see Figure 13). A majority of households consume vegetables, other cereals, and pulses. Only few households normally consume chicken and eggs, and less than a third eat fish, fruit, and meat (FAO 2004). WFP (2008c) conducted a rapid assessment on impacts of high food prices and found that households with poor and borderline food consumptions increased as result of high food prices. Poor food consumption is more prevalent in rural areas; a quarter of rural households and a fifth of urban households record poor consumption. The diet of the poor is restricted to wheat, oil and tea with sugar, while consumption of animal food sources (milk, meat, eggs) is extremely limited (WFP 2008a). 96% of households consume fruits less than 3 days/week. In urban areas, 84% consume dairy less than 3 days/week compared to 76% in rural areas (WFP 2008c). Sources of nutrients (e.g. animal proteins), are replaced by cheaper,

non-nutrient dense food (e.g. cereals), which has significant impact on the already poor micronutrient status of young children and women of childbearing age (WFP 2008a).

*Figure 13: Types of Food Normally Eaten per Day (FAO 2004)*



FIVIMS showed that households shield children from hunger. Adults are more than twice as likely to go a day without food compared to children, even though households with children are slightly more likely to be food insecure. Most food insecure households indicate that food insecurity is distributed evenly across male and female adults. Food insecurity by gender is not distributed evenly across governorates, but more investigation is needed to understand food consumption within Yemeni households across the country (FAO 2004).

Consumption of qat is widespread and increased dramatically – contributing to social and economic problems. Recent statistics suggest that 90% of men and 60% of women are regular qat chewers. Some 15-20% of children under twelve also chew (WFP 2002). The impacts of qat consumption are varied. It affects the economy through the high opportunity cost of lost work-hours (WFP 2008d). Qat reduces the availability of finances for other consumption, i.e. diverts resources from basic needs, including food, education and health. In poor households with less disposable income, qat consumption absorbs up to 50% of budgets<sup>27</sup> (World Bank *et al.* 2007). Some households forego food in favour of qat (WFP 2002). This reduces the saving ability of households, making them more vulnerable to food insecurity (FAO 2004). According to estimates, poverty incidence would decrease nationally by more than 6%, if qat spending were reallocated to other uses (World Bank 2002).

#### **4.3.2. Food Security Status**

According to FIVIMS, close to 4 million individuals are food insecure (21.7% of households). Of these, approximately two thirds are food insecure with moderate hunger; nearly 2.5 million individuals – or 14% of households. Approximately 1.4 million individuals live in households (191,700) with severe hunger, representing 8% of households (FAO 2004).

<sup>27</sup> According to FAO (2004), on average, an estimated 11% of household income are spent on qat.

Summarised, FIVIMS estimates the prevalence of food insecurity: (1) Shabwa, Sa'ada, Hajja, Ibb, Hodeida, and Al-Mahra have the highest rates of general food insecurity, definite food insecurity, and food insecurity with moderate hunger; (2) Lahej, Al-Gawf, and Al-Baida have proportionally lower rates of overall definite food insecurity, but some of the highest rates of food insecurity with severe hunger; (3) there are marked disparities at the district level in governorates with definite food insecurity; (4) households in desert and coastal zones are slightly more likely to be food insecure with hunger compared with mountain regions; (5) Governorates that are considered to be some of the poorest have below average rates of food insecurity (e.g. Lahej, which has one of the lowest rates of general food insecurity, and Taiz, which has one of the lowest rates of severe hunger); (6) Conversely, Saadah, with one of the lowest poverty rates in the country, has one of the highest prevalence rates of general food insecurity.

The Poverty Assessment 2007, based on HBS 2005/06 data, estimates that 35% of population are poor (7 million) and 13% of population are food poor (2.9 million). UNDP (2008) updated HBS 2005/06 to reflect high food prices and estimate current levels of poverty. It concluded that the proportion of people suffering from food poverty, those unable to even meet their basic food needs, more than doubled to 27% in December 2007. With respect to numbers, this would imply that food poverty affects 6.2 million people in the country. UNDP estimates that more than 6% of Yemenis have dropped below the poverty line due to rising food prices. The impacts of high food prices thus reverse all the gains made in poverty reduction between 1998-2005 (UNDP 2008). Based on the rapid assessment of food consumption scores, WFP (2008c) concluded that food security in the poorest governorates has deteriorated as a consequence of high prices; and found 24% of households have poor, and additional 35% have borderline food consumption<sup>28</sup>. With the majority of the poor population living in rural areas, it is clear that poverty reduction strategies must have a strong rural focus. Furthermore, inter-governorate differences in poverty incidence are high. Given the limited access to social infrastructure, those who are poor are also most vulnerable to extreme poverty and food insecurity.

#### **4.3.2.1. Food Security Status by Agro-Ecological Zone**

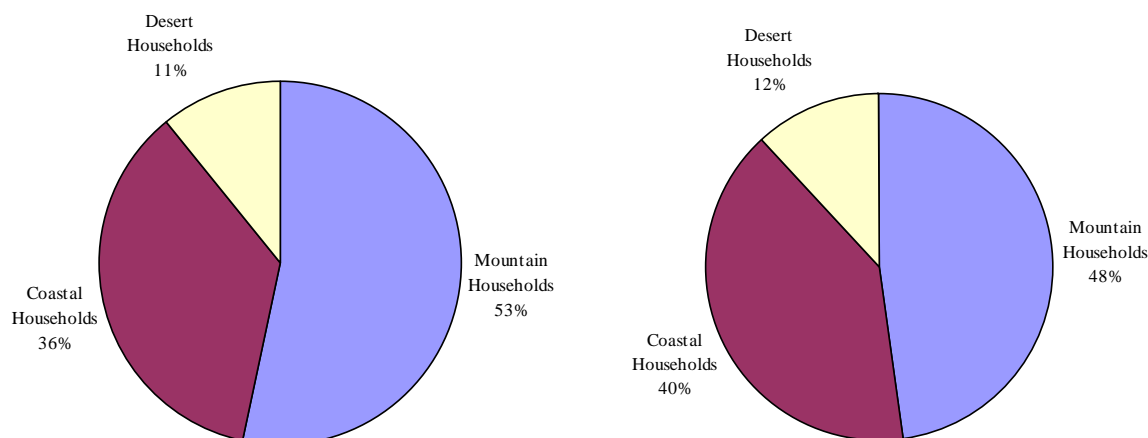
FIVIMS 2003 disaggregates food insecurity findings by agro-ecological zone, but only distinguishes mountainous, coastal and desert regions. Prevalence rates of food insecurity do not vary greatly across agro-ecological zones. Governorates in the mountainous area make up 53% of the population and 53% of the food insecure population. As shown in Figures 14-15, coastal households, making up 36% of the total sample population, account for 40% of all households with severe hunger. Likewise, desert households, with 11% of the total sample population, account for 12% of all households with severe hunger. However, food insecurity varies significantly within agro-ecological zones, particularly in the mountainous and coastal regions. For example, the mountainous region contains both Sana'a City and Addaleh, two

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<sup>28</sup> FCS: method to capture consumption patterns and dietary diversity, looks at food groups consumed over a 7-day recall period, weights are assigned to each food group. A FCS >35 is considered acceptable, 35-21 as borderline, <21 suggests poor food consumption.

governorates with the lowest general rates of food insecurity, as well as Sa'ada and Hajja, two governorates with some of the highest rates (FAO 2004).

*Figures 14-15: Share of Total Sample Population (left) and Share of Households with Severe Hunger (right) (MoPIC 2006)*



#### *Zone 1: The Central and Northern Highlands*

48% of the zone's population is food insecure (FAO 2004). While households that cultivate qat are more than twice as likely to be food secure than those that are not, they are less likely to own livestock (Alabsi 2006; World Bank 2007a). Households with access to irrigation and qat are food secure and food self sufficient for most of the year, while households without access to productive land and dependent on daily labour are food insecure with 2-4 months of food self-sufficiency (WFP 2003). Households with severe hunger are proportionally higher. The intra-zone differences in food insecurity are large; this zone including some of the lowest rates of food security (Sada'a and Hajja), and some of the highest. Differences can be observed with respect to consumption patterns, as some households compare to the national average with respect to balanced diets, while others eat unbalanced diets with respect to dietary diversity and number of meals (FAO 2004).

#### *Zone 2 & 3: The Tihama Plain and The Southern Coast from Aden to the Border with Oman*

With respect to food security, there is no separate information available for the two coastal zones<sup>29</sup> (FAO 2004). Both combined, show that more than 22% of the households are food insecure with hunger. Households with moderate hunger make up a large proportion (FAO 2004). Community food security profiling showed that generally households with access to groundwater and fishing, as well as households involved in fishing or irrigated land are more food self-sufficient than households with small land owners, rainfed systems and landless households that rely on casual labour or public employment (WFP 2003).

#### *Zone 4: The Middle Plateau of Shabwah and Hadramout*

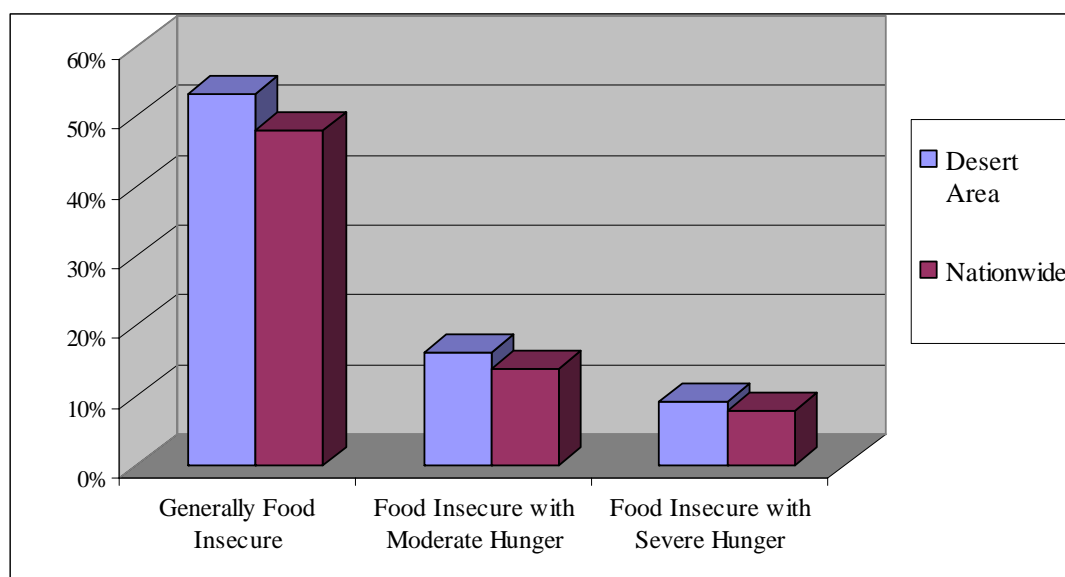
<sup>29</sup> Including governorates from both coastal zones, FAO did not distinguish Tihama Plain and Southern Coast.

FIVIMS uses other categorisations of agro-ecological zones and the middle plateau is combined as mountainous zone (see food security information in zone 1). Food security in this zone is largely driven by remittances, as households that are food self-sufficient for most of the year are largely dependent on remittances. In addition, more food secure households have access to irrigation in valleys and cultivate dates and other fruits. Casual workers and households that rely on livestock in the plateau are landless and less food secure (WFP 2003).

#### *Zone 5: The Empty Quarter (Desert)*

This zone has above average food insecurity, with 25.4% food insecure with hunger. Moreover, people generally eat fewer food groups and have a less balanced diet. Figure 16 shows the zone in national comparison with respect to food insecurity.

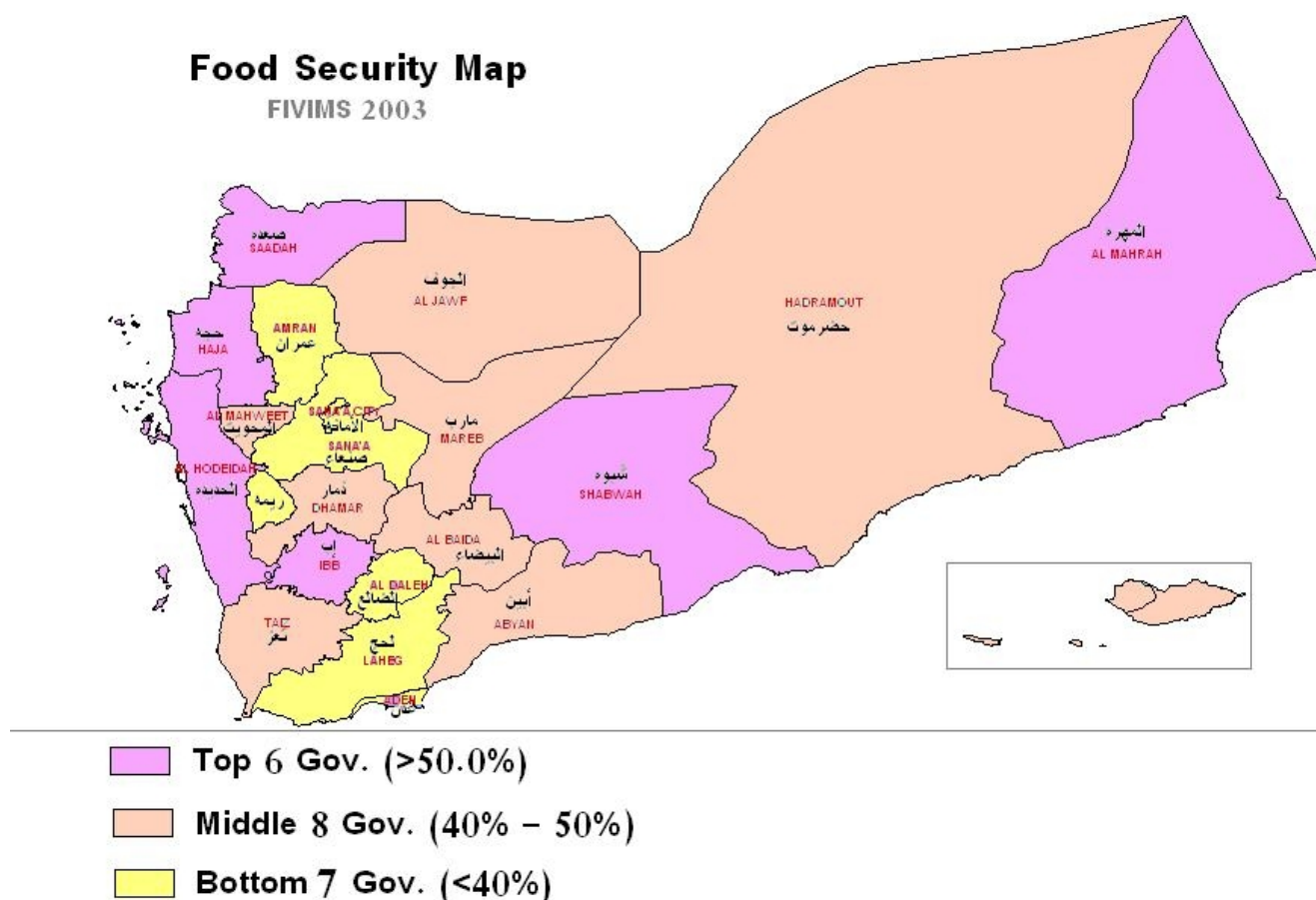
***Figure 16: Food Insecurity in the Desert Zone, Compared to National Statistics (FAO 2004)***



#### **4.3.2.2. Geographic Distribution by Governorate**

There are substantial differences in the geographic distribution of food insecure households (see Map 5). More than half of the half a million households that are food insecure are located in Ibb, Hodeida, Taiz, and Hajja (see Table 9-10). Ibb, Hajja, Hodeida, and Sa'ada have the highest numbers of food insecure households with severe hunger (51.6% of all food insecure households with severe hunger) (FAO 2004). Detailed governorate profiles are in Appendix 6.

***Map 5: Food Insecure Households (FAO 2004)***



FIVIMS 2003 found substantial differences in the distribution of food insecure populations. Prevalence of food insecurity ranged from 8% in Sana'a City to 44% in Shabwa (see Figure 17). At 44%, food insecurity prevalence in Shabwa is twice the national average. At least one quarter of the population were found to be food insecure, including Sa'ada (40%), Hajja (36%), Ibb (29%), and Al-Mahra (29%). On the other end of the spectrum, several governorates have below average prevalence rates of food insecurity. Sana'a City is the lowest at 8%, followed by Sana'a (10%), Addaleh (13.5%), and Aden (14.6%).

*Table 9: Top Governorates: Numbers of Food Insecure Households (FAO 2004)*

|                      | Food Insecure Households<br>(Moderate and Severe) |         | Food Insecure Households<br>with Moderate Hunger |         | Food Insecure Households<br>with Severe Hunger |         |
|----------------------|---|---------|--|---------|--|---------|
| Rank                 | Governorate                                       | N       | Governorate                                      | N       | Governorate                                    | N       |
| 1                    | Ibb   | 79,726  | Hodeida  | 60,034  | Ibb  | 33,124  |
| 2                    | Hodeida   | 78,567  | Taiz   | 54,725  | Hajja  | 28,791  |
| 3                    | Taiz  | 63,886  | Ibb  | 46,602  | Hodeida  | 18,533  |
| 4                    | Hajja   | 62,897  | Hajja  | 34,106  | Sa'ada   | 14,508  |
| Yemen (N)            |   | 527,241 |  | 335,542 |  | 191,699 |
| Top 4 Govs (percent) |   | 54.1%   |  | 58.3%   |  | 51.6%   |

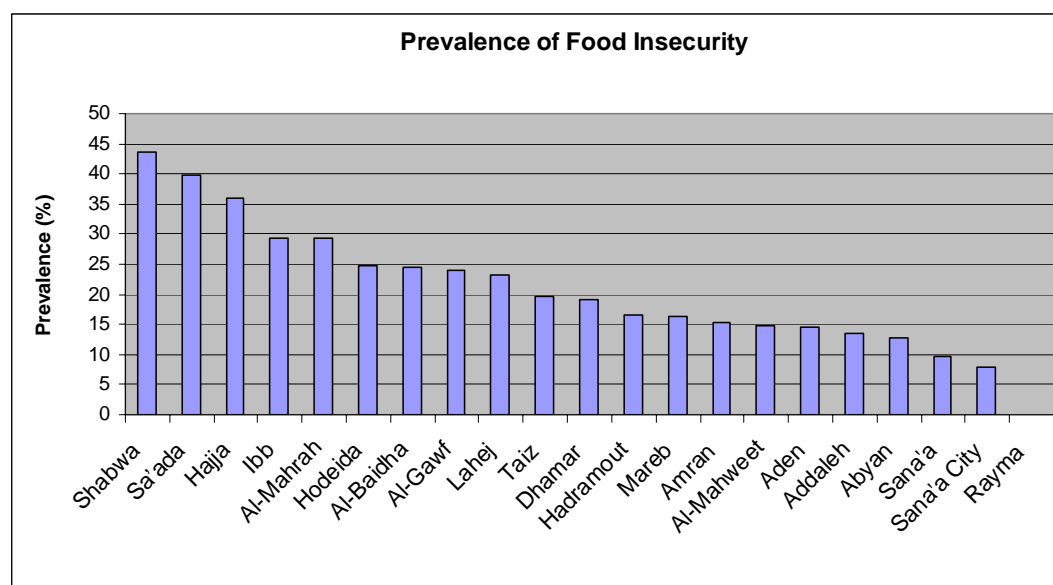
*Table 10: Top Governorates: Prevalence of Food Insecurity (FAO 2004)*

|      | Food Insecure Households<br>(Moderate and Severe) |         | Food Insecure Households<br>with Moderate Hunger |         | Food Insecure Households<br>with Severe Hunger |         |
|------|---|---------|--|---------|--|---------|
| Rank | Governorate                                       | Percent | Governorate                                      | Percent | Governorate                                    | Percent |
| 1    | Shabwa  | 43.5    | Shabwa   | 33.4    | Sa'ada   | 19.0    |

|       |          |      |          |      |           |      |
|-------|----------|------|----------|------|-----------|------|
| 2     | Sa'ada   | 39.9 | Sa'ada   | 20.9 | Hajja     | 16.5 |
| 3     | Hajja    | 36.0 | Hajja    | 19.5 | Al-Gawf   | 15.0 |
| 4     | Ibb      | 29.4 | Hodeida  | 18.9 | Al-Baidah | 12.9 |
| 5     | Al-Mahra | 29.3 | Al-Mahra | 18.6 | Ibb       | 12.2 |
| 6     | Hodeida  | 24.7 | Ibb      | 17.2 | Lahej     | 11.2 |
| Yemen |          | 21.7 |          | 13.8 |           | 7.9  |

Variation of food insecurity is higher within than across governorates, mainly due to differences in agricultural productivity and natural resources, remittances received, and proximity to markets. Food insecurity with moderate hunger is particularly prevalent in Shabwah, with one third of households. Other governorates with high percentages of households with moderate hunger are Sa'ada (21%), Hajja, (20%), Hodeida (19%), and Al-Mahra (18.6%). Governorates with low percentages of households with moderate hunger include Sana'a (5.2%), Sana'a City (5.5%), Abyan (6.1%), and Aden (6.6%). At the district level, governorates with moderate hunger exhibit significant intra-governorate diversity as well. Districts with the most prevalent rates of moderate hunger within the five governorates ranged from 14.2% of households in Mustaba (Hajja) to 100% in Hat (Al-Mahra). Hajja exhibited the greatest amount of diversity among its districts, with an 81 point spread between Mustaba (14.2%) and Bani Al Awwam (95.3%). Governorates with low moderate hunger also contain districts with widely divergent prevalence rates. Abyan had districts ranging from 2.2% in Mudiya to 83.1% in Jayshan (FAO 2004).

*Figure 17: Governorates: Highest & Lowest Rates of Food Insecurity (FAO 2004)*

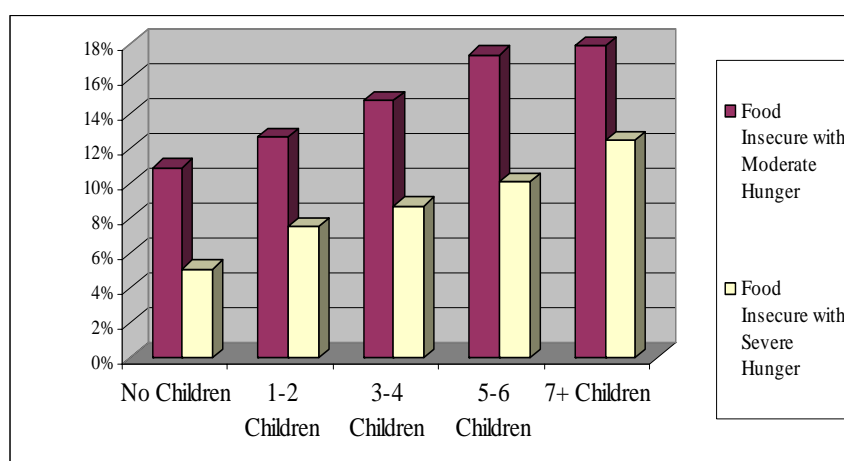


With respect to food insecure households with severe hunger, prevalence is at a striking 19% of all households in Sa'ada, which is surpassed only by Shabwah in terms of overall prevalence of food security. It is followed by Hajja (17%), Al-Gawf (15%), Al-Baidah (13%), Ibb (12%), and Lahej (11%). Governorates with low severe hunger include Sana'a City (2.3%), Taiz (2.8%), Sana'a (4.4%), Al-Mahweet (4.7%), and Hadramout (5.1%). It is of note that several governorates that do not have the highest prevalence rates of food insecurity do have some of the highest proportions of severely hungry households. This includes Al-Gawf, Al-Baidah, and Lahej. It is noteworthy that Taiz, a governorate known to be among the poorest in Yemen, has a markedly low incidence of severe hunger (FAO 2004).

Of the governorates with the highest percentage of households with severe hunger, Laheg has the most extreme disparities among its districts, with *all households* in Habil Jabar reporting that one or more adults did not eat for an entire day, compared with *no households* in Al Had. Similarly acute disparities exist in most governorates with high prevalence rates of food insecurity with severe hunger. The exception is Sa'ada, which has the highest average proportion of households with severe hunger. Here, Baqim had the highest prevalence rates at 65.9%, and Ad Dhahir had the lowest at 23.4%. Governorates with low rates of severe hunger also exhibit significant diversity. Taiz, which has one of the lowest percentages of households with severe hunger, has the widest spread among its districts, with Haifan at only 3.7% of households compared with Al Misrakh at 87.5%.

### 4.3.3. Characteristics of Food Insecure Households

FIVIMS 2003 identified a number of characteristics of food insecure households, which largely correspond with household characteristics for poverty (based on HBS 2005/06). Yet, this information is not available aggregated at governorate level. The most food insecure are characterised by a range of household characteristics that include:

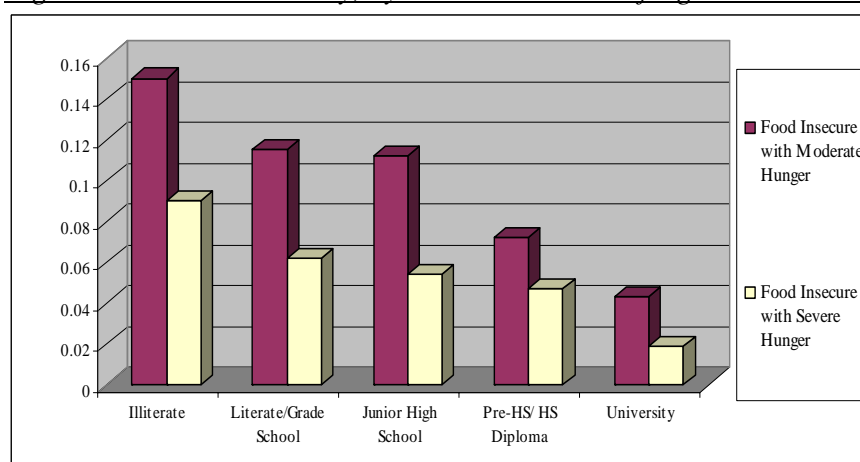


*Figure 18: Household Food Insecurity, by Number of Children (FAO 2004)*

(1) Household size and number of children (see Figure 18); a positive association between size and food insecurity with hunger; households with more children under twelve are more likely to be

food insecure; depth of food insecurity increases with rising child to adult ratio (FAO 2004); WFP (2008c) confirms that household size with small number of children and with more than 8 children are most likely to be food insecure;

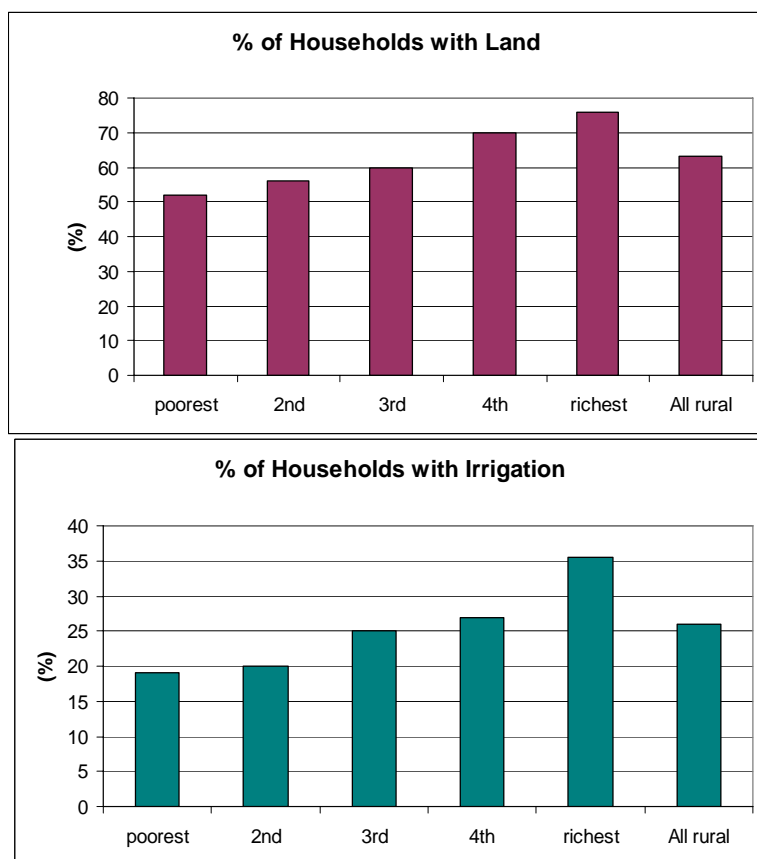
*Figure 19: Food Insecurity, by Education Level of Agricultural Household Head (FAO 2004)*



(2) Higher educational attainment of household head reduces the risk of being vulnerable or food insecure with hunger (see Figure 19); nearly half (45.7%) of agricultural households are illiterate; associations between food insecurity and educational attainment

are some of the strongest associations in FIVIMS;

*Figure 20-21: Household Poverty in Relation to Available Land and Irrigation (World Bank 2009)*



(3) Land ownership and size are associated with lower prevalence of food insecurity and poverty among agricultural households (see Figures 20-21); one in four households with no land are food insecure (FAO 2004); World Bank (2009) also shows that land owners with access to irrigation have lower prevalence rates of poverty;

(4) Livestock ownership reduces food insecurity; households with large herds have lower prevalence rates of food insecurity; households with less than ten heads of chicken are more than twice as likely to be food insecure with hunger compared to national averages;

(5) Diversity of employment beyond an agricultural activity reduces

likelihood of being food insecure; household gains access to food by generating sufficient revenue to be able to purchase necessary items; the larger the number of income sources, the lower the risk of food entitlement failure (FAO 2004); WFP (2008c): households relying on remittances and pensions are most vulnerable to food insecurity; and

(6) Households growing qat are significantly less likely to be food insecure. There is a strong correlation between growing qat and food security and it is a major factor contributing to high malnutrition (WFP & UNICEF 2006). Qat producers are more than twice as likely to be food secure than agricultural households not producing qat, since high profits enable higher investments in irrigation, increase in cultivated area, raise incomes and create jobs. Households have better means to buy food and enhance food security. However, qat producers are generally wealthy landholders – a small proportion of the rural population, while poor farmers do not benefit<sup>30</sup> (FAO 2004). Qat chewers are more likely to be food insecure. They are largely rural and urban medium to low income households. Chewers have reduced food intake to expend on sustaining their qat habit (FAO 2004; World Bank 2007a). Despite the economic opportunities for qat producers and suppliers, the net effect of consumption is negative for Yemen's economic and social development. The two-sided impact on producers and consumers poses a unique policy challenge – the need to find a

<sup>30</sup> Detailed numbers on this relationship are not available

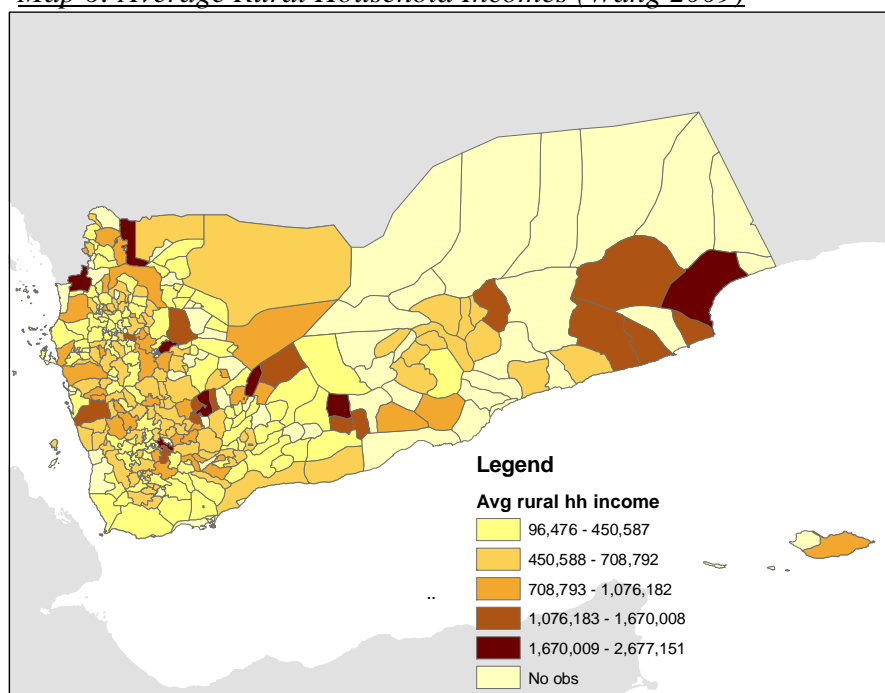
balance while lessening its negative impacts. Discouraging qat consumption – which is well integrated into Yemeni economy and culture – becomes a complex and difficult challenge.

Food insecure households are not homogenous. While small agricultural households form a major group of vulnerable households, others include labourers, sharecroppers, un/underemployed, female headed households, rural women in general, and socially marginalized groups (WFP 2002). WFP (2008c) finds that (1) female headed households are more vulnerable to food insecurity and poverty; and (2) food security status and expenditure are related, as over 50% of severely food insecure households belong to the lower two expenditure quintiles. FIVIMS shows that agricultural households are less likely to be food insecure with severe hunger; mostly if they are headed by male or older adult (FAO 2004).

#### 4.3.4. Main Sources of Food for Food Insecure Households

In Yemen, economic access to food is a main food security issue. Since food availability is driven by imports, people produce a small proportion of their food needs and rely heavily on other sources of income. Low purchasing power, limited sources of income and high food prices are determinants of food insecurity and malnutrition. This shows that income is an important prerequisite for food access. Few rural households can make a living on agriculture alone due to low productivity and incomes (Map 6) (MoPIC 2003). According to WRI (2003) 41.2% of income in Yemen is earned by the richest 20% of the population, while the poorest 2% earn 7.4% (WRI 2003). Apart from the economic aspects, food access requires access to infrastructure in the forms of markets, marketing and transport facilities.

*Map 6: Average Rural Household Incomes (Wang 2009)*



The majority of food consumed by Yemeni households is purchased on the market. According to FIVIMS 2003, temporary employment (>30%), followed by fulltime employment (Y20%) and sale of agricultural produce (14%) are main sources of food for vulnerable and not vulnerable households. Only 4% of households rely on their own

production as main source of food. This is interesting in light of three quarters of Yemen's population living in rural areas. As a consequence, more severe levels of food insecurity are associated with an increased reliance on salaries from temporary employment. While only 21.6% of households not vulnerable to food insecurity depend primarily on temporary employment, this figure jumps to 37.1% of households vulnerable to food insecurity, to 46% of households with moderate hunger, and to 48% of those with severe hunger. Moreover, households not vulnerable to food insecurity are more than twice more likely to rely on income from commercial activities and remittances than households with hunger. Households not vulnerable are more likely to have more than one source of income. This suggests that

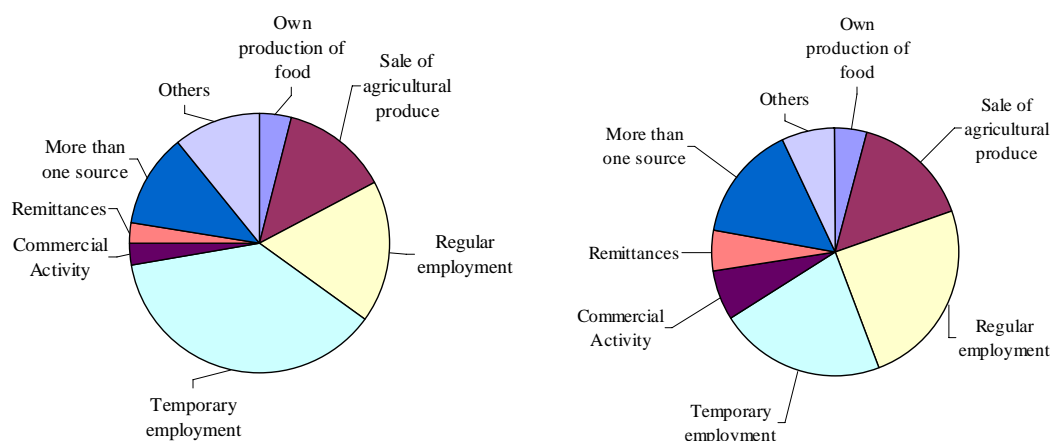
food insecure households have fewer options for livelihood diversification to rely on when obtaining food (FAO 2004).

Recent food price increases were sudden and did not allow for preparation. Malnutrition due to poor consumption is high, with 24% of households having a food consumption score below 21 indicating poor consumption in terms of nutrient quality (i.e. dietary diversity) and quantity, 35% were borderline and a larger number (40%) scored above 35. Comparing these with results from the WFP and UNICEF (2006), the situation has deteriorated. Households with poor and borderline food consumptions have increased across agro-ecological zones (see Table 11). At 71%, Zone 4 recorded a much higher prevalence of poor food consumption compared to the others. At 2%, Zone 4 had the least prevalence of households with adequate food consumption. Comparing FCSs with main source of income suggests people producing cash crops had the highest FCS (45%), followed by self-employed (43%), government employees (39%), livestock (38%), and wage labour (36%).

*Table 11: Food Consumption by Location (% of household) (WFP 2008c)*

| Food Consumption | Urban | Rural | Rural  |        |        |        |
|------------------|-------|-------|--------|--------|--------|--------|
|                  |       |       | Zone 1 | Zone 2 | Zone 3 | Zone 4 |
| Poor             | 18    | 28    | 24     | 6      | 10     | 71     |
| Borderline       | 44    | 31    | 41     | 32     | 26     | 27     |
| Adequate         | 38    | 41    | 35     | 62     | 65     | 2      |

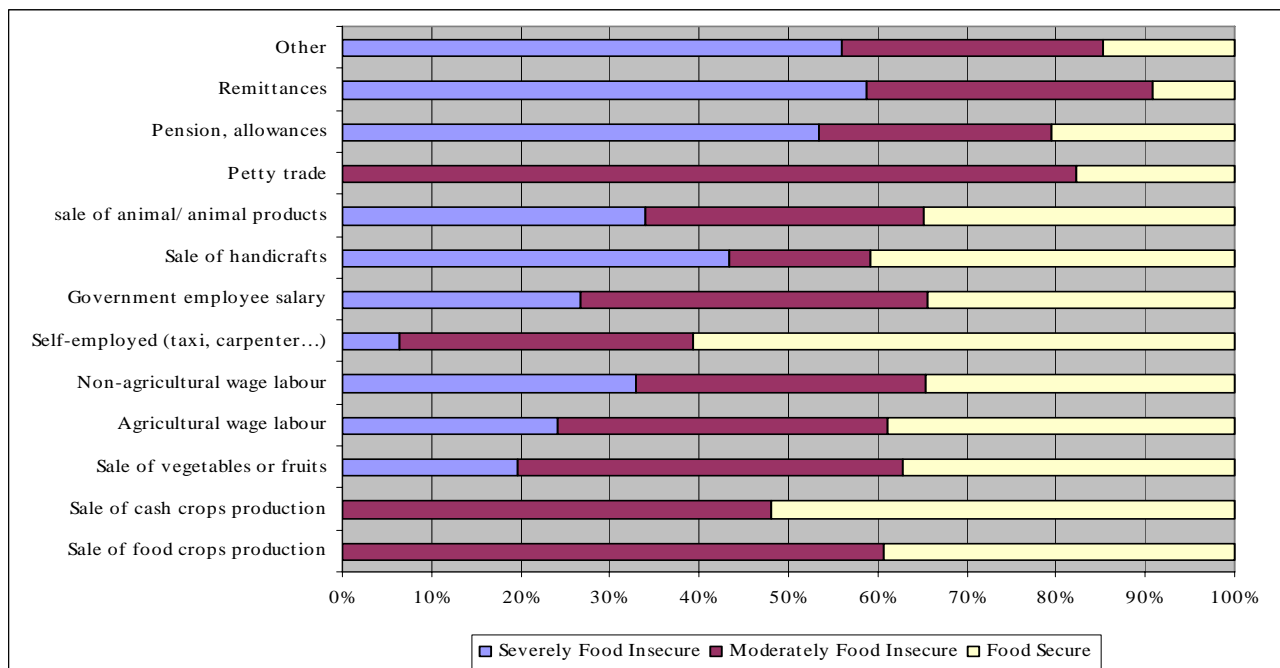
*Figures 22-23: Main Sources of Food for Vulnerable to Food Insecurity (left) and Not Vulnerable Households (right) (FAO 2004)*



WFP and UNICEF (2006) found that most households relied on salaries and wages as main income source (30%), followed by skilled and unskilled labour (26%) and remittances (9%). Agriculture, livestock and fishing account as main income source for 8% of households, while qat features as the major income for 2% of households (WFP & UNICEF 2006). According to the WFP high food price study, the main source of income was non-agricultural wage labour, though a quarter of the population reports having more than one source of income (see Figure 24). Households who are able to sell agricultural produce or generate income through petty trade, are less vulnerable than those relying on fixed incomes (e.g.

pensions, remittances). Over 50% of households relying on remittances and/or pensions as their primary source of income are food insecure (WFP 2008c).

*Figure 24: Income Sources (WFP 2008c)*



WFP (2008c) estimates that in its surveyed area more than half of households (53%) were affected by the increase in food prices over the past six months. An additional 17% reported job loss or reduction of salaries and sickness (23%). WFP (2008c) found that average household expenditure consisted of 65% on food, 18% on health, 6% on *Qat*, 3% on transport and 2% on education. On average, households spent 129YR per capita per day. Over 80% of the population spends less than a dollar per day. The share of food in daily expenses is highest for those relying on pensions, allowances and remittances. On average, households spent 65% of their income on food (WFP 2008c). Generally, female headed households allocate household resources better for current and future welfare than male headed households. They also have a lower share on consumption goods, such as qat and tobacco, and spend more on education and health (World Bank *et al.* 2007).

#### 4.3.5. Determinants of Food Access

The causes of food insecurity in Yemen are diverse, include biophysical and socio-economic factors, and have different impacts in the agro-ecological zones and on different socio-economic groups. Structural causes of food insecurity include: high population growth, reliance on food imports financed by oil revenues, overexploitation of limited natural resources, namely water, and lack of livelihood diversification options, especially in rural areas. Access to markets and basic services, household characteristics, qat consumption, and population density also play a role. Natural hazards and conflict severely affect household food security. Public and private transfers, as well as government policies are important. Vulnerability to increased food insecurity in the context to hazards is exacerbated by high food prices and the impacts of the global economic crisis. However, exposure to natural hazards is not controllable nor are they likely to decrease in future, particularly in the context of climate change. The internal capacity of society can be changed, however. Populations can increase its internal capacity to cope with natural hazards, by increasing resilience, mitigative and adaptive capacities. Population growth and livelihood diversification are also controllable factors that are to be addressed at multiple scales, including community up to national levels.

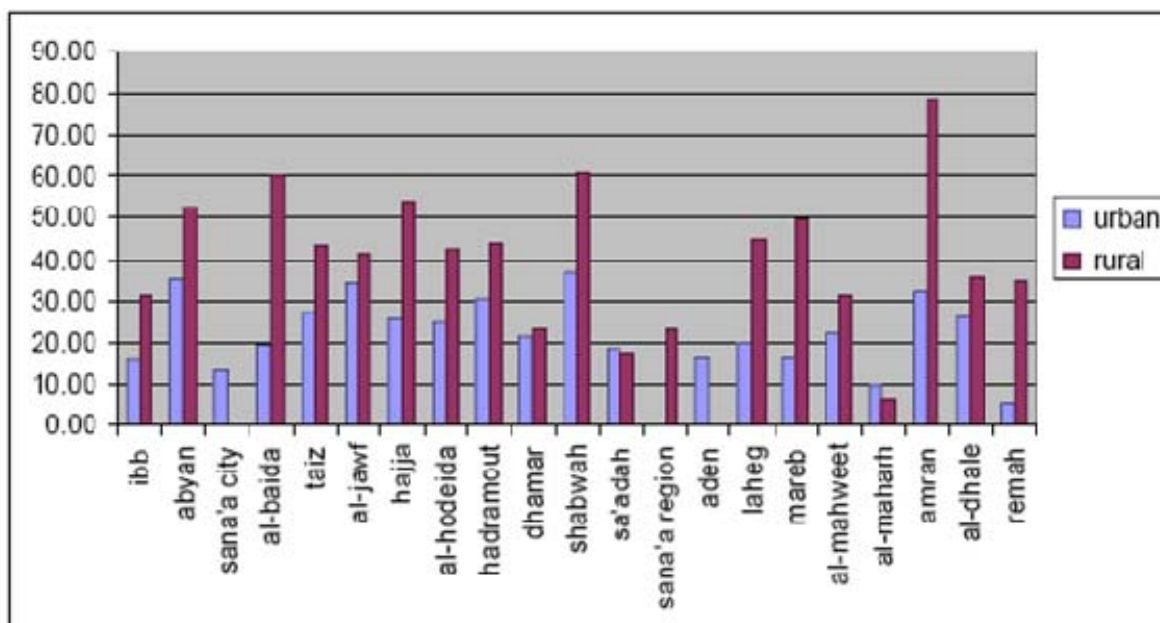
Most of the understanding on food security in Yemen is limited to the availability aspects of food, i.e. trade and production; often emphasising food self-sufficiency. Food access, i.e. entitlements to income, livelihood systems, food market mechanisms, and purchasing power, is becoming more and more recognised as a central element to food security. This is especially the case in the global context of international price rises, as Yemen depends on food imports from international markets.

#### **4.3.6. Poverty as Key Determinant of Food Access**

The literature establishes a clear relationship between food insecurity and poverty – households are considered food insecure as a result of poverty. The dilemma of a vicious cycle becomes visible: on one side, food and nutrition insecurity is a cause of poverty; on the other, it is a consequence – and at the same time food and nutrition insecurity is part of poverty. Malnutrition is a determinant of poverty, since chronically undernourished people cannot participate in an active life and economic activities. Food and nutrition insecurity has a negative impact on labour productivity and contributes to poverty. Consequently, food and nutrition security is a precondition for sustainable development while malnourishment slows development. At the same time, inadequate access to food is an outcome of poverty. Food and nutrition insecurity is a consequence of faltering income, structural poverty and lack of coping strategies. This is why food insecure people mostly belong to the poorest category. However, whether food insecurity is considered as cause or consequence, it is always a manifestation of poverty. In Yemen, while poverty and food insecurity are related, both address different aspects of household need. There is significant overlap, i.e. food insecure households are poor and *vice versa*; but this is not always the case. Evidence suggests that poor households may be food secure, while a smaller proportion of non-poor households may be food insecure. Some governorates with strikingly high rates of poverty, e.g. Amran, have low rates of food insecurity. A possible explanation may be that poverty estimates measure annual expenditure, while food security can be a temporary phenomenon. Non-poor households may be forced to reduce their food consumption at a certain point in time as a result of cash flow problems (FAO 2004).

The difference in poverty between governorates is large in terms of socio-economic conditions (UNDP 2006). Figure 25 shows poverty incidence for rural and urban areas across governorates and confirms large inter- and intra-governorate differences in rural and urban areas. The figure illustrates that poverty is relatively low in the two pure urban areas (Aden, Sana'a City). Generally, the poor are more represented in rural areas of each governorate. In Amran, Hajja, and Taiz rural regions are the highest representation of poor. About one third of the poor live in rural areas of three governorates, namely Taiz, Hajja, and Hodeida, and another 16% live in rural Ibb and Amran (UNDP 2006). There are large intra-governorate differences in the incidence of poverty. Poverty varied between 5.4% (Al-Mahra) and 71% (Amran) in 2005-06. Regional differences also persist when using the notion of extreme poverty (World Bank *et al.* 2007). According to the Poverty Assessment 2007, a range of factors characterise level of household poverty. Educational attainment and illiteracy, access to health facilities and malnutrition rates among children characterised poor households. Additionally, female headed households are more at risk of poverty, while their risk declines depending on whether they have a spouse residing in the household, the husband is away, or whether women are widows, divorcees or single (World Bank *et al.* 2007).

*Figure 25: Poverty Incidence (%) by Governorate (UNDP 2006)*



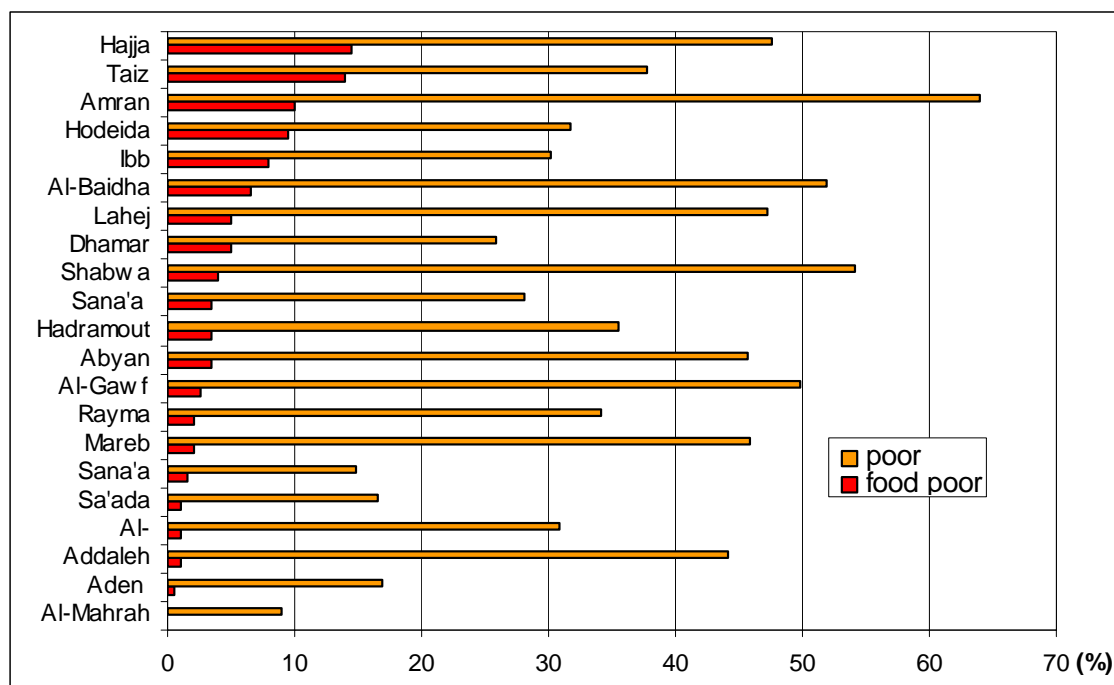
Before FIVIMS 2003, the only representative food security assessment, surveys measured food security by using food poverty lines. Since food is a basic commodity, food poverty lines are considered indicators of extreme poverty. Poverty in the assessments discussed here focus on household annual incomes and expenditures, while food security focuses on food needs of households at one or more points in time during the year. Table 12 and Figure 26 illustrate the distribution of food insecure, poor and food poor households. This direct comparison between the latest poverty and food insecurity data in Yemen show discrepancies in the geographic distribution that are largely unexplained.

*Table 12: Incidence of Food Insecurity and Poverty According to FIVIMS and Poverty Assessment by Governorates (FAO 2004; World Bank et al. 2007)*

| Food Insecurity (FIVIMS 2003) |             |       | Poverty (HBS 2005/06) |       |
|-------------------------------|-------------|-------|-----------------------|-------|
| 1                             | Shabwa      | 43.5% | Amran                 | 63.9% |
| 2                             | Sa'ada      | 39.9% | Shabwa                | 54.1% |
| 3                             | Hajja       | 36.0% | Al-Baidha             | 51.9% |
| 4                             | Ibb         | 29.4% | Al-Gawf               | 49.9% |
| 5                             | Al-Mahrah   | 29.3% | Hajja                 | 47.5% |
| 6                             | Hodeida     | 24.7% | Lahej                 | 47.2% |
| 7                             | Al-Baidha   | 24.5% | Mareb                 | 45.9% |
| 8                             | Al-Gawf     | 23.9% | Abyan                 | 45.7% |
| 9                             | Lahej       | 23.1% | Addaleh               | 44.2% |
| 10                            | Taiz        | 19.6% | Taiz                  | 37.8% |
| 11                            | Dhamar      | 19.2% | Hadramout             | 35.6% |
| 12                            | Hadramout   | 16.6% | Rayma                 | 34.1% |
| 13                            | Mareb       | 16.2% | Hodeida               | 31.7% |
| 14                            | Amran       | 15.2% | Al-Mahweet            | 30.8% |
| 15                            | Al-Mahweet  | 14.9% | Ibb                   | 30.1% |
| 16                            | Aden        | 14.6% | Dhamar                | 25.8% |
| 17                            | Addaleh     | 13.5% | Sana'a                | 28.1% |
| 18                            | Abyan       | 12.7% | Aden                  | 16.9% |
| 19                            | Sana'a      | 9.6%  | Sa'ada                | 16.6% |
| 20                            | Sana'a City | 7.8%  | Sana'a City           | 14.9% |

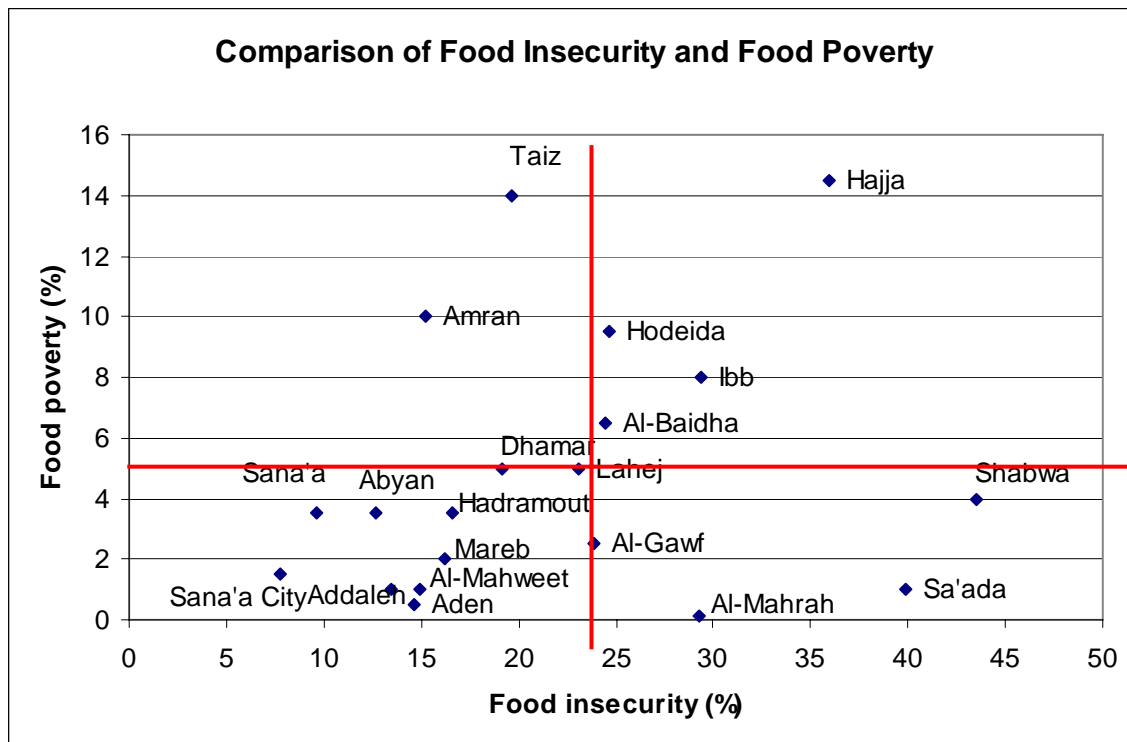
|  |              |              |              |              |
|--|--------------|--------------|--------------|--------------|
|  | Rayma        | n.a.         | Al-Mahrah    | 8.9%         |
|  | <b>TOTAL</b> | <b>21.7%</b> | <b>Total</b> | <b>34.8%</b> |

*Figure 26: Distribution of Poor and Food Poor in 2005/06 (CSO 2006; World Bank et al. 2007)*



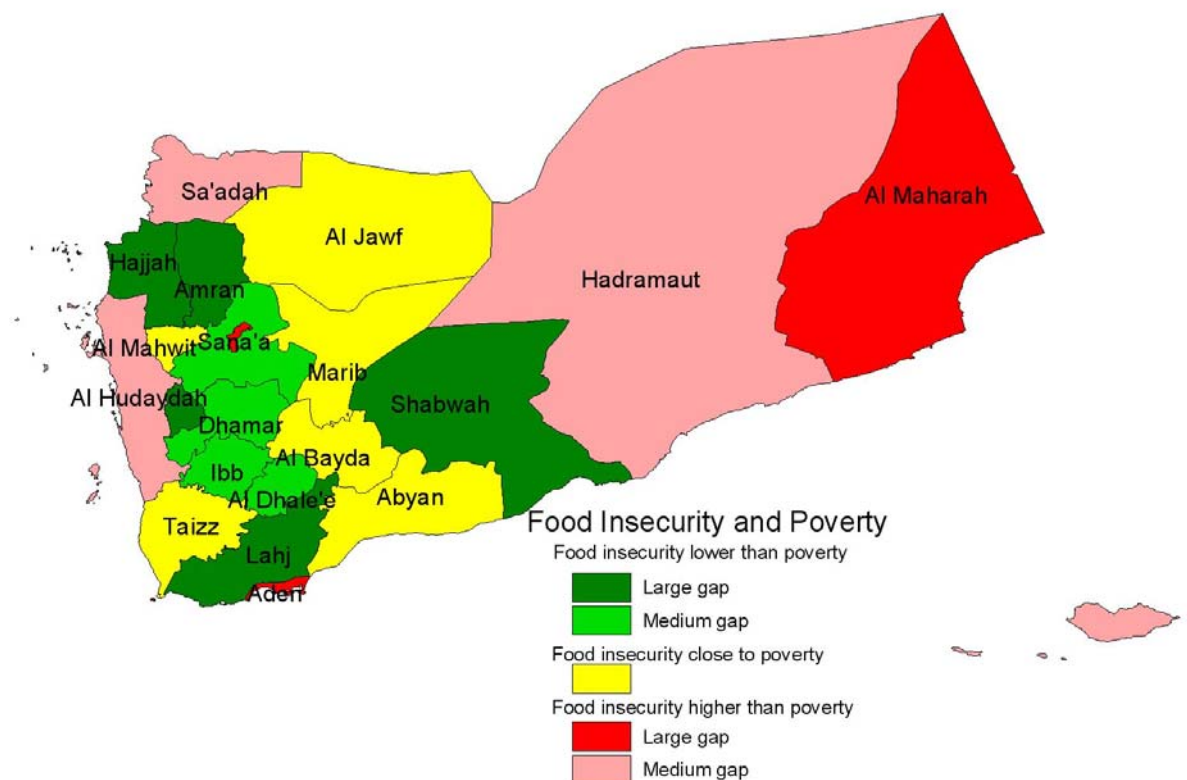
Important differences arise from different measurements of food security and poverty. National estimates for food insecurity in FIVIMS are comparable to those of food poverty in HBS. Determinants of poverty and food insecurity are largely similar: poverty is concentrated in rural areas, among large households, households with high child-to-adult ratios, and households with high rates of illiteracy; while food insecurity increases with larger number of children, and lower education attainment of the household head. While both assessments have similar risk factors, there is a difference in prevalence of food insecurity and poverty in geographic locations. Figure 27 shows that while there is some overlap in governorates ranked under the top five with respect to food insecurity and poverty (Shabwa and Hajja), there are differences in both. Sa'ada, Ibb, and Al-Mahrah are amongst the five most food insecure governorates, while they rank at the bottom of poverty incidence. Similarly, Amran, Al-Baidha and Al-Gawf are considered some of the poorest governorates, but are not amongst the most food insecure.

*Figure 27: Comparison of FIVIMS and Poverty Assessment Ranks (provided by WFP-VAM)*



Map 7 shows differences in food insecurity and poverty. It identifies a different distribution of gaps between poverty and food insecurity. The underlying analysis is not known and one needs to wait for IFPRI to publish their analysis.

*Map 7: Differing Food Insecurity and Poverty Levels in Yemen (Breisinger et al. 2009)*



The results of the geographic distribution of poverty differ from common understanding of food security experts in Yemen with respect to the distribution of poverty and this discrepancy will require more in-depth analysis. These differences in geographic distribution of food insecurity and poverty indicate methodological and conceptual differences – or could point towards differences in poverty and food insecurity amongst the governorates. Time is also a consideration; FIVIMS was collected in 2003, while HBS data is from 2005/06. For instance, poor areas without food security may be areas of high proportion of subsistence agriculture. More information is needed and an analysis at the district level may shed light on this issue. An accurate way to achieve this would be to assess food insecurity and poverty in one assessment, i.e. amongst the same households. For this purpose, food security questions may be included in upcoming HBSs.

Based on the assumption that food insecurity and poverty are similar, poverty information is commonly used for the selection of survey respondents or targeting purposes. This may lead to targeting errors by excluding non-poor food insecure households, or including households that are poor but not food insecure. This relationship is poorly understood and requires additional research. These findings suggest that interventions or policies addressing one of the two may not necessarily address the other. Food insecurity and poverty needs are distinct and are better addressed directly. Integrated interventions addressing both components of deprivation are needed.

## 5. Nutrition Analysis

### 5.1. Nutrition Indicators

Where children do not receive adequate nutrition, they are more likely to have impaired immune systems, poorer cognitive development, lower productivity than adults, and greater susceptibility to diet-related chronic diseases later in life. Undernourished female preschoolers face greater chances of growing into undernourished young women who are more likely to give birth to babies who are undernourished, thus perpetuating the inter-generational transmission of deprivation. Insufficient food consumption leads to other problems that are of public health significance. Among these are deficiency in iron, which causes iron-deficiency anaemia, deficiency in vitamin A, which leads to blindness, and deficiency in iodine, which contributes to iodine deficiency disorders and goitre. Preschool children and pregnant and lactating women are the most vulnerable groups (FAO 2004).

Yemen is one of the ten countries most affected by an increase in malnutrition, judged by stunting and wasting indicators (World Bank *et al.* 2009). The recent HDI shows that between 1990/92-2002/04, the average undernourished population<sup>31</sup> in LDCs decreased from 38-35%, while in Yemen it increased from 34-38% (UNDP 2007). Few LDCs have worse malnutrition rates for weight-for-height (wasting), height-for-age (stunting) and low birth weight. Most recent national data on malnutrition comes from the FHS 2003 and is presented in Table 13-14. According to FHS 2003, more than half (53.1%) of children under 5 are stunted, a little less than half (45.6%) underweight, and nearly one in eight children (12.4%)

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<sup>31</sup> Based on FAO national balance sheets

wasted. The prevalence of low birth weight in infants is high at 32% (in 2006) (UNCTAD 2008a). In comparison, HBS 2005/06 data validates those findings of the FHS 2003, with 13.2% of children under 5 being wasted, and 55.7% stunted. World Bank *et al.* (2009) refer to data from World Health Organization (WHO) indicating that 58% of children under five are stunted and 41% underweight. Chronic malnutrition, measured by stunting in children under five, is increasing: from 33.7% in 1983, to 42% in 1992, to 53.1% in 2003 (MoPHP 2003; World Bank 2007a).

*Table 13: Prevalence of Malnutrition Among Under-five Children, According to FHS 2003 (UNICEF & MoPHP 2009b)*

|                               | total | males | females |
|-------------------------------|-------|-------|---------|
| Underweight Moderate & Severe | 45.6  | 46.0  | 45.1    |
| Underweight Severe            | 15.2  | 15.4  | 15.0    |
| Stunting Moderate & Severe    | 53.1  | 53.1  | 53.1    |
| Stunting Severe               | 30.9  | 30.9  | 30.8    |
| Wasting Moderate & Severe     | 12.4  | 13.3  | 11.4    |
| Wasting Severe                | 3.0   | 3.5   | 2.4     |

*Table 14: Prevalence of Malnutrition Among Children Under Five by Age (MoPHP 2003)*

| Age in Months | Stunting | Severe Stunting | Wasting | Severe Wasting | Underweight | Severe Underweight |
|---------------|----------|-----------------|---------|----------------|-------------|--------------------|
| < 6 months    | 14.2     | 4.8             | 14.3    | 4.1            | 12.3        | 4.1                |
| 6-9           | 36.9     | 14.9            | 17.9    | 4.4            | 42.2        | 13.1               |
| 10-11         | 59.9     | 31.8            | 14.0    | 4.4            | 55.7        | 23.1               |
| 12-15         | 46.2     | 20.3            | 17.2    | 5.9            | 42.4        | 16.2               |
| 16-23         | 66.8     | 41.9            | 15.8    | 2.5            | 52.3        | 20.5               |
| 24-35         | 57.4     | 35.6            | 12.0    | 2.6            | 53.5        | 22.2               |
| Total         | 53.1     | 30.9            | 12.4    | 3.0            | 45.6        | 15.2               |

FHS finds that a quarter of women of reproductive age have a BMI (body mass index) below 18.5, indicating that chronic energy deficiency, i.e. low dietary energy intake, is common. A significant proportion of children and women suffer from low intake of essential micronutrients including Vitamin A, iron/folate and iodine (WFP & UNICEF 2006). UNICEF data shows that a majority (up to 80%) of children under-6 suffer from iron deficiency anaemia. For the surveyed area, vitamin-supplementation coverage is 15% among children under-5, and the use of iodized salt is 30%, both of which are concerns (WFP 2006).

While national data is available is from FHS 2003, there has been debate about its quality (see section 2). However, it is the only representative data. Local surveys were conducted, primarily by donor agencies in their intervention areas. These are of limited coverage and not representative. WFP and UNICEF (2006) in the five most food insecure

governorates<sup>32</sup> find that poor households are worse off in terms of nutritional status, compared to the national average. The rate of chronic energy deficiency among pregnant and lactating women was high; 27% of pregnant and 35% of lactating women were malnourished, based on MUAC and BMI, respectively. Micronutrient malnutrition was even more pervasive. In the surveyed area, the prevalence of anaemia was 82% in children under five, 83% in lactating mothers and 73% in pregnant women (WFP 2006; WFP & UNICEF 2006). These figures are likely to be a more accurate state of malnutrition in Yemen today, since the nutritional status of children is estimated to have worsened with significant reduction of access to food especially among households who were food-insecure prior to high food prices (WFP 2008a).

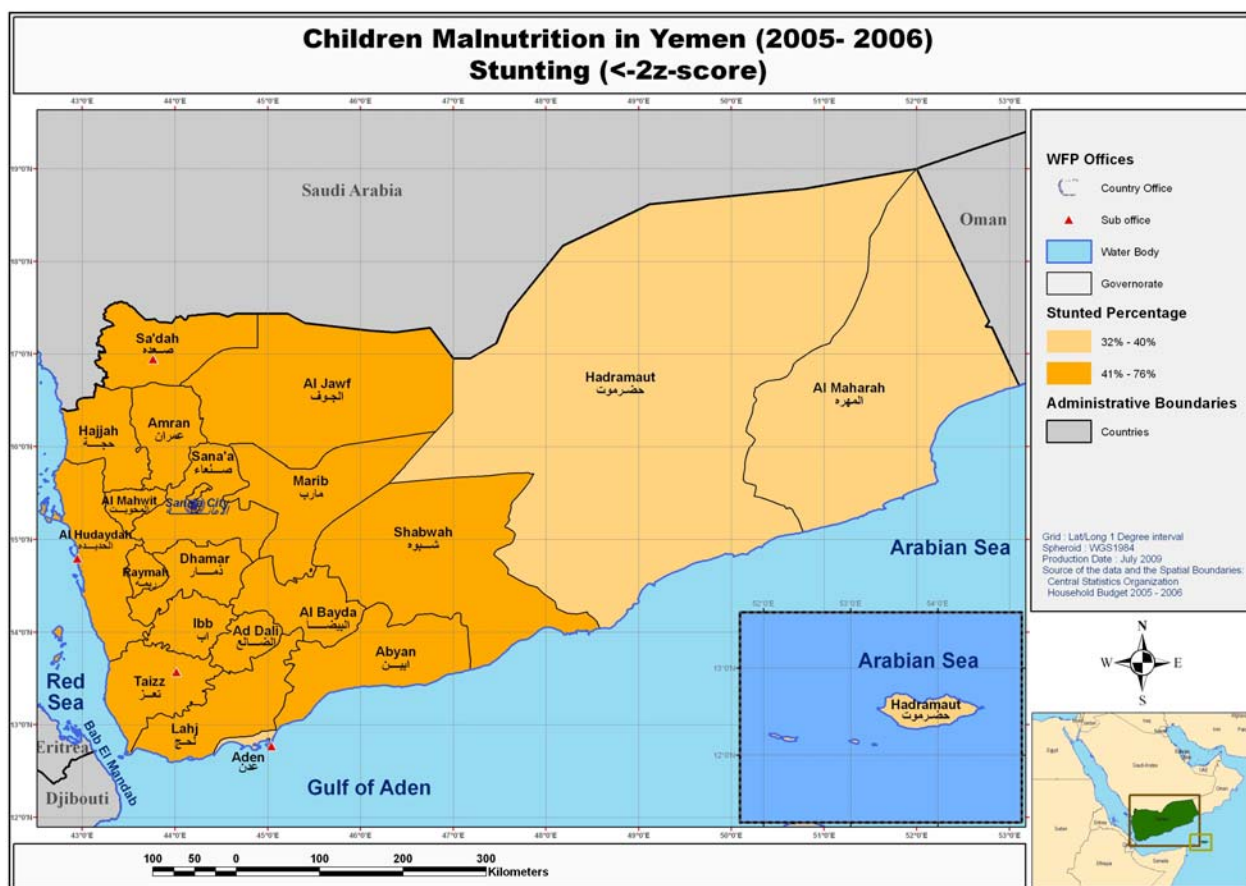
### **5.1.1. Geographic Distribution of Malnutrition**

Disaggregated malnutrition information for Yemen is not easily available. Based on the HBS 2005/06 data, Maps 8-9 illustrate the distribution of stunting and wasting across the governorates. Critical levels of stunting in children under 5 according to WHO thresholds can be observed in 18 governorates; while the remaining 3 governorates still face serious conditions. In three governorates, critical levels of wasting above 15% can be observed. In addition, nine governorate show serious levels of wasting between 10-15%.

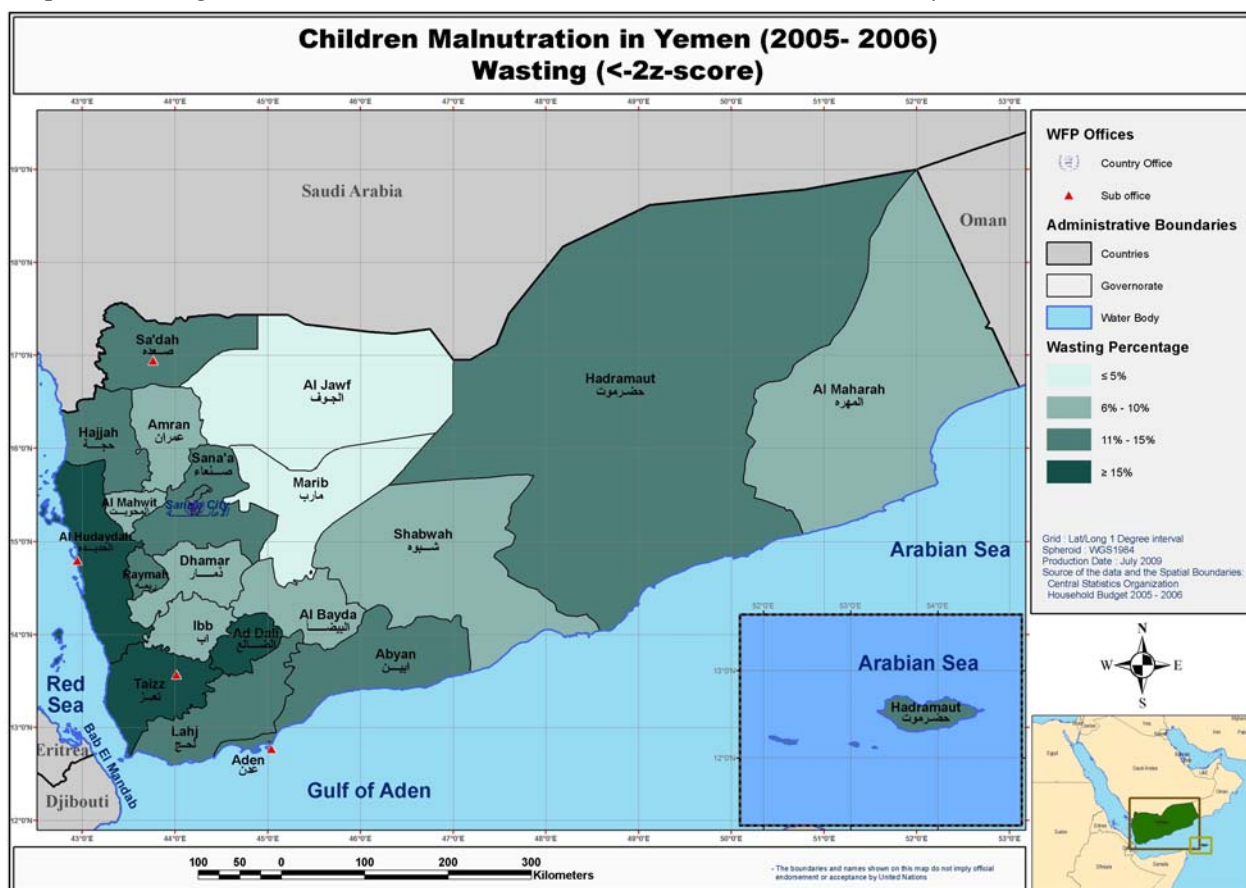
*Map 8: Stunting in Children Under 5 in Yemen (HBS 2005/06, created by WFP-VAM)*

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<sup>32</sup> Ibb, Taiz, Hodeidah, Lahej and Addaleh



Map 9: Wasting in Children Under 5 in Yemen (HBS 2005/06, created by WFP-VAM)



## 5.2. Analysis of Underlying Causes for Malnutrition

Access to food and utilisation largely determine food insecurity in Yemen. Potential causes for malnutrition and low food utilisation need to be better understood. This section describes some main utilisation factors contributing to malnutrition: inadequate maternal and child-care practices, poor water and sanitation, and inadequate health services. Food utilisation is achieved through nutritionally adequate diet, clean water, sanitation and health care to reach a state of nutritional well-being where all physiological needs are met – this brings out the importance of non-food inputs in food security (FAO 2006b). It is defined by a household's use of the food to which they have access; and an individuals' ability to absorb and metabolize nutrients (i.e. efficiency of food conversion by the body) (WFP 2009a). Food utilisation is linked to knowledge of and attitudes towards production, storage, processing, domestic preparation and consumption. There is interaction between food insecurity, infections and illnesses as adequate physical conversion of food depends on health status. Household capacity to provide appropriate caring practices, for themselves and for the most vulnerable in their family, can improve utilisation. The use of food is influenced by consumption habits and socio-cultural factors. Undernourishment (insufficient food intake) can lead to malnutrition, when deficiencies and imbalances in energy, protein and micronutrients exist. Common indicators of malnutrition are anthropometric characteristics: wasting for acute and stunting for chronic malnutrition in young children (WFP 2009a).

### 5.2.1. Food Availability, Access and Utilisation

Food availability is an important factor determining malnutrition. Inadequate access to food is an underlying cause of malnutrition in Yemen. However, there is little evidence establishing the link between food access and malnutrition. WFP and UNICEF (2006) found in their intervention area (districts with high food insecurity) that there is a strong relationship between consumption of a diverse diet and malnourishment in children. Two thirds of households consume vegetables less than 3 days per week. About a third (31%) of children in this group are wasted and two thirds stunted (68%) and underweight (64%). Similar patterns exist in households with low consumption of pulses, meat, dairy products or fruits. Nutritionally, most significant deficiencies are in meat and pulses (both above 70%) (WFP & UNICEF 2006). Food utilisation is a crucial component of food insecurity in Yemen. In the context of high food prices, poor households may need to respond by disinvesting in the future of their children. For example, poor families may discontinue preventative health care, withdraw children from school to generate additional income or reduce costs, and replace well-balanced diets with less expensive, less healthy staples. There is a need to educate households about the benefits of a well-balanced diet to sustain long-term health benefits. A well-balanced diet rich in vitamins and minerals and high in fibre can reduce the risk of health problems such as malnutrition and non-communicable diseases (World Bank *et al.* 2009).

### 5.2.2. Water and Sanitation

Access to water and sanitation in Yemen is low. Sanitation infrastructure includes public networks (limited to urban areas), covered and open pits (only means in rural areas). In 2004, 36% of households receive safe water from piped networks; the majority gets its water from unsafe sources such as wells, ponds, dams, and *karfan* (water reservoirs) (MoPIC 2003). Disparities between rural and urban areas are significant. Only 32% of rural settlements have access to improved water supplies, while 23% have access to safe sanitation services (MoPIC 2005a). About 45% of rural households get their drinking water from pumped wells, 17% from springs and lakes; others depend on rainwater (MoPHP 2003). Inadequate access to safe rural water supply has a great impact on women and girls. They are forced to travel long distances in search for water; time that could otherwise be spent for

education, economic participation and social interaction. Currently, 54% of urban population has access to piped water and 26% to sanitation. Most supply systems in urban centres suffer from interruptions due to absence of standards for construction, poor contracting, and deficiencies in spare parts supply (MoPIC 2005a). Overall, there is an improvement in the coverage of potable water and sanitation, in urban more than in rural areas. However, in the context of high population growth, increasing levels of water consumption place a burden on the system. The sector faces challenges, including water scarcity, low coverage of sanitation services, and inadequate human, financial and institutional resources (MoPIC 2005a). Given high efficiency losses in the distribution system, the average monthly water bill is not enough to cover operations and maintenance, let alone investments (World Bank 2006). The water crisis (see section 4.1.1.3) is placing an undue burden on the poor. This is an outcome of inequitable access to drinking water, since wealthier populations can access subsidised services, while rural poor lack access to water and sanitation facilities (UNDG 2005).

### 5.2.3. Health Services

Public health, access to and utilisation of facilities contribute to food security. In Yemen, access to basic health services is extremely limited, with only 30% of the rural population living close<sup>33</sup> to facilities (World Bank 2007a). Yemen's health indicators are amongst the worst in the world (see Table 15), as reflected in malnutrition status. However, Yemen has improved the delivery of public health care and public health in the last decade, although public expenditure has seen only a modest increase (from 1.4% of GDP in 2002 to 1.9% in 2004) (EC 2006). There have been improvements in the health of Yemen's population. From 1970-75 to 2000-05 life expectancy at birth increased from 39.8 to 60.3, infant mortality rates declined from 202 to 76 per 1,000 live births, under five mortality rate declined from 303 to 102, while maternal mortality increased from 1990-2005 to 2005 from 370 to 430 per 100,000 live births (UNDP 2007). Yemen faces a challenge in providing adequate health care to remote populations. There are 2,099 health units, of which 1,700 are functioning, 569 health centres and 180 hospitals with 12,252 beds (MoPIC 2005a).

*Table 15: Core Health Indicators<sup>34</sup> (UNDG 2005)*

| Core Indicators   | 1992      | 1997  | 2003 |
|---|-----------|-------|------|
| Prevalence of underweight children (<5)                     | 30%       | 46%   | 46%  |
| <5 mortality rate   | 122       | 105   | 102  |
| Infant mortality rate                                       | 83        | 75    | 75   |
| Proportion of 1 year old children immunised against measles | 49.6%     | 42.8% | 45%  |
| Maternal mortality ratio                                    | 800-1,000 | 351   | 365  |

<sup>33</sup> With respect to distance as well as time needed to reach basic health care facilities.

<sup>34</sup> Based on 1992 and 1997 DHS surveys and FHS 2003

|   |       |       |       |
|---|-------|-------|-------|
| Proportion of births attended by skilled health personnel                 | 16%   | 22%   | 25%   |
| Contraceptive prevalence rate (modern)                                    | 6.1%  | 10%   | 13.4% |
| Proportion of population with sustainable access to improved water source | 34.9% | 37%   | 48%   |
| Proportion of people with access to improved sanitation                   | 27.4% | 30.5% | 31%   |

In addition to limited access to health care, many units are closed, understaffed, poorly trained or without supplies. The standards of treatment are exceptionally low, as the wealthy seek treatment abroad for serious medical problems. Private health service providers are common but costly and of questionable quality. It is particularly difficult for women to seek health care due to their limited mobility, needing a male escort to move and limited availability of female service providers. Women often have to travel many kilometres to the nearest clinic or are reluctant to seek treatment due to misdiagnoses (World Bank 2007a). Consequently, most women give birth at home and 7% of deliveries are attended by a skilled professional (UNDP 2007). Women in mountainous areas are more likely to cite the clinic being too far as reason for not utilising health care for deliveries and poor access contributes to high rates of chronic malnutrition for rural mothers and their children (WFP 2002).

The prevalence of communicable diseases is high, in particular malaria, tuberculosis, measles and meningitis (EC 2006). 60% of the population lives in malaria prone areas (UNDG 2005). The prevalence of HIV/AIDS is becoming increasingly serious, as 2% of those tested at sexually transmitted disease clinics in 2000 tested positive (World Bank 2007a). Other endemic diseases constitute a burden of disease e.g. bilharzias, hemorrhagic fevers (dengue), hepatitis. A recent outbreak of polio in Yemen reflects the fragility of the system, in spite of the maintenance of polio-free status for a few years (UNDG 2005).

Particularly poor people are discouraged from using health care. Physical access to health care is a constraint, due to distances and transportation costs. As a consequence, poor people only go to health facilities as a last resort and attendance for preventive care is very low (World Bank 2007a). Poor families spend proportionately less on health due to their inability to pay; the most significant reason for not seeking medical care. The proportion of household expenditure on health among poor households remains the same (2%) between 1998 and 2005; while better off households spent a greater portion of income on health. Both, inability to pay and unavailability of care become less significant barriers as expenditure goes up (World Bank *et al.* 2007). There is a link between poverty and poor health, with 2-7 fold differential when poorest households are compared to richest, whereas geographic, rural/urban and gender differentials have a 1-2 fold effect. For example, percentage of underweight children in 2003 was twice higher in the poorest than in the richest quintile of the population, and severely underweight were more than three times higher (UNDG 2005).

While there is an improvement in children mortality rate under five and infant mortality; this remains below the desired level to achieve the MDGs, particularly, maternal mortality has not improved (MoPIC 2009). The public health sector faces constraints, including rapidly growing demand for health services, declining per capita budget, inadequacy of coverage and quality, shortages of human resources and gender imbalance, lack of medical supplies, equipment and medicines, weak management of the sector, and lack of a national health monitoring system (MoPIC 2009).

## 5.2.4. Feeding and Caring Practices

### *Maternal Health*

Maternal health ranks amongst the lowest in the world, with maternal mortality of 365 per 100,000 live births (World Bank 2007a). It is the leading cause of deaths among women of reproductive age, accounting for 42%; while 18% of deaths occurred during pregnancy and 82% during delivery and postpartum (UNDG 2005). In addition, 58% and 25% of mortalities are among mothers in the age groups of 15-25 years and over 35 years, respectively. The high mortality of the first age group reflects reproductive risk of early marriage, early childbearing, and less than 2 years birth spacing (MoPIC 2005a). 84% of births took place at home, with less than 25% of deliveries attended by a qualified person (MoPIC 2005a). Furthermore, 45% received antenatal care, 13% post-partum care (UNDG 2005). Several factors influence maternal mortality, including high fertility, early pregnancies, short spacing, low rates of antenatal care and attended births (MoPIC 2005a).

Intake of a variety of foods is important to ensure consumption of nutrients for optimal body functioning, particularly during pregnancy. Assessment of the food habit revealed that 68% of pregnant women reported eating less food than usual. Except for dairy products, other items are consumed daily by less than 30% of women surveyed; eggs, followed by lentil/beans was least common. The most common reason for not having consumed all items was not being able to afford them. Only 33% of women who recently had delivered a baby reported having consumed iron supplements during their pregnancy (WFP & UNICEF 2006).

The average desired fertility expressed by Yemeni women is 4.6 children compared to the actual 6.2 fertility rate (MoPHP 2003). Family planning is important to improve maternal, child and family health. Use of modern methods of family planning is less than 13.4%, while unmet contraceptive needs is estimated at 44% (MoPIC 2005a). If one were to hold up the right of women to control their reproduction, the gap between desired and actual fertility rate would be narrowed, while reductions in poverty, child mortality and improved access of girls to education will lead to further declines in fertility based on global experience. Lower fertility by reducing population growth, will make it possible for limited public resources to cover a greater percentage of people with health and education services, and it will, eventually, reduce the number entering the labour market (UNDG 2005). The provision of family planning services could have long-term food security benefits (World Bank *et al.* 2009).

The low status of women within family and society leads to and is aggravated by discrimination, such as early marriage and teenage pregnancy, short birth intervals, high fertility rates, malnutrition, anaemia, lack of access to and availability of skilled care during pregnancy, childbirth and post-partum period and a paucity of affordable quality emergency obstetric care. These compound effects of poverty and lead to high mortality. Women in coastal areas are subject to additional hazards due to the practice of female genital mutilation. Women, as primary claim holders for reproductive health services, are not able to advocate for their rights, as they are absent from most decision making. These issues are complicated by high illiteracy among women (69%), low girls' school enrolment (55.9%), and the impact of historically high under five mortality on the desired number of births (UNDG 2005).

### *Child Health*

FHS 2003 found that there was a decline in mortality during infancy and childhood. Infant mortality dropped from 90.4 deaths per 1000 live births over the fifteen years period preceding the survey to 74.8 during the five years prior to the survey. The corresponding decline in under-five mortality was from 122.8 to 101.9 deaths per 1000 births (MoPHP

2003). The prevalence of low birth weight in infants is high at 32% (in 2006) (UNCTAD 2008a). Mortality causes include reproductive behaviour of having more than 6 births per woman, high malnutrition, high disease prevalence (34% diarrhoea, 25% respiratory tract infections), and on average less than 40% receive health care (MoPIC 2005a). Other reasons include lack of attention to the neonatal component of child mortality, which is hovering around 40 per 1000 live births since 1990 and poor antenatal care (UNDG 2005).

There is a clear link between child malnutrition and the mother's education level, in 1997, children of illiterate mothers are 3 times as likely to be stunted, as children whose mothers have completed secondary or higher education. Young women without education are disadvantaged not only in terms of lack of knowledge about nutrition, but also in terms of general and reproductive health and family planning (WFP 2002). There is a clear relation between child malnutrition and household size. Smaller households with less than 4 children record better nutrition and larger households with more than 9 children suffer from higher prevalence of malnutrition (WFP & UNICEF 2006).

### *Socio-Cultural and Demographic Factors*

Malnutrition in Yemen is associated with inadequate breastfeeding practices, high prevalence of diarrhoeal diseases and low birth weight (WFP 2006). Whereas prevalence of stunting is high, prevalence of wasting and underweight reached a very high level in rural areas and among children less than 6 months. This situation reflects the low level of breastfeeding during the first six months of the child's age and early introduction of supplementary foods (MoPHP 2003). 97% of children are normally breastfed (MoPHP 2003); however, exclusive breastfeeding is of concern. Only 12% of children are exclusively breastfed for the first six months<sup>35</sup>, while 76% are breastfed with complementary food (6-9 months) (UNICEF 2007). While 60% of women started breastfeeding within 30 minutes of birth, delayed initiation is a cause for concern (almost 24% delayed up to 24 hours) (WFP & UNICEF 2006). Approximately 75% of mothers give other liquids to the baby after birth even before initiating breast-feeding (MoPHP 2003). These findings reflect practices which can lead to risk for infection consequently precipitation of malnutrition during the early days of infant's life (WFP & UNICEF 2006). 62% of mothers reported breastfeeding their child up to the age of 24 months, while solid foods were given to 45% of the infants before the child reached age of 6 months<sup>36</sup> (WFP & UNICEF 2006). The observations on feeding practices explain part of high malnutrition rates and reinforce the need for education of mothers on age appropriate foods (WFP & UNICEF 2006). Dietary recall of the items fed to young children revealed reliance on rice and limited consumption of animal source foods such as milk, meat, and eggs. This is a concern from a child survival perspective (WFP & UNICEF 2006).

WFP and UNICEF (2006) found that caring practices contribute to child health. A large proportion of women reported washing their hands prior to cooking, before eating, and after defecation, a positive practice; however, less than half reported washing their hands before feeding children (42.5%), after cleaning child's faeces (41.3%) and after cleaning

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<sup>35</sup> Exclusive breastfeeding is recommended for children until the age of 6 months by WHO

<sup>36</sup> WHO recommends complementary food be initiated at age of 6 months to ensure optimal growth of a child.

animal waste (43.8%) (WFP & UNICEF 2006). Diarrhoea is the second cause of child mortality in Yemen. The prevalence of diarrhoea among children aged 6-59 months was reported to be 44.5%. 90.7 % of mothers reduced the amount of food offered to their children during an episode of diarrhoea and 31% reported either reducing or maintaining the amount of liquids offered to their children (WFP & UNICEF 2006).

Qat consumption can lead to poor health. The leaves are chewed as a stimulant that is said to increase concentration, reduce tiredness, suppress hunger and produce feelings of euphoria. But qat consumption reduces absorption of nutrients and causes loss of appetite, which both contribute to low birth weight (WFP & UNICEF 2006). Regular qat consumption implies reduced quality and composition of food (due to decreased outlays for food in exchange for qat) (World Bank *et al.* 2007). While there is no representative data on the impacts of qat chewing on birth outcome and nutritional status of children, WFP and UNICEF (2006) surveyed pregnant and lactating women and found that nearly half of the women chew qat during pregnancy and lactation (WFP & UNICEF 2006).

## **6. Risk Analysis**

### **6.1. Risk Factors and Exposure to Risks and Shocks**

A number of natural and human made hazards affect livelihood security, while placing increased costs on the economy and requiring additional spending to mediate impacts. With reference to recent years, Yemen is affected by water scarcity, high food price crises and global economic crisis, prolonged conflict in Sa'ada and other conflicts, flooding, and influx of refugees. Other hazards include drought, locust, earthquakes and epidemics (MoPIC 2009).

#### **6.1.1. Water Scarcity**

The country is heading towards a severe water crisis, which is determined by: (1) scarcity of water resources and deterioration in water quality; (2) poor water management; (3) limited access to drinking water and sanitation; and (4) weak institutional capacity and poor enforcement of rules that control groundwater exploitation (MoPIC 2009). In the future, high rates of population growth and urbanization, increasing aridity through climate change, agriculture's water needs, industrial pollution, conflicts over depleting water resources and potential mass migrations are additional challenges to water management (WFP 2008d).

The indiscriminate pumping of groundwater for irrigation and poor water management significantly contribute to the crisis. Low rates of precipitation combined with reduced water retention due to land degradation lead to low groundwater recharge. The introduction of tube wells and their operation through using subsidized diesel has resulted in a shift of cropping patterns to water intensive crops (UNDG 2005). Agricultural water management is extremely inefficient, as in MENA only 30% of water used in flood irrigation reaches the crops (Shetty 2006). Aquifers are depleted at a high rate. A typical farmer near Sana'a has deepened his well by 50m over the past twelve years, while the amount of water extracted has dropped two-thirds (Shetty 2006). Groundwater levels are dropping 3-6m annually (EC 2006). Moreover, 80% of new wells in the highlands are used for qat at the expense of food crops (UNDG 2005). The lack of efficiency in agricultural water management can be attributed to the fact that a farmer does not bear the full cost of water he uses and has no incentive for conservation. The provision of subsidized pumps and diesel, without training on appropriate techniques, has resulted in overexploitation. Cheap water has resulted in limited use of modern irrigation methods (e.g. drip irrigation) (UNDG 2005). Farming has been scaled down in some areas due to depletion of groundwater, e.g. in the Sa'ada basin (UNDG 2005).

In the context of high population growth and urbanization the demand for water for urban and rural domestic supply will increase, while per capita water availability will shrink dramatically by 2050 (WFP 2008d). Major urban areas already suffer severe water shortages. This is particularly the case in western Yemen, where rates of extraction exceed precipitation by 70% and supplies are predicted to run out in the next fifty years (EC 2006).

Limited water resources are increasingly appropriated in the hands of wealthier parts of society, exacerbating inequality in water access and further marginalising poor groups (MoPIC & UN; UNDG 2005). The competition between agricultural and urban water uses, and increased concentration of irrigated lands in the hands of large landholders is negatively affecting smallholders, whose access to water is reduced (UNDG 2005). Women are affected by the water crisis, as they are responsible for fetching water, while having little say in dealing with the crisis. Water scarcity has a severe impact on employment, as agriculture and industry are adversely impacted (UNDG 2005). The water crisis places a disproportionate burden on the poor, with consequences for food production, water supply and incomes. Food security and livelihood sustainability, particularly of rural poor households, are threatened.

Water scarcity is one of the most critical constraints to food security in Yemen, unless drastic measures are taken. Despite reforms since 1996, there has been no reduction in groundwater withdrawal, nor water use efficiency gains (MoPIC 2009). The agricultural sector has little scope for expansion under current land use; while changing agricultural practices have contributed to rising food insecurity. Competition with domestic uses calls for more beneficial systems, e.g. wastewater re-use. The most viable option is to improve water management through adoption of appropriate conservation policies and integrated watershed management approaches that optimise water use, while sustaining the resource base. More efficient irrigation systems should be used, focusing on production of high value crops. A removal of subsidies is urgently needed to encourage water use efficiency. Policy changes and allocation of resources to water management are needed to deal with the water crisis, while at the same time inviting greater user participation in water management (UNDG 2005).

### **6.1.2. High Food Prices and Global Economic Crisis**

Before the current food price rises, Yemen was already in a food insecure situation. It is a low income, food deficit LDC with high rates of child malnourishment and food access as major concern. It is reliant on food imports to meet domestic demands for staples. Food price increases from 2006 until 2008 in combination with global economic and financial crises increased vulnerability to food insecurity. While prices have fallen slightly after peaking in 2008, food prices remain high and international food prices are not expected to decline, rather stabilizing at current levels. Thus, international price increases have profound impact on household food insecurity (UNDP 2008; WFP 2008c; MoPIC 2009).

Yemen, as a net food importing LDC faces challenges that aggravate the high food price crisis – chronic conditions of food insecurity and underdeveloped markets. Problems of food insecurity and increasing vulnerability due to high food prices are not limited to small sections of the population but affect society as a whole (WFP 2008d). Yemen has felt the impacts of the global economic crisis. With food prices predicted to remain high and the volatility of oil prices, it is crucial to review the development strategy. Over the last two decades there has been a negative trend in the contribution of agriculture to GDP and an increasing reliance on imports (UNDP 2008). The GoY renewed its commitment to expanding food production and diversifying economic revenue by promoting fisheries and tourism. It increased salaries of civil servants and implemented social protection to support poor households, these measures are not sustainable without revenue increases (MoPIC 2009; World Bank *et al.* 2009). The food price crisis is poorly documented, and, with respect to primary data collection, is limited to a rapid assessment by WFP (see section 2). The impacts

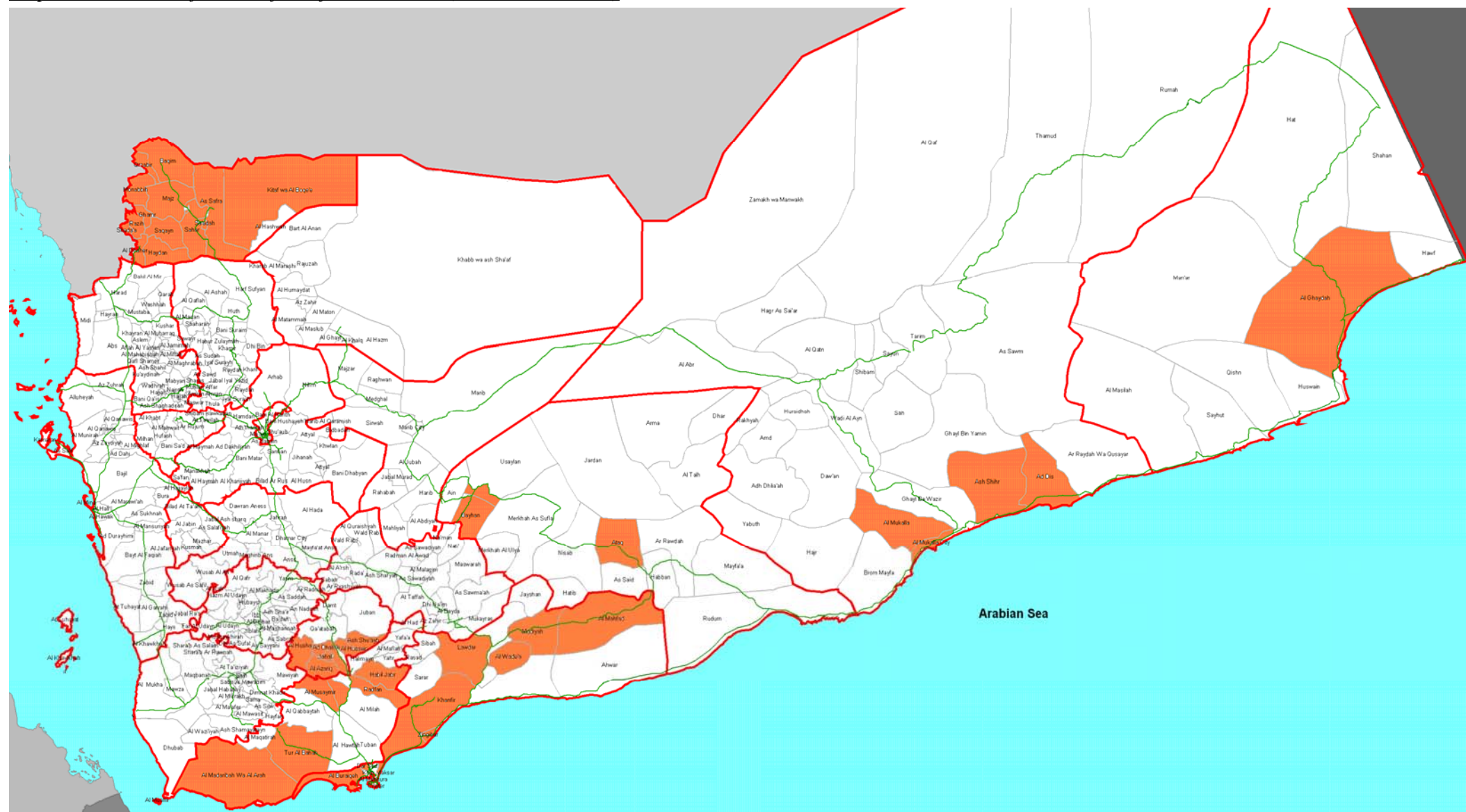
are likely to persist, even after prices drop. Yemen is vulnerable to bigger import bills that will widen the trade deficit (UNCTAD 2008a). The poorest households remain most vulnerable unless they are sellers of food. Households that were forced to sell productive assets have reduced their potential for earning income. Households that were forced to forego spending on education and health, have compromised the productivity of their children in the future. There is a need for a better understanding of the impacts of high prices on food insecurity at a disaggregated level of analysis and across temporal scales (see section 7).

### **6.1.3. Conflict**

Yemen is subject to prolonged conflicts in Sa'ada and to increasing violence in the south (see Map 10). While there is little information about impacts of unrest on food security in the south, assessments were conducted in Sa'ada. Prolonged conflict is affecting civilians, displacing thousands and affecting livelihoods. Government control in parts of the country remains weak and the security situation extremely volatile. UN emergency assessments were conducted in May 2007 and in September 2008 to assess the needs of the population affected by conflict in Sa'ada. The conflict has intensified over the course of 2008, while in May road blocks to the area have cut off humanitarian assistance. By July 2008 an estimated 100,000 people were displaced in the region, mainly focused in camps or with host families within Sa'ada town; and due to insecurity a number settled in Malaheet, near the border with Saudi Arabia. The situation is characterised by a lack of information on casualties, number of affected and displaced, which is a challenge to assessing humanitarian needs. Despite the government's pronouncement in July 2008 that the war is over, many families remain in displacement. Most of those displaced were coming from poor farming backgrounds in their original places of living, leaving their homes with few belongings. These families are living in dire conditions and are reliant on food assistance for survival. WFP is regularly distributing food to IDPs, but delivery is disrupted in some instances due to increased conflict and road blocks. NGOs have some access, although distributions are irregular and of limited coverage. This has significantly impacted on already fragile levels of food security. The shortage of food aid is an exacerbating factor contributing to food insecurity. During the war, food prices have soared by more than double, food is often inaccessible to IDPs due to limited purchasing power. Households reported to cope by selling assets to buy food, reducing food consumption by shifting to lower quality foods and reducing quantity and number of meals per day. Some reported consuming inexpensive animal fodder and borrowing food from each other. Households that cannot cope are leaving the camps to unknown destinations.

This example illustrates that conflict is a major factor disrupting household food security, not only of IDPs but also of residents. Humanitarian assistance is essential to save lives, but hampered by security concerns. Moreover, when people start returning home they will require long-term assistance to rebuild their livelihoods. In-depth assessments are required to determine needs. Conflicts are often exacerbated when regions are additionally affected by other hazards, creating complex emergencies (UN 2007; UN & INGOs 2008).

*Map 10: Overview of Areas of Conflict in Yemen (WFP-VAM, 2009)*



#### 6.1.4. Flooding

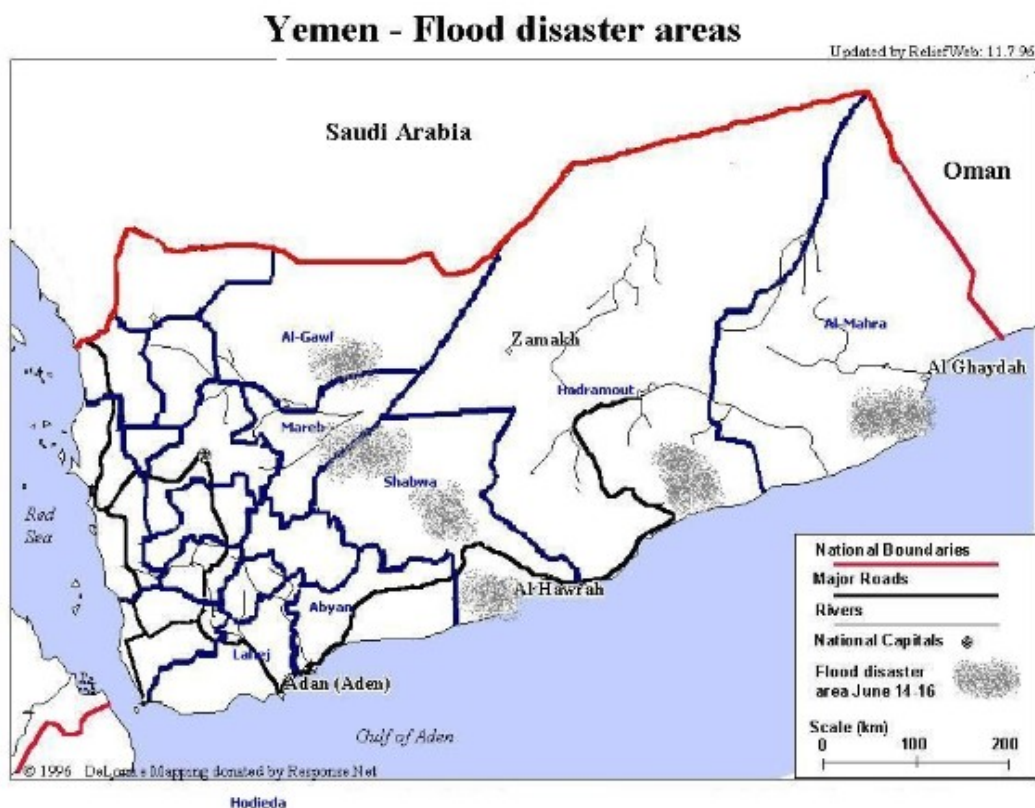
Flash floods, surging waters and landslides cause casualties, damages to physical and social infrastructure and economic activities, and leave people homeless, particularly in *wadi* and coastal areas (see Map 11). In October 2008, heavy rains created flash floods in the eastern governorates of Hadramout and Al-Mahra, leaving 25,000 people without homes and affecting 700,000. Casualties and major damages were caused by flash floods in 1996 in Shabwa, Mareb, Al-Gawf, Hadramout and Al-Mahra and in 2002 and 2006 in Hodeida. Flooding can create major humanitarian disasters, requiring emergency responses.

According to UN emergency assessments and WFP, the recent flooding in Hadramout and Al-Mahra, in addition to casualties, injuries and displacement, destroyed houses, eroded agricultural land, damaged irrigation and other infrastructure, and killed livestock. At least 3,300 predominantly mud-brick houses were destroyed; health facilities and 170 schools destroyed, as well as water and sanitation facilities. Over 700,000 people – nearly half of the Hadramouti population – had their livelihoods destroyed or severely affected by the floods, with extensive damages to agricultural production, fishing and honey production. More than 20,000 hectares of cultivated land have been eroded, this year's harvest destroyed. The cost of losses is estimated at \$1.6 billion, mainly in the agricultural sector (MoPIC 2009). While emergency assessments were conducted throughout the crisis, there were remote areas that have not been assessed, several weeks after the event. Access to safe drinking water, prevention of water borne diseases, and providing food and temporary shelter to the affected population were major interventions. Yet, widespread poverty and food insecurity, as well as reliance on agriculture make these governorates vulnerable to food insecurity due to flooding. 75% of the farmers in Hadramout are affected. While coping strategies include decreased expenditures on health to buy food, withdrawing children from school, households ate less and compromised on food quality. Support from relatives was high which points towards strong social ties. Due to the floods, displaced families were entirely dependent on external food assistance. Humanitarian agencies appealed for funding under the Yemen Floods Response Plan to assist households with immediate food, water and sanitation, health and nutrition services, shelter, protection and education. Prompt humanitarian assistance prevented any negative impact on food consumption. But families continue to need of assistance, since recovery takes time and options in these areas are limited. Recovery interventions are slow to commence, somewhat protracting the emergency<sup>37</sup>. Thousands of families who depend on fishing and farming need assistance until the next harvest or until they are able to secure alternative sources of livelihood. A multi-year recovery programme is needed to rebuild livelihoods (OCHA 2008; UNCTAD 2008b; WFP 2008b; MoPIC 2009).

Map 11: Areas Affected by Flooding in 1996 (Provided by VAM/WFP)

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<sup>37</sup> Within this context WFP has extended and expanded its emergency operation in the area



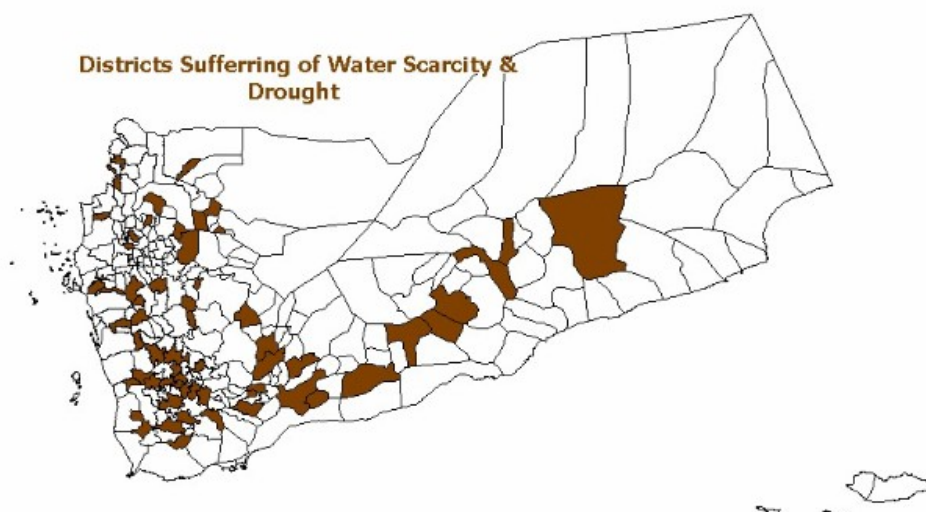
### 6.1.5. Influx of Refugees

Influx of refugees from the Horn of Africa since the 1990s is placing strain on the country's limited resources. Yemen hosts a considerable number of Somali refugees, officially registered numbers scattered throughout Yemeni towns surpasses 117,000. In addition, Ethiopian refugees also enter the country. According to WFP, in 2008 some 50,000 refugees crossed the Gulf of Aden, a significant increase from 2007 (30,000). In 2009, the numbers are consistently high. UNHCR (2009) estimates that 151,000 officially recognised refugees are in Yemen. While some stay, others transit for onward travel to the Gulf States. Refugees stay in a large refugee camp on the coast run by UNHCR and supported by WFP, or go to urban settlements in search of employment. The largest and most vulnerable refugee group, women and children, remain in the camp. More than half of the refugees are under 18, while an estimated 53% of the families in the camps are female headed. Living conditions in the camps are adequate by international standard. Opportunities for refugees to become self-reliant are very limited. Few projects support refugees in building self-reliance, while most refugees are unable to cope outside the camps, due to insecure and low paid incomes, lack of jobs and high living costs. In the camp, options are even more limited, due to its isolated location in the middle of the desert. Few people get jobs, run small shops and businesses or tend to vegetable gardens and goats. Remittances from Somalis in the Diaspora play an important role. Households in the camps tend to rely on food aid. Refugees in the towns depend on income for purchasing food. WFP provides support to refugees in camps since 1992 in the form of general food distribution to meet basic needs, supplementary feeding among children and mothers, and school feeding. As a result of WFP and other interventions refugees are food secure and levels of malnutrition are contained below the national average. Generally, there is insufficient evidence to draw conclusions about remittances or levels of economic activity amongst refugees (UNHCR *et al.* 2007; UNHCR 2009; WFP 2009b).

### 6.1.6. Drought and Locust

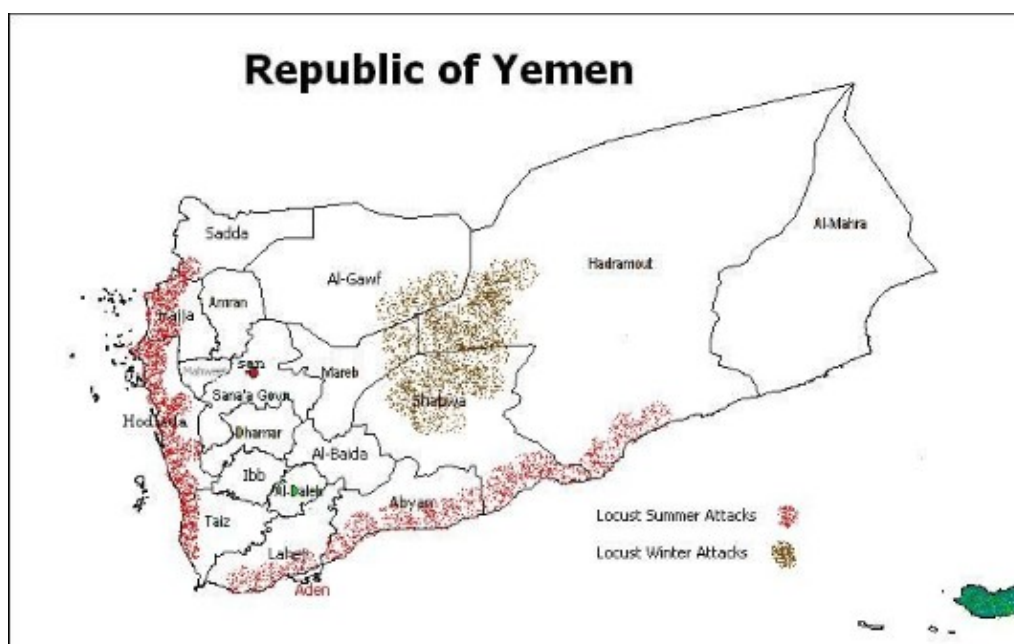
Drought and water scarcity are hazards that hit the country on a frequent basis (see Map 12). At a national level, drought is not considered a major hazard, due to the reliance on food imports and a large proportion of household incomes being little vulnerable to drought. However, in rainfed systems vulnerability to drought is significant and can severely impact food security, especially if agriculture contributes a large share to household income and food access. This is particularly true for smallholders. In the semi-arid environment, drought is not new and occurs frequently. Traditional livelihood systems have adapted to environmental conditions through elaborate systems of water harvesting. With a shift to irrigated agriculture, the risk of drought is somewhat reduced, especially for large landholders. However, scenarios of water scarcity create additional vulnerabilities. Recently, districts experienced increasing vulnerability to water scarcity, resulting in migration of rural inhabitants to urban areas. Migration due to water scarcity has been observed in Abyan (Sara district), Dhamar (Wesab Al-Ali), Hodeida and Lahej. While drought occurrence currently has little impact on national food security, this may be one of the most significant future challenges. First, in the context of rising food prices there may be an increase in domestic food production, which could make drought more relevant. Second, in the context of climate change, drought vulnerability will increase. Adaptation entails a process of building a country's adaptive capacity to respond and adjust to climate variability and extremes by increasing its ability to moderate potential damages, take advantage of opportunities due to climate change and cope with consequences of adverse effects (WFP 2002; World Bank 2008). Detailed assessments are needed.

*Map 12: Districts Suffering from Water Scarcity and Drought (provided by VAM/WFP)*



Locust attacks can have impacts on agriculture, particularly in the western and southern areas of the country, notably in the Tihama and Abyan (see Map 13). In 1998 those areas were affected, when more than 250,000 of the poorest households were left without any food. Since then, those parts of the country report locust attacks, while damages have been minimal. In communities reliant on agriculture for a majority of their income, locust attacks on crops may be a substantial impact on household food security.

*Map 13: Districts Suffering from Locust Attacks (provided by VAM/WFP)*



### 6.1.7. Earthquakes

Yemen has a long history of earthquakes. The most destructive occurred in 1982 in Dhamar. 29,000 families were displaced and 1,376 died. Another earthquake stroke Al-Odain district in Ibb in 1992, without any casualties. The National Seismology Observation Centre records strong seismic activity in the most populated areas. Since January 2004, frequent seismic activity has been recorded in districts in Lahej and Taiz. People regularly report minor quakes. With the lack of preparedness, earthquakes can cause significant humanitarian disasters, particularly in densely populated areas. Populations living in earthquake prone areas, and socio-economic groups that cannot afford adequate housing are most vulnerable.

### 6.1.8. Epidemics

Epidemics, such as Rift Valley affected the northwest of the country in 2002. The disease killed over 75,000 heads of livestock in the effected districts of Midi, Bakil Al -Meer, Abs, Aslam, Hairan and Khairan Al -Muharaq in Hajja, Al-Daher in Sa'ada, Al-zuhra and Alluhaya in Hodeida. Economically, farmers have been affected significantly by the loss of livestock – one of the major assets in the area. This may have important impacts on food security, especially of households that rely on livestock for subsistence and for generating income. Other epidemics have been identified in different areas in Yemen on a smaller scale. Malaria is a major constraint to human health in large parts of the country.

## 6.2. Ability to Cope with Potential Shocks

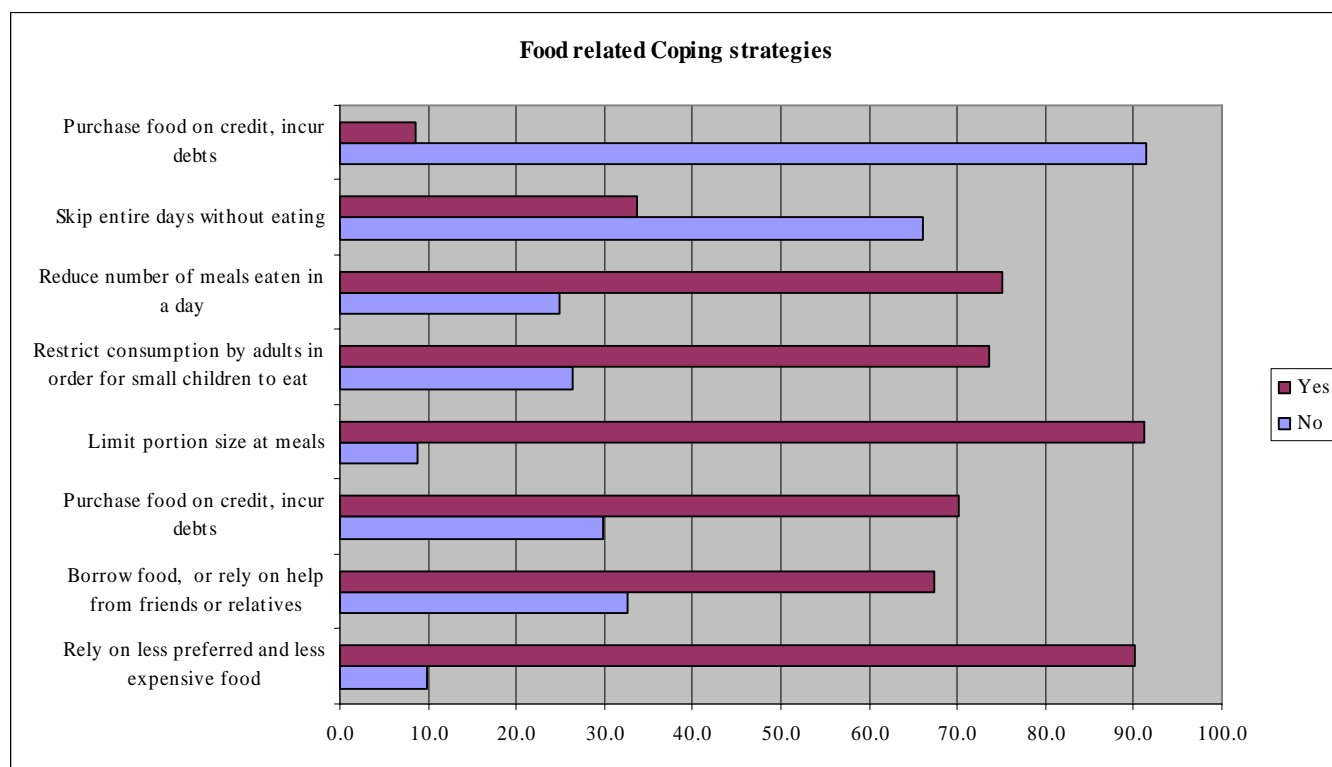
According to FIVIMS, when faced with food insecurity, households are divided equally among those that eat less quantities of food (32.1%), that eat the same quantity of cheaper foods (32.1%), and that eat less quantities and cheaper foods (35.7%). Household strategies vary depending upon the degree of food insecurity. For households that could not eat what they normally eat, but who did not fear not having enough food, the primary strategy was to consume the same quantity of cheaper food. Food insecure households cut back on the types of food normally eaten, while bread is the only item that they do not eliminate from their diets. While consumption of all food groups decreases as food security deteriorates, households tend to cut back on certain items more than others. The greater the severity of food insecurity, the more households rely on only one to three (of five) food groups. Over 60% of food insecure households with severe hunger consume food from only one to three

food groups. This percentage drops to half of all households facing moderate hunger, to 40% of vulnerable households, and 30% for households not classified as vulnerable (FAO 2004).

Households vulnerable to food insecurity rely on a range of coping strategies, including borrowing money or food, doing additional work to acquire money, accepting help from friends and relatives, selling or pawning household assets; and seeking assistance from government or non-government programs. Borrowing money is the most frequent strategy regardless of the severity of food insecurity. Due to their lack of assets that can be used as collateral and difficulties of poor people securing formal credit, it is likely that these households resort to informal credit (i.e. friends, family, money lenders). Borrowing food is common, nearly one fifth of food insecure households reported that they had borrowed food from one or more sources in the past year. 10.8% of food insecure households rely on additional work to acquire money for food. However, this coping strategy is utilized by fewer households as the severity of their food insecurity situation worsens. A household can improve its food entitlement through transfers from family members and access to social networks. Food insecure households with hunger are more likely to rely on help from friends and relatives to meet their needs, while vulnerable households are less likely to accept assistance. Selling assets to cope with emergencies and unexpected need for cash is another strategy at times of severe food shortages, when other options were exhausted (FAO 2004).

For 21% of households vulnerable to food insecurity, coping strategies were successful (i.e. obtaining additional food), while 79% fell into food insecurity. While this is true across different strategies, finding additional work seems most successful. Other factors that influence household's chances of successfully coping with threats to food security include reliance on remittances (29%) or on income from a commercial activity. Education is important, as 28% of households with a university-educated head obtained all of the food needed, 7% above the national average (FAO 2004).

*Figure 28: Food Strategies Adopted in the Month Preceding the Survey (% HH) (WFP 2008c)*



WFP and UNICEF (2006) found that a primary coping strategy is to seek other employment (28%), reducing quality or quantity of food intake was second (23%). In districts

with low income earning opportunities, people heavily relied on reducing food intake. Fewer households draw on savings (12%) or incurred debt to meet needs (WFP & UNICEF 2006). Within the high price context, WFP (2008c) found that 97% of households did not have enough money for food, 90% had to rely on less preferred/less expensive food and limited meal size. Adults restricted consumption in favour of meeting children's needs, households borrowed money or food, sold assets and consumed agricultural stocks (see Figure 28).

As a response to high food prices, coping strategies include: reducing portion size and quality of meals<sup>38</sup> (90%), incurring new debts (78%), adults restricting own consumption to meet children's food needs<sup>39</sup> (74%), purchasing food on credit and unable to stock food (53%); reducing expenditure on health (40%); and pulling children out of school (18%) (WFP 2008c). Households rely on gifts from relatives, sell productive assets, use wood instead of gas for cooking, and resort to begging. This constitutes a deterioration of food security, particularly for children of households who were already food insecure. A reduction in dietary diversity and quality of meals is expected to impact on the already poor nutrition status of children and pregnant or lactating women (WFP 2008a).

### 6.3. Trends in Food Insecurity over Time

To better understand food insecurity and vulnerability to food insecurity, directions of change are important. The food insecurity situation in Yemen has significantly changed in recent years, due to the impacts of high food prices. Moreover, other trends can be identified. Due to the lack of comparable datasets, trends in food insecurity cannot easily be quantified. Trends that impacted on food security include reliance on limited oil resources to support the shift towards a higher share of food imports and increasing vulnerability to global market trends. Lower levels of self-sufficiency are a result of shifts in land use systems: from cereal production to cash crops (qat) that resulted in a reduction in livestock ownership due to fodder constraints, and a reduction in cereals due to climate change impacts. Earlier reductions in subsidies (e.g. wheat, fuel) have resulted in higher consumer prices, directly affecting households with low purchasing power. High rates of population growth have reduced the per capita availability of food and contribute to high unemployment.

Recent global projections assume that LDCs with certain criteria are at highest risk to high food prices, including Yemen (FAO 2008). Factors that determine the degree to which countries are vulnerable are: (1) extent to which they have a structural food production deficit and are net importers of energy products and cereals; (2) relative levels of poverty with low incomes and high proportion of household budgets spent on food; and (3) prevalence of undernourishment. Yemen is a low income food deficit country at high risk of deteriorating food security and recent trends have created new dimensions of vulnerability. In combination with natural disasters, civil unrest, financial crisis or any combination will worsen the situation and increase the potential for a food security crisis. High rates of population growth and urbanisation will increase food demand. Food availability constraints due to reliance on imports and acute competition for limited arable land and water constrain Yemen's ability to

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<sup>38</sup> People report reductions in meat and milk consumption, meals were restricted to wheat and tea with sugar.

<sup>39</sup> Although there have also been reports that infants were given tea and sugar instead of milk

expand cereal production. Thin cereal markets and climate change are likely to increase price sensitivity to disturbances. Deterioration in fiscal balances due to oil price volatility will further reduce Yemen's ability to cope with future shocks. It is unknown if world food prices will be high or low, but it is certain that most MENA countries, including Yemen, will remain vulnerable to food price and quantity shocks in the future (World Bank *et al.* 2009).

## 7. Conclusions and Recommendations

### 7.1. Information Gaps and Need for Primary Data Collection

Statistics on poverty and malnutrition suggest that food insecurity is widespread in Yemen. However, there is little *direct and current* evidence about the extent of household food insecurity or the characteristics and geographic location of food insecure populations, nor intra-community differences. Conducting a comprehensive assessment of food security and vulnerability would provide policy makers and donors with important information about the status and nature of hunger and food insecurity. After completing the review of secondary sources with respect to methodology, thematic and geographic coverage, and providing a picture of food security and vulnerability in Yemen, several issues call for primary data collection:

#### *(1) Food security and nutrition data that is representative and up to date is extremely limited*

While there is information available on food availability and access components of household food security, there is a considerable lack of understanding of food utilisation. There is a need for qualitative information on food utilisation aspects of food security, as cultural habits are not well understood, but may have significant impacts on nutrition. For instance, traditional diets, eating out of a common pot, speed of eating, and women stop breastfeeding early, there is little dietary diversity and nutritional knowledge amongst women is low. Moreover, the impacts of qat consumption on health and nutrition need to be better understood. There is no representative data on the impacts of qat chewing on birth outcomes and nutritional status of children. However, evidence suggests that qat is one of the major contributors to persistently high malnutrition in Yemen.

Food security and nutrition data that is representative and up to date at governorate or district level is not available. This is particularly the case for nutrition data, which is only available at national level and even those figures are old (2003) and quality and accuracy of the data is reportedly low. Food security information in a representative fashion is only available from one data source, which is outdated. Poverty data is often used a proxy for food insecurity, however, there are drawbacks of such an approach, not least the controversy over incompatibility of poverty and food insecurity distributions across Yemen's districts. A nutrition survey is needed that would provide representative data at the sub-national level. The upcoming nutrition survey will possibly include a food security component, although the details are not yet determined. The lack of comparable data sets on food insecurity precludes the possibility of quantifying trends in food insecurity over time.

There is a need for a comprehensive assessment of food and nutrition security in Yemen to establish a baseline, which should consider all agro-ecological zones and governorates. Currently the desert zone is ignored due to inaccessibility. Several districts pose security threats to primary data collection. An appropriate tool to establish a baseline would be a Comprehensive Food Security Survey (CFSS). While it is recommended to establish food security and nutrition baselines in years of average conditions, this is difficult in the context of Yemen. It does not seem advisable to wait with establishing a baseline for several reasons. We do not know when and if the current situation will change and we cannot predict the direction of change. There is little indication that food insecurity conditions will return to

`average'<sup>40</sup> any time soon, or that the vulnerability context with respect to political, economic and conflict conditions will improve in the near future. The unpredictable situation increases the need for a baseline, which should be the mandate of WFP, especially in times of crises. Also, the planned PRRO calls for primary data collection in a timely manner. Thus, a CFSS conducted under current conditions would provide a baseline to which to compare future trends to. With respect to coverage, a national assessment is justified, due to: first, the lack of an existing food security and nutrition baseline; second, due to current food security concerns being macro-level with potentially significantly different impacts across agro-ecological zones and governorates.

A food security monitoring system in Yemen does not exist; although there are efforts underway in CSO with support of the EC to establish a food security information system<sup>41</sup>. In the long term, there is a need for a comprehensive food security monitoring system with a baseline and regular updates on critical indicators that would provide timely early warning information on trends of food insecurity and vulnerability to acute hazards, natural or human-made. Especially in the light of unprecedented economic trends<sup>42</sup>, such a system would facilitate a timely response to major shifts in food security and emerging humanitarian crises. There is need for more regular collection of food price data in rural areas, where poverty is widespread and persistent. A monitoring system should differentiate between agro-ecological zones, with special emphasis on livelihoods, food security issues and response options. It should include remotely sensed vegetation change information, climate data and local market trends. Stakeholders in food security should strongly engage in a monitoring system and benefits from current efforts to establish a food security information system.

## *(2) Impacts of recent high food prices and global economic crisis on household food security*

The most significant limitation of existing secondary sources is the lack of representative surveys that address the impact of the high food prices and global economic crisis on household food security. These events happened fairly recently and only two studies address their impacts. WFP (2008b) conducted primary data collection in WFP intervention areas and give a snapshot of high food price impacts during June 2008 without being representative. UNDP (2008) used an econometric analysis of existing data and incorporated high prices to predict impacts on households. Limitations of these studies point towards a need for primary data collection in a comprehensive and representative manner.

Food insecurity and malnutrition could be characterised as endemic in some parts of Yemen, particularly in the face of every day challenges, such as water scarcity and low agricultural productivity, low human capacity, poverty, etc. However, food security and nutrition in Yemen as it is currently understood from secondary data may well be dramatically different from reality due to the recent impacts of global economic crisis, high food prices, and volatility of the oil market. A recent global analysis of the impact of high food prices assumes least developed countries, including Yemen, to be at highest risk (FAO 2008). The impacts of these recent macro-trends on household food security are not well understood. The

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<sup>40</sup> Also, what constitutes `average' conditions in a country where food insecurity and conflict are endemic?

<sup>41</sup> This project is at an early stage and will start with a pilot in Hodeida, before potentially scaling up to national.

<sup>42</sup> Including little experience of impacts, as well as with responses

WFP high food price survey is the only source of information on impacts, but only provides a snapshot. It should be followed by a regularly updated food security monitoring system. However, there seems to be a consensus amongst stakeholders in the ministries and donor representatives that the recent peak in food prices has significantly altered the food security scenario in the country. This supports the recommendation for primary data collection and these recent trends constitute a significant area of investigation during a CFSS. The following themes should be addressed:

- Not only rural populations are vulnerable to food insecurity in the light of economic challenges, but also increasingly urban populations. This is particularly true in the light of high population growth and rates of urbanisation, higher living costs in urban areas.
- Already vulnerable, food insecure or poor populations are expected to be more vulnerable in the light of recent trends. However, non-poor or non-food insecure households may have fallen into food insecurity (or poverty) due to recent crises. One might expect that middle class households may be disproportionately more affected by rising food prices, becoming more vulnerable. Their coping mechanisms are not yet assessed, since they were not part of any food security surveys in the past.
- Other socio-economic groups that might be considered borderline poor or food insecure in the past may have been pushed over the edge by recent crises. These groups have not received much attention, but could be more vulnerable to food insecurity than in the past.
- Impacts of global economic crises may have not only affected expenditures of households, but also significantly altered incomes. Income earning opportunities may have been reduced due to impacts on private sector employment. Combined with high population growth and increasing rates of unemployment, impacts on household income, income sources and options for diversification should be looked at in rural and urban areas.
- Impacts of high food prices on local food producers should be assessed. Has there been a positive stimulus of higher prices on agricultural production and marketing of produce; if so, which types of households have benefited and how; have rural producer incomes increased, are benefits shared equally across different sized landholders.
- The effects of food prices in different parts of the country should be considered, have price changes occurred similarly throughout various markets or have some regions been more affected. Did price rises have different impacts within districts and how are coping strategies different across socio-economic groups.

### *(3) Methodological issues to consider*

The quality of secondary data dictates the scope of primary data collection needs. Where good and regularly updated secondary data exists, primary data may only be needed to verify secondary data, or to fill in gaps. In this context, an SDA can provide a basis for CFSS planners to identify regions of greatest vulnerability (WFP 2009a). In the case of Yemen, the secondary data does not provide sufficient detail to allow for an in-depth understanding of the dynamics behind household food security beyond the governorate level. More detailed information is required for programming adequate responses. Thus, primary data collection is needed to provide specific information about community and household food security issues, in order to also allow for improved programme design and focus on the most vulnerable population groups within targeted areas.

GoY and donor agencies produce large amounts of primary data on a range of indicators, particularly as irregularly conducted assessments of limited geographical and thematic coverage and representativeness. In view of the amount of primary data collection that has been taking place over the last years, it is worth considering options to expand and streamline primary data collection exercises with special emphasis on food security across agencies, partners and programs. This is also a concern for the CSO and MoPIC who criticise

the fact that every agency in the country does separate assessments. Thus, a comprehensive national strategy should be developed, with standardised tools, enumerator training, data collection and management, as well as analyses and interpretation. GoY is reluctant to accept more small surveys without good justification or would want to see resources go into other areas. Smaller surveys with different methodologies are limited in their scope and comparability. Broad generalisations are often made on their basis without the necessary caution. GoY calls for a consolidated approach to primary data collection, which produces representative results at disaggregated levels. The CSO is the professional entity that is responsible for collecting, analysing and disseminating data in a wide range of sectors. CSO has branches in every governorate and was also the official partner in the elaboration and implementation of FIVIMS 2003 (EC 2009). The active involvement of CSO in any primary data collection endeavour is critical, not only for implementation, but also in order to create ownership, legitimacy and acceptance of results in the GoY, while at the same time further building CSO capacity.

A CFSS at this point in time is justified since there is no food security baseline and/or periodic updates to monitor trends. If the CFSS is designed to establish a baseline, the allocation of resources to this exercise is justified to inform the design of WFP operations. This assessment would create a system of knowledge that can be used as baseline for food security and interventions, and as more effective targeting tool. The CFSS should be designed in such a way as to minimize problems of comparability with existing surveys.

The analysis of food insecurity and vulnerability in Yemen is based on quantitative, questionnaire-based surveys. New data collection approaches and mixed methods should be considered, especially with respect to issues like climate change, environmental degradation, water scarcity and global crises, which require specific, often new, methods. Assessments make use of systematic quantitative methods to estimate the prevalence of food insecurity vulnerability and its determinants. There are a wide range of qualitative methods to assess food insecurity, but these are rarely used in Yemen. Qualitative data collection is often times cheaper, especially when compared to measuring anthropometric attributes. This SDA proposes to supplement any quantitative survey with qualitative data collection. Quantitative and qualitative data complement each other and provide different types of information. Qualitative data is used to obtain in-depth information on perceptions, judgements and opinions and thus, provides contextual detail that enables an understanding of meanings, processes and reasons (WFP 2009a). It should be an essential component of the CFSS analysis. Moreover, a mixed methods approach with a qualitative component would allow for triangulation of information. Triangulation is particularly important when respondents are asked about income and expenditure, or other sensitive topics.

The current security situation in the country is a major concern and obstacle to any primary data collection exercise. Conflicts in some parts of the country, namely in Sa'ada and southern governorates, may severely hamper data collection. But what are the alternatives? In conflict hot spots, one may need to rely on secondary information or limit data collection to snapshots in the form of focus group discussions and qualitative assessments, if travel is limited. However, primary data collection in these areas should be done to the extent possible.

There is a strong need for stakeholder coordination in food security and nutrition in the country to avoid overlap of activities and wastage of resources. The CFSS offers a strategic entry point for partnership and collaboration with other donor agencies and government (WFP 2009a). The National Food Security Strategy and the Food Security Information System, both in the pipeline, are both directly relevant to WFP programming, and, on the other hand, could benefit from WFP inputs with respect to short-term emergency response strategies. Any primary data collection effort by WFP should involve a steering committee with buy-in of the Government and other donors.

## 7.2. Programme Recommendations to Address Food Insecurity and Malnutrition

The understanding of food security, its concepts and components, is relatively new in Yemen. Most of the perceptions on food security were limited to aspects of food availability with a strong focus on food self-sufficiency in terms of national food production. Food access and utilisation are only slowly starting to come to the fore, especially in the context of high food prices and global economic crisis. Only recently the GoY has embarked on formulation of a National Food Security Strategy, therewith recognising food security as priority.

Yemen faces immense challenges through a combination of structural and acute food security and nutrition problems. Addressing food security in Yemen requires several components to an overall strategy, including enhancement of agricultural productivity and rural livelihoods, reduction in the exposure to international market volatility, and strengthening of safety nets to buffer impacts on vulnerable households. There is an immediate need to upscale humanitarian interventions to address the acute crisis. The challenge also is to continue coordination with ongoing interventions in the food security sector. It is important to understand food security in Yemen in the broader context of livelihood security and sustainable development. To address food availability, access and utilisation, the following priority areas should be addressed:

- Support the ongoing process of developing a national food security strategy and endorse the draft nutrition strategy to provide policy and strategic frameworks;
- Strengthen existing coordination mechanisms in the area of food security and nutrition;
- Establish food security and nutrition baselines and monitoring systems;
- Address malnutrition of pregnant and lactating women and children under five through therapeutic and supplementary feeding of the malnourished, increased micronutrient intake and 'preventive' nutrition activities;
- Strengthening of safety nets for vulnerable groups and improved targeting. Well targeted social transfers are crucial to preventing a lost generation due to inadequate investments in health, nutrition, and education. But creating safety nets that provide the appropriate assistance to those who most need it in a financially sustainable manner requires improved targeting and flexibility, so that they can be scaled up when shocks strike and scaled down when they recede. While safety net interventions proved beneficial for the most food insecure and poor segments of society, they currently do not reach all of those in need. Programmes need to be targeted at the poorest because they are most affected by price shocks. It is imperative that social safety nets are designed to reach these people, which programmes based on categorical targeting are not currently well equipped to do.
- Enhance education opportunities with a particular focus on girls;
- Advocate for the establishment of national and sub-national food stocks;
- Diversify and strengthen non-oil sector of the economy. With national food availability determined by food imports, the impacts of volatile global food prices need to be better understood. Alternatives need to be created to reduce the reliance on food imports and on oil-financed economic growth.
- Strengthening livelihoods and resilience of vulnerable groups via increasing agricultural productivity, water use efficiency, income diversification, and employment generation. There are intra-zonal differences with respect to socio-economic groups, livelihood security, access to assets, livelihood strategies and diversification options, food security and nutrition outcomes, and vulnerability. This merits a disaggregated approach to account for heterogeneity across different socio-economic groups.
- Integrated natural resources management: Especially in areas where water scarcity is acute and shifts in livelihood strategies are happening, more emphasis needs to be placed on

understanding impacts of shifts in livelihoods on food security and vulnerability. Indigenous rainfed farming systems have supported the population for millennia; their applicability and potential for revitalization has to be considered, especially with respect to increasing agricultural water use efficiency. New technologies may offer potentials for improved food security in the context of sustainable natural resources management, e.g. wastewater reuse for peri-urban agriculture. Integrated approaches may offer the appropriate framework of analysis, e.g. integrated watershed management.

With respect to WFP response and programming: through its planned PRRO could make a significant difference in many regions of the country. It is recommended to invite major stakeholders to both processes, while there is a need to consider a balanced process of consultative inputs and implements – especially under the current time pressures that WFP faces. If feasible, it is recommended to wait for the (draft) results of the IFPRI efforts to develop a National Food Security Strategy, including the modelling of food insecurity scenarios in the country. Draft findings are expected by October 2009. IFPRI findings could substantially inform the PRRO proposal, particularly with respect to targeting. This would ensure enhanced coordination with other ongoing activities to clearly identify and streamline WFP interventions to meet national food security and nutrition objectives.

More generally, the SDA recognised a strong willingness of major stakeholders to engage in cooperation and coordination of food security data collection and programming. Ideally, coordination should be driven by national interests and there are developments under way to create a national council on food security. The National Food Security Strategy currently being developed is likely to provide a good framework for cooperation. Within the context of the Paris Declaration on Aid Effectiveness, harmonisation and coordination of donor activities should be enhanced. In order to achieve this, the GoY has to take the lead to reduce overlap of activities and wastage of scarce resources. In this respect, capacity building in food security and nutrition is needed.

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## **APPENDICES**

- Appendix 1: Terms of Reference**
- Appendix 2: People Contacted**
- Appendix 3: Review of Secondary Sources**
- Appendix 4: List of Potential Food Security Indicators**
- Appendix 5: Community Food Security Profiling Maps: Livelihood Strategies and Food Security by Agro-Ecological Zone**
- Appendix 6: Governorate Profiles: Food Security and Vulnerability Analysis**

## **Appendix 1: Terms of Reference**

### **Secondary Literature Review and Data Analysis**

#### **Yemen**

#### **Background**

WFP is currently engaged in several programme activities across Yemen. There is a need to consolidate these activities under a single PRRO. An assessment of food security is required to determine the need, if any, of a continued PRRO. There is a considerable amount of existing assessments, surveys and analysis covering poverty, food security, nutrition and emergencies (floods, higher food prices). This enormous source of secondary data must be reviewed to determine information gaps to be filled by primary data such as a CFSVA. A proper utilization of this information will avoid duplication of efforts and wastage of scarce aid resources. The gap found between the knowledge required for the PRRO and the information available or requiring cross-checking will help to define the need for and type of primary data collection. At the same time, the process of accessing data from other local players in the food security environment can promote partnerships.

The country office needs to prepare and submit this new PRRO to the Executive Board in February 2010, meaning that the document has to be prepared and submitted to a Project Review Committee by October 2009. Given this timeline, the CFSVA will not be able to feed into the project design and would then be used to calibrate programmes once the assessment has been completed. As such, this comprehensive Secondary Data Analysis (SDA) will form the food security basis of the justifications for the new PRRO and programme design. Given the absence of new assessment data that will be provided from the CFSVA, it will be important to validate and build consensus on the findings of the SDA in advance of the PRRO programme development. This underscores the importance of this SDA, and the way in which data should be provided in order to allow for such a consultative validation process to link assessment results with programme design.

#### **Country Context**

Yemen is an impoverished country with large scale food insecurity, malnourishment and poverty. It relies heavily on imports to provide the staple foods its population consumes. Over 91% of wheat and 100% of rice is imported. The rise in global prices of cereals has severely impacted consumers in Yemen. According to the WFP global analysis, Yemen is one of the 18 countries most affected by higher food prices. Drought, floods, locust and conflict have further affected food security in certain governorates.

Over the last few years, WFP and its sister UN agencies have conducted a series of studies to estimate prevalence of food insecurity, malnourishment and poverty in the country. These include the 2006 Nutrition Baseline study by WFP/UNICEF in the 5 poorest districts of Yemen, the 2003 FIVIMS study by FAO and lately the 2007 Poverty Assessment by UNDP, the World Bank, and the Government of Yemen. These reports are complemented by the government's own Family Health Survey conducted in 2003. In June 2008, to better understand the impact of higher food prices, WFP conducted a rapid assessment consisting of a literature review, focus group discussions, a household survey covering 15 governorates and a trader

survey. UNICEF and the Ministry of Public Health and Population are planning to conduct a nutrition survey in 2009. A study of these sources is required to identify information gaps and avoid duplication of analysis.

### ***Objectives of Literature Review and Secondary Data Analysis***

- Based on existing information, determine where the most vulnerable are located, who they are (livelihood groups, gender issues), the type of food security problems they face, and at which times of the year.
- Help to identify the regions to be covered by primary data collection and the information to be collected.

## **1. Approach and Key Stages**

Literature review and secondary data analyses could provide information on geographic distribution of populations; poverty and inequality; government investment into social services; literacy and health levels among population groups; gender inequalities; food production patterns and related food security issues. They also cover information on meteorological data, access to natural resources, markets and commodity prices. Yemen has 21 governorates spanning 5 agro-ecological zones. One result of this analytical stage is an initial analysis which identifies geographic areas where a number of indicators (i.e. poverty, inequality, nutrition, health, education, production patterns, markets, etc.) converge and could potentially signify a food insecurity problem. Another result is to provide a macro-level view of the country's overall food security situation. This includes a study of key factors that impact household food security including but not restricted to: locust, rainfall, *qat*, conflict and displacement. Considering the availability of studies by UN agencies including WFP, these sources could be used to develop an initial food security and vulnerability analysis. A major role of the SDA would be to avoid duplication of work and to clearly identify areas where secondary data is lacking and primary data collection is necessary. UNDP has mapped poverty and FAO has quantified food insecurity (albeit in 2003). The validity and applicability of these sources must be considered while designing any future data collection.

The secondary data analysis will analyse the status and dynamics (through endowment, process, output and outcome indicators) for each of the principal dimensions of food security (availability, access and utilization). The "Guidelines for Undertaking a Secondary Data Analysis Within the framework of a SAF Comprehensive Vulnerability Analysis" issued by WFP/VAM should be reviewed for further guidance on the objectives, methods and topics to address through SDA.

The SDA process would identify gaps and recommend:

- if primary data collection is required
- method required to fill this gap – EFSA, CFSVA or other approaches.

The Literature Review/Secondary Data Analysis will:

- Compile, analyze, and map information about food security and nutrition at national, regional and local levels, if possible disaggregated by gender. This includes a study of the following existing reports:

- 2006 Nutrition study by WFP/UNICEF
- 2003 FIVIMS study by FAO
- 2003 Family Health Survey conducted by Government
- 2007 Poverty Assessment by UNDP/World Bank/Government of Yemen
- 2008 Impact of Higher Food Prices by WFP
- 2008 EFSA reports on Flood Impacts by WFP
- 2008 UN/INGO Sa'ada Assessment Report
- 2009 UNICEF Nutrition Survey (if completed in time)
- Include, at a minimum, the following information
  - Summary of findings on malnutrition
  - Food security situation in areas affected by conflict and natural disasters (drought, floods, locust)
  - Impact of high food prices
  - Methodological differences in FIVIMS and UNDP assessments
  - Indicators suitable for food security monitoring in Yemen
  - Identify key gaps to be filled through primary data collection
  - Based upon the secondary data review and gaps identified, design a sample frame to cover remaining geographic areas and information required to construct a CFSVA
- Assess the trend of food insecurity in Yemen over time
- Allow for an informed discussion of the relationship between food insecurity and poverty in the country

## 1. Topics to be covered

Based on the availability and quality of the secondary data, part or all of the following should be covered by a secondary data analysis, with a focus on factors that are pertinent for food security and vulnerability:

- geography, climate, hydrology, topography, zoning;
- political, security-risks information;
- demographic data;
- economy, resources, infrastructure, at macro level;
- food access and livelihoods, including formal and informal employment/income-generating activities, assets and coping strategies at household level;
- trends in food insecurity in Yemen over time;
- Description of the relationship between food insecurity and poverty in the country;
- number and types of shocks (e.g. droughts and floods, etc), where and when they have predominantly occurred, and number of people affected;
- historical records (of the last 3 years) of numbers of people affected and requiring assistance (i.e. WFP beneficiaries) under different programme types (i.e. relief, nutrition, FFW etc) and at which times of the year;
- markets and staple food-commodity prices, volume and trends in trade and food stocks;
- agriculture and land-tenure, livestock and food production patterns;
- nutrition:
 

Nutritional status of children <2 years, <5 years, pregnant and lactating women, women of reproductive age (if available), adolescent girls (if available). This includes malnutrition rates, mortality rates (if available), and

micronutrient deficiencies.

Food consumption (Kcal) and dietary diversity (protein, micronutrient intake)

Situation in regard to water and sanitation, including worm infestation.

Health situation: e.g. vaccination coverage, ante- and post-natal care, HIV/AIDS situation, child feeding and caring practices (e.g. exclusive breastfeeding, complementary feeding etc.)

Health care system: coverage/outreach, services available and uptake of basic health services, other issues.

risks affecting livelihoods and food access, including the seasonal dimension (i.e. hazard calendars)

- poverty and inequality, including consideration of gender, ethnic, cultural or religious inequalities;
- government and donor policies towards food security poverty and social services; and
- literacy and education.

## 2. Sources of information

- General
  - international, national, regional statistics and reports from government ministries and research institutions on the situation regarding agriculture, ecology, socio-economic issues, education, health, etc.;
  - district level agriculture statistics from the Central Statistics Organization;
  - health and nutritional surveys, food security monitoring systems; and
  - reports/documents on food security, health and poverty, including previous VAM and needs assessment reports, other household surveys, previous development and food assistance interventions.
- Specific
  - 2003 FIVIMS study by FAO
  - 2003 Family Health Survey conducted by Government
  - 2006 Food Security and Nutrition study by WFP/UNICEF
  - 2007 Poverty Assessment by UNDP
  - 2008 Impact of Higher Food Prices by WFP
  - 2008 EFSA reports on Flood Impacts by WFP
  - 2008 UN/INGO Sa'ada Assessment Report
  - 2009 WFP Food Subsidy and Safety Net Study
  - 2009 UNICEF Nutrition Survey (planned geographic coverage and indicators)

## Outputs

A write-up, disaggregated by gender where possible, with:

- macro-level view and trends in the country's overall food security situation;
- insight into factors related to food availability, food access and food utilisation affecting poverty and food security and their geographic distribution and convergence in various zones (if already described);
- an initial food security and vulnerability analysis by identifying endowments and processes providing food access, hazards that reduce and opportunities that increase this food access, and coping options available to mitigate the impacts of hazards. This includes describing and if possible quantifying vulnerable population groups and vulnerable areas by governorate and

livelihood; Ranking of geographical areas in terms of food security status to the lowest administrative level should be made.

- Assess the trends of food insecurity over time
- Presentation of an informed discussion of relation between food insecurity and poverty in the country
- Findings need to be mapped out.
- recommendations on which gaps to fill and what geographic areas and topics to focus on during primary data collection; and
- information relevant for typical WFP programs (e.g. food for work, food for training, school feeding, vulnerable group feeding)

### ***Timeframe***

30 days consultancy to begin in June 2009 (as soon as possible).

## **Proposed Outline for SDA Report**

Abbreviations and Acronyms

Table of Contents

Executive Summary

Introduction

    Objectives

    Methodology

Secondary Literature Review

    Food Security

        Availability

        Access

            Economic means to purchase food

            Relation between food insecurity and poverty

        Utilization

        Impact of Natural Hazards

        Impact of Conflict

        Trends in food insecurity over time

    Food Subsidies and Safety Nets

    Strengths and limitations of secondary sources

        Methodology

        Coverage: geographic, thematic

        Relevance to WFP response and programming

Information gaps and need for primary data

Conclusions and Recommendations

Annex

    ToR, Bibliography, Maps

## Appendix 2: People Contacted

Meetings were held with key stakeholders in food security and nutrition in Sana'a in order to introduce our ongoing SDA activity, gather existing secondary information and generally build partnerships with stakeholders. The people met with are listed below.

|            |  |
|------------|--|
| WFP        | Gian Carlo Cirri, Country Director<br>Adham Musallam, Deputy Country Director<br>Yukako Sato, Programme Officer  |
| MoPIC      | Nabil A. Shaiban, Director General International Cooperation with Europe and the Americas<br>Khaled Mohamed Saeed, Head of World Bank Portfolio Monitoring Unit<br>Naser Ali Shalely, General Manager of Dissemination and Publication |
| CSO        | Ali Abdullah Saleh<br>Tarek Mathhaji, Assistant Deputy for Technical Affairs   |
| EC         | Michele Cervone, Country Director<br>Philippe Jacques, Councilor Development Cooperation<br>Damien Bouchon, Programme Manager Food Security, Rural Development and Agriculture   |
| World Bank | Benson Ateng, Country Manager<br>Afrah Alawi Al-Ahmadi, Senior Human Development Specialist  |
| UNDP       | Mohammed Pournik, Principal Economic and Governance Advisor<br>Abdo Seif, Consultant   |
| UNICEF     | Kamel Ben Abdallah, Health and Nutrition Officer<br>Rajia Ahmed Sharhan, Nutrition Officer   |
| GTZ        | Henning Baur, Principal Advisor Food Security  |
| SWF        | Mansour H. Al Fayadi, Executive Manager  |
| GOPA       | Arjen Stark, Team Leader Technical Assistance in Support to the Social Welfare Fund  |
| GFA        | Partha Ippadi, Team Leader EC Food Security Information Systems (FSIS) Project   |
| IOM        | Stefano Tamagnini, Chief of Mission  |
| IFPRI      | Clemens Breisinger, Team leader Yemen National Food Security Strategy (via tele-conference)  |

### Appendix 3: Review of Secondary Sources

A range of different secondary sources were provided for review in the context of this SDA. The most relevant ones are summarized below with respect to their scope, methodology of research, sampling strategy (where relevant), and in terms of strengths and limitations.

*FIVIMS study, as part of Agricultural Census (FAO 2004; Kabbani & Wehelie 2004; Kabbani & Wehelie 2005)*

FAO, in collaboration with the Central Statistics Organization (CSO) and the Ministry of Agriculture (MoA), conducted the first food insecurity and vulnerability survey in the country. It is the largest and most representative sample survey on the prevalence of household food insecurity and vulnerability to date, albeit in 2003. The survey was implemented in conjunction with the Agricultural Census. Therefore, it was possible, at a relatively cheap cost, to conduct such a comprehensive survey. It aims to (1) define how many are the food insecure; (2) identify who are the food insecure; (3) describe where the food insecure are located; (4) estimate how severe is their hunger; (5) explore why they are in this condition by analyzing the factors influencing their food insecurity; and (6) estimate how vulnerable households cope with threats to their food insecurity. It also looks at intra-household impacts of food insecurity and household food consumption patterns.

This survey questionnaire was added as supplement to the second phase of the Agricultural Censuses, which is based on a nationally representative sample of 112,226 households with sub-samples of 74,837 agricultural and 27,389 non-agricultural households. A stratified random sampling strategy was used, based on the population census from 2000/01. Agricultural households were interviewed as part of the Agricultural Census, while non-agricultural households were separately sampled in order to increase accuracy. The survey is representative at district level. The questionnaire includes 16 questions on food security that form the basis for four household food security indicators. Findings are to be considered as conservation, lower-bound estimated of the food insecurity situation, due to the way questions were asked. The first question categorises generally food insecure and food secure households, based on household perception. Households that responded yes to whether they were unable to afford to eat what they normally eat any time during the past 12 months are considered generally food insecure. Only those answering yes got probing questions.

The survey provides baseline information on household food insecurity and vulnerability at national level and disaggregated at governorate level and by agro-ecological zones. While primary district level data should be available, it is not included in the report, and therefore not accessible. It also offers a comparison of food insecurity and poverty data. However, the largest limitation of this survey is that it is from 2003, and outdated due to recent high food price and global economic crisis and potential impacts on household food insecurity. This type of information urgently needs to be updated within the context of current conditions. While FIVIMS was originally designed as a food security monitoring system, the information was never updated due to the lack of funding. In addition, the questionnaire design in stages has its limitations. The entry question set the upper limit of food security, and answering no to the first question already lead to the stopping of the questionnaire. The question is subjective, as a positive response does not necessarily mean that the household is food secure. This might have resulted in misclassifications of households, while no probing of households classified as food secure took place. Another limitation is the lack of including income or expenditure data; i.e. associations between poverty and food insecurity cannot be made. This survey is the most comprehensive food security survey to date and would urgently need updating. However, to conduct a survey of similar coverage will be difficult, due to the high costs associated with primary data collection at this scale.

*Poverty Assessment, based on Household Budget Survey 2005/06 (Worldbank et al. 2007)*

The Poverty Assessment 2007 aims at mapping poverty at district level. The estimates of poverty are based on the Household Budget Survey (HBS) 2005/06, i.e. no primary data collection was done. The objectives were to (1) provide aggregates of indicators for urban/rural communities of each governorate; (2) update national estimates to determine governorate shares in GDP through household consumption patterns; and (3) collect information on variation in living standards. The assessment proposes new poverty lines and provides poverty estimates, compares poverty in 1998 and 2005/06 and tries to explain differences in terms of growth in consumption and changes in consumption inequality.

The sampling frame of the HBS 2005/06 was the Population Census from 2004 to determine rural and urban strata. Based on this stratification, enumeration areas with similar numbers of households were selected, then twelve households were picked from each by equal probability sampling. A total of 14,400 households were sampled, 13,136 were surveyed. The assessment has a governorate focus, while estimated poverty lines ensure that regional differences in factors such as relative prices, activity levels and size and age composition of poor households are considered. It follows a cost of basic needs methodology to construct household region specific poverty and food poverty lines. Differences in poverty lines reflect variations in food and non-food prices across regions, and incorporate household differences in size and age composition and their food and non-food consumption preferences. The food poverty line represents a minimum household food bundle constructed to reflect consumption preferences and thus defines extreme poverty. However, the standard errors in the poverty assessment are large, and estimates for food poverty indicators are less good than total consumption indicators.

The HBS is the most comprehensive source of primary poverty data in Yemen, but CSO analyses of the HBS 2005/06 data have not been published, making the Poverty Assessment 2007 the most comprehensive analysis. The major limitation with respect to food insecurity and vulnerability is the limited set of indicators used, heavily focusing on income and expenditures. This information needs to be supplemented with other indicators, e.g. mortality, school enrolment, nutrition. The HBS 2005/06 is largely based on consumption expenditures and incomes to determine levels of poverty. Income figures should be handled with care, as respondents may not always report truthfully on income – especially if the survey is conducted by a government agency. Also, with respect to food poverty, the survey is based on recall periods on food and beverages of the last month; a very long period. Also, non-monetary aspects of well-being are not adequately covered in the HBS. Since the Poverty Assessment relied on the HBS 2005/06, data limitations of the HBS are also valid. Some of the findings are questionable, as they significantly differ from expected results – the survey does not cover all districts and responses are not well triangulated.

*Food Security & Nutrition Baseline Survey (WFP 2006b; WFP & UNICEF 2006)*

The Food Security and Nutrition Baseline Survey conducted jointly by WFP and UNICEF to inform integrated packages of support in the five poorest district of Yemen in the five governorates of Ibb, Taiz, Hodeidah, Lahej and Addaleh. Secondary data from FIVIMS (2003), National Poverty Survey (1999) and Population Census (2004) were used to target the five districts<sup>1</sup> for intervention. Targeting was based on filtering out better off districts with respect to food insecurity and educational indicators, and also considering operational constraints in terms of security, logistics and cost per beneficiary. The survey was designed to document baseline nutritional status of women and children before implementing Mother and Child Nutrition/Health Care interventions, and to provide an understanding of vulnerability to

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<sup>1</sup> Fare'e Al-Udyin, Wazia, Mighllaf, Tor Al-Baha and Al-Azariq

food insecurity to assist in addressing food and nutrition needs of targeted populations. The survey provides the following information: (1) estimates of the prevalence of child malnutrition (moderate and severe malnutrition), including wasting (weight-for-height), underweight (weight-for-age) and stunting (height-for-age) among children 6-59 months of age; (2) estimates of the prevalence of adult malnutrition in pregnant and lactating women, using mid-upper arm circumference (MUAC) and body mass index (BMI) as appropriate; (3) information related to food security, and health and care practices for children below 5 years of age, to help understand the potential causes of malnutrition; and (4) estimates of the prevalence of anaemia among pregnant and lactating women and children aged 6-59 months. The questionnaire for the food security component was adapted from the standardized VAM baseline questionnaire to get comprehensive profile of vulnerability. The survey measures levels of food insecurity through household food consumption, expenditure patterns, risks and coping strategies, agriculture, drinking water, literacy, and household characteristics.

With respect to methodology, a two stage cluster sampling technique was used to select 40 clusters within the five districts (two villages per district, 15 households each). The survey teams visited 2617 households, collected information on 3924 children aged 6-59 months, 594 children aged 0-6 months and 594 lactating women, and 741 pregnant women. The sample was to be representative at district level for WFP operational areas only. For primary data at district level to be nationally representative would require a sample of 15,000 to 20,000 households (286 districts). Due to fewer lactating women per household than originally estimated and limited resources this was not feasible. However, interpretations of malnutrition status of pregnant women are more adequate. Another limitation included the difficulty in determining age of children.

#### *Family Health Survey (MoPHP 2003)*

The Family Health Survey (FHS) was conducted by the Government of Yemen in order to provide a reliable database for policy choices and population programs, focusing on reproductive health and malnutrition. It aims to: (1) update and expand the national population and health data through collection of data which will allow the calculation of demographic rates, especially fertility rates, and infant and child mortality rates; (2) analyze direct and indirect factors which determine levels and trends of fertility; (3) measure the level of contraceptive knowledge and practice by method; (4) collect quality data on family health: immunizations, prevalence and treatment of diarrhea and other diseases among children under five, prenatal visits, assistance at delivery and breastfeeding; (5) measure the nutritional status of children under five years (anthropometric measurements: weight and height; (6) measure the level of maternal mortality at the national level; and (7) develop skills and resources necessary to conduct high-quality demographic and health surveys). The survey consisted of separate questionnaires on household health administered to households, and reproductive health and maternal mortality questionnaires administered to all ever-married women from 15-49 years of age. A two-stage cluster sampling methodology was used to determine enumeration areas that covered all inhabitants of all governorates; within each enumeration area twenty households were selected. Data are disaggregated by governorate, urban and rural. The final sample included 13,815 households, while 12,655 were interviewed in all governorates (excluding islands). This survey looks at a range of malnutrition indicators in children under five and women of reproductive age. It was the first to collect information on maternal death in Yemen. However, the FHS was never designed to collect nutrition information *per se*. While the data reflects the national situation and is the most cited data, the information is not available at governorate level. Also, the quality of data is low, according to UNICEF, with only around 22% accuracy.

#### *Impact of Rising Food Prices on Food Security (WFP 2008c)*

WFP conducted a rapid assessment in 2008 to better understand the impact of higher food prices on household food security. The objectives were to: (1) identify who are most affected by higher food prices and where are they; (2) what is the status of government programs to address the price shock; and (3) determine whether specific responses are required. The assessment consisted of a literature review, focus group discussions, a household survey covering 15 governorates and a trader survey. Purposeful random sampling was used to identify districts (with higher than 40% poverty rate in the poverty assessment 2007) for each agro-ecological zone (excluding desert), while ten districts were then randomly selected from each agro-ecological zone. Seven villages and three urban areas were identified by the enumerators in each zone, according to selected criteria (no commercial *Qat* cultivation, no functioning services, some distance from a paved road, and local knowledge on poverty). Then, 15 households were selected in each village (criteria: poorest looking houses, children's clothes, number of children per household, etc.). Finally, 600 households were surveyed (150/agro-ecological zone), 28 traders interviewed and 10 focus group discussions conducted.

The limitations of the study are: (1) no data collection in desert zone due to inaccessibility and few inhabitants and in Al-Gawf and Sa'ada due to security; (2) anthropometric measures were not collected; (3) results are not representative as analysis is only possible at zone or national level, not at district level; (4) provides only a snapshot of higher food prices impacts in June 2008; (5) the survey was conducted in poor districts as identified by the poverty assessment and excludes non-poor food insecure households, while assuming that most food insecure households are also poor. The small sample size limits the analysis to a broad level of understanding of the impacts of high food prices, it is not representative. Using the Social Welfare Fund (SWF) ration cards as sampling frame was also reported<sup>2</sup> as problematic in the field. Enumerators came across beneficiaries that were better off households, due to targeting errors in the SWF operations. The study provides a snapshot of the impacts and should be followed by a more detailed assessment and periodic food security monitoring. Based on the assumption that food insecurity and poverty are similar, only poor households are surveyed. This could mean that a significant proportion of households are excluded, i.e. previously non-poor households that have fallen into food insecurity due to the high food prices. The results show a deterioration of overall food security due to rising food prices since January 2008. According to this survey food insecurity has increased to 18%, from 12% in the HBS 2005/06. The Government of Yemen has expressed its concerns with these results, due to sampling errors and other issues.

#### *Child Development Project Baseline (UNICEF 2003)*

The baseline survey was conducted to provide data for districts targeted by UNICEF and assess impacts of interventions. The survey was conducted in two rounds in 2001 and 2003, while the second round was adjusted and extended based on experiences gained from the first round. The 1999 poverty survey was used as sampling frame, while the sample was stratified by district and by rural/urban location. The survey covered 2,031 and 3,400 households in rounds one and two respectively, covering 32 districts of 9 governorates. Three questionnaires were implemented, adapted from a model questionnaire for UNICEF's multiple indicator cluster survey, to cover households, eligible women, and children. The range of indicators included under-five mortality, incidence of severe wasting among children under five, ratio of boys to girls attention grade six of basic education plus indicators on health, nutrition, water, education, maternal care, child protection, etc.

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<sup>2</sup> Personal communication with WFP-VAM

The results of the survey are aggregates of district level findings. Since not all districts or all governorates were included in this survey, the results are not representative for entire governorates or the entire country. Especially round one reveals a fairly high rate of non-response, while variations were wide for individual questions. Round one has been described as ‘inconsistent’ with respect to data quality within different districts. Modifications worked to make the results of round two better for most governorates. This may be due to the fact that in round two more emphasis was placed on data quality control, and on enumerator training, data screening and review, seasonality of data collection and security issues. However, extensive recoding was needed to achieve compatibility between the data of the two rounds and allow for consolidation of results. The data quality issues, especially of round one, pose a disadvantage in utilising these data as baseline information. Also, trends in districts that were not covered in this survey can not be easily identified, due to the lack of representativeness.

#### *Community Food Security Profiling (WFP 2002; WFP 2003)*

The Community Food Security Profiling (CFSP) is intended as detailed field assessment tool to identify the livelihood strategies of poor communities in 90 rural districts within the WFP intervention area. It mainly describes (1) poverty and food insecurity causes; (2) levels of vulnerability and risks; and (3) coping strategies. The CFSP is based on field data collection using a combination of a sample survey and qualitative PRA techniques, as well as data process and information analysis, which are used to provide a beneficiary level perspective and to fill gaps in information not available in existing secondary data. The three stage sampling strategy (standard WFP targeting strategy in Yemen) identified 90 most vulnerable districts within the five agro-ecological zones of Yemen. Communities have been sampled according to population density within each zone. 501 questionnaires and 334 community maps were collected and included indicators on type of communities, women economic participation, household food access and utilisation, and risks, hazards and coping strategies. The profiling provides a snapshot of different livelihoods within the agro-ecological zones and, as a mixed survey of quantitative and qualitative data offers a different perspective. However, data is representative and only covers WFP intervention districts. Also, a final report has not been released yet.

#### *EFSA Reports on Flood Impacts (WFP 2008b)*

The emergency food security assessment on flood impacts assesses the food security situation among the affected population in the two governorates of Hadramout and Al-Mahra in eastern Yemen that were most affected by heavy rains leading to widespread flooding. It also aims to identify the neediest groups among the affected population. The governorates were divided by agro-ecological zone, then whether it was urban or rural. After, the agro-ecological zones of coastal areas and valleys were selected. Via random sampling, 36 villages and 209 households (based on secondary data provided by NGOs, local councils, international agencies) were selected. Using 209 household questionnaires, supported by 24 focus group discussions and key informant interviews, the flood affected households were identified, their food security status (food consumption score), as well as livelihood impacts assessed. This is an assessment of an emergency situation only. It provides a snapshot in time, has limited coverage and is not designed to be representative.

#### *Sa’ada Assessment Reports (UN 2007; UN & INGOs 2008)*

A series of joint UN assessment reports address the conflict in Sa’ada governorate in the north of the country. They provide assessments of the humanitarian needs of IDP families in Sa’ada and two IDP settlements that are accessible, e.g. Al Malaheet. The assessments are limited to providing an update of the humanitarian situation at a certain point in time and to

identifying lifesaving humanitarian needs of the IDP and others affected. The assessments are based on discussions with local authorities and specialized sectors, as well as local and international organizations. It includes a brief survey of living conditions by sector: food, non-food items and shelter, nutrition, education, water/sanitation, protection, and health.

### *Reflections on Rising Food Prices (UNDP 2008)*

The brief report on the rising food prices in Yemen presents a short narrative on high food prices, impacts and potential response strategies. Moreover, using data on consumption patterns from the HBS 2005/06 and the Consumer Price Index (CPI), UNDP predicted the current level of poverty by plugging in the current level of prices into the consumption basket obtained by the HBS. While the analysis adjusts expenditures to include the recent rise in food prices and estimates that the level of poverty has significantly increased, it was assumed that incomes have not changed over the same time period.

## **Other Surveys**

In the 1990s, the CSO has implemented three major household surveys – the Household Budget Surveys (HBS) from 1992 and 1998, and the National Poverty Survey (NPS) in 1999. Due to the outdated nature of these, they are not utilised in this SDA; also most of the reports are only available in Arabic. The Population Census from 2004 (CSO 2004) and the Statistical Yearbook from 2007 (CSO 2007) are not analysed in detail. Some of the major secondary sources used refer to these surveys or use them for their sampling frames.

### *Household Budget Surveys 1992 and 1998*

The HBS from 1992 and 1998, as well as the NPS from 1999 are analysed in detail with respect to their main features and limitations by (Worldbank 2002). With respect to survey design, the HBS from 1992 and 1998 are different with respect to sampling frame, sample stratification and size, and recall periods for food and beverages. The use of the HBS from 1992 requires extreme caution due to several limitations: lack expansion factors and results are therefore not representative, urban bias of the sample, and lack of weights. These prevent from any meaningful poverty comparisons with the HBS from 1998. Thus, the 1998 HBS is *de facto* the first household budget survey for Yemen (Worldbank 2002).

The HBS from 1998 is a traditional consumption survey, focusing on expenditure and income. It takes seasonal patterns for consumption expenditure and income into consideration by conducting the interviews in four rounds throughout the year. The sample included 15,120 households that were selected based on a two stage sampling strategy. The following topics were included in data collection: basic household characteristics with respect to housing, assets, socio-economic characteristics, local society services, consumption expenditures and incomes, and water and electricity. Overall, the 1998 HBS provides adequate information on incomes and expenditures and provides a good baseline for future assessments; but is deficient in addressing non-monetary aspects of well-being (e.g. health, access to basic services, access to credit, labour market conditions) (van de Walle 2002; Worldbank 2002).

### *National Poverty Survey 1999*

In contrast, the NPS from 1999 was conducted in one month and does not consider seasonal variations. The sample is representative at the governorate level, covering 49,450 households. The objective was to provide information on access to service and other aspects of non-income living standards. The NPS covers fewer consumption items than the HBS from 1998. The seasonality bias may severely affect the analyses which rests on expenditure and income variables, while the survey provides good information on non-income poverty (van de

Walle 2002; Worldbank 2002). The two surveys complement each other, HBS providing income/expenditure information, while NPS focuses on non-income well-being.

## Upcoming Surveys

Other government agencies and donors are also involved in addressing the shortcomings of current data availability with respect to food security and nutrition in Yemen. During consultations with several food security and nutrition stakeholders in Sana'a, the SDA identified several upcoming surveys – either the results are not yet released, or the surveys are at the design stage. These can be of critical importance to WFP in the future, particularly with respect to planning interventions and optimising targeting strategies. As much as possible, the results of these surveys – some to be released over the next months – should be integrated into the PRRO planning process.

### *2010 National Food Security Strategy (Worldbank & IFPRI 2008)*

The Government of Yemen is developing a National Food Security Strategy in cooperation with the International Food Policy Research Institute (IFPRI), the European Commission, the World Bank and the German Agency for Technical Cooperation (GTZ). The overall aim is to formulate a sustainable National Food Security Strategy that will take macro-economic considerations, non-agricultural linkages, and nutrition security challenges into account and assess related investments to improve food security. The strategy will be based on existing sector strategies and develop a comprehensive analytical framework to give answers to (1) where and who are the food insecure (2) what are the main determinants of food insecurity and (3) what are the challenges and options to improving food security. It consists of (1) strategy development and scenario analysis; (2) analysis of policy options for poverty reduction and food and nutrition security to develop an economy-wide model and scenarios based on available data/information, a conceptual framework for the determinates of under-nutrition, and estimate the costs and benefits of policy options and programs.

A workshop took place in June 2009 in Sana'a to discuss the outline and preliminary results of the food security analysis. At a high-level mid-term consultation workshop in October 2009 the final results on food security estimates and preliminary results on model simulations will be presented. The Draft Strategy will be presented in January 2010, while the Food Security Strategy Paper will be disseminated in May 2010. WFP Yemen has been communicating with IFPRI to coordinate efforts with respect to this SDA. For WFP, it will be crucial to include IFPRI findings into the planned PRRO as much as possible. In addition, there are discussions underway about including a short-term emergency response component into the National Food Security Strategy and possible WFP contributions in this regard.

### *2009 National Nutrition Survey (UNICEF & MoPHP 2009b; UNICEF & MoPHP 2009a)*

In 2009, the MoPHP, in collaboration with UNICEF, is planning to conduct a nationwide nutrition survey with two components: an anthropometric nutrition survey and a food security household economy survey. Due to the lack of representative, quality data on malnutrition, this anthropometric survey aims to establish a baseline, including the prevalence of acute malnutrition in children aged 6-59 months, mortality data, and maternal health data. In parallel, the food security survey, using the Household Food Insecurity Access Scale, Household Dietary Diversity Score, and qualitative survey, will assess effects of socio-economic factors on livelihoods and ability of the affected population to cope at a household level. The objectives are to: (1) measure the level of household food insecurity as one of the causes of malnutrition; (2) establish a household food insecurity baseline for each agro-ecological zone that can be compared across locations, and over time; (3) develop a causal analysis to identify the factors and dynamics that lead to the current level of food insecurity.

UNICEF initially argued for a separate nutrition survey, while the MoPHP and other donors are in favour of the nutrition survey being conducted as component of the upcoming national Family Health Survey. Currently, a technical group has been established that will commence planning of the sampling strategy, design, etc. The nutrition survey will be conducted as a component in the FHS, using the same sample. UNICEF had concerns with regards to the quality of data collection, but it has been agreed that a separate team with specific training will conduct the anthropometric survey, as well as the food security component. The survey will be representative at the governorate level, since district level representativeness would only be possible to achieve with significantly more resources than available. However, with an estimated sample size of around 20,000 households, concerns of accuracy and data representativeness at governorate level may arise. However, this will be the first data in the country collected on nutrition indicators at governorate level. Data collection is expected to start in November 2009, to be completed in the same year<sup>3</sup>.

#### *2009 Social Welfare Fund Survey (Europeaid 2008)*

Within the context of the new law on social protection (see section 4.7.1), the selection process with poverty-based eligibility criteria is a cornerstone of future activities. Thus, all beneficiaries of the SWF are to have met the same criteria. The SWF has undertaken a nationwide survey of 1.7 million current and potential beneficiaries to confirm eligibility of beneficiaries and identify poor and vulnerable individuals and households who are yet not supported by SWF. The fieldwork part of the survey was implemented from June until August 2008. Data entry, data validation and data analysis are at present ongoing. No results have been reported to date. The database is expected to be finalised in September 2009.

However, several limitations can be identified: the survey results are not representative due to the skewed sample: it only includes SWF beneficiaries or those that applied. The questionnaire heavily relies on income and expenditure information; while reliability of answers may be low. Respondents are likely to underreport income, especially if they are applying for social welfare and higher incomes could disqualify them.

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<sup>3</sup> Information based on personal communication with UNICEF representatives in Sana'a.

## **Appendix 4: List of Potential Food Security Indicators**

## WFP Yemen – Secondary Data Analysis on Food Security and Vulnerability

**FOOD SECURITY INDICATORS FOR YEMEN (adopted from FSIS and other sources)**

| Food security pillars | Domain              | Indicators  | Type of Data (QT, QL) | Avail. (Y/N) | Coverage (N/G) | Source            | Ref. Year   | Gaps (Y/N) |
|-----------------------|---------------------|---|-----------------------|--------------|----------------|-------------------|-------------|------------|
| General Information   | Geography           | climate, rainfall: total, distribution, variability, climate change trends    | QT                    | Y            | G              | Sat. Year bc      | 2007        |            |
|                       |                     | agro-ecological zones   | QT                    | Y            | G              | Sat. Year bc      | 2007        |            |
|                       |                     | natural resources and land use  | QT                    | Y            | N              | Sat. Year bc      | 2007        |            |
|                       | Macro-economy       | GDP total, growth   | QT                    | Y            | N              | Sat. Year bc      | 2007        |            |
|                       |                     | GDP by economic sector  | QT                    | Y            | N              | Sat. Year bc      | 2007        |            |
|                       |                     | Labor force, unemployment   | QT                    | Y            | G              | Sat. Year bc      | 2007        |            |
|                       |                     | GINI  | QT                    | Y            | N (G: HBS)     | HBs :CSO          | 2005 / 2006 |            |
|                       |                     | investment  | QT                    | Y            | N              | Sat. Year bc      | 2007        |            |
|                       |                     | inflation   | QT                    | Y            | N              | Sat. Year bc      | 2007        |            |
|                       |                     | consumer price index  | QT                    | Y            | G              | Sat. Year bc      | 2007        |            |
|                       |                     | budget, debt, sources, aid  | QT                    | Y            | N              | Sat. Year bc      | 2007        |            |
|                       |                     | balance of payment  |                       |              |                |                   |             |            |
|                       |                     | imports/exports of major commodities  | QT                    | Y            | N              | Sat. Year bc      | 2007        |            |
|                       |                     | energy (fuel and electricity): sources, import/export                         | QT                    | Y            | N              | Sat. Year bc      | 2007        |            |
|                       |                     | freshwater resources: renewable/non-renewable, groundwater, freshwater, wadis | QT                    | Y            | N              | Sat. Year bc      | 2007        |            |
|                       |                     | water withdrawal by sector  | QT                    | Y            | N              | Sat. Year bc      | 2007        |            |
|                       | Water               | population: amount, growth  | QT                    | Y            | G              | Sensus 2004 : CSO |             |            |
|                       |                     | population density  | QT                    | Y            | G              | Sensus 2004 : CSO |             |            |
|                       |                     | household size  | QT                    | Y            | G              | Sensus 2004 : CSO |             |            |
|                       |                     | age structure, by gender  | QT                    | Y            | G              | Sensus 2004 : CSO |             |            |
|                       |                     | rate of urbanization  | QT                    | Y            | G              | Sensus 2004 : CSO |             |            |
|                       |                     | migration   | QT                    | Y            | G              | Sensus 2004 : CSO |             |            |
|                       |                     | inequality: gender, ethnic, cultural, religious                               |                       |              |                |                   |             |            |
|                       |                     | number of IDPs  |                       |              |                |                   |             |            |
|                       |                     | number of refugees (to/from)  |                       |              |                |                   |             |            |
|                       | Demography          | % population under 1\$/day  | QT                    | Y            | N              | HBs :CSO          | 2005 / 2006 |            |
|                       |                     | % population under 2\$/day  | QT                    | Y            | N              | HBs :CSO          | 2005 / 2006 |            |
|                       |                     | % population under upper poverty line   | QT                    | Y            | N              | HBs :CSO          | 2005 / 2006 |            |
|                       |                     | % population under lower poverty line (food poverty)                          | QT                    | Y            | N              | HBs :CSO          | 2005 / 2006 |            |
|                       | Poverty             | literacy  | QT                    | Y            | G              | Sensus 2004 : CSO |             |            |
|                       |                     | enrolment average annual rate of change in # of girls/boys                    | QT                    | Y            | G              | Sensus 2004 : CSO |             |            |
|                       | Education           | access to roads   | QT                    | Y            | G              | HBs :CSO          | 2005 / 2006 |            |
|                       |                     | access to communications  | QT                    | Y            | G              | HBs :CSO          | 2005 / 2006 |            |
|                       | Infrastructure      | access to health facilities   | QT                    | Y            | G              | HBs :CSO          | 2005 / 2006 |            |
|                       |                     | antenatal care coverage (%)   |                       |              |                |                   |             |            |
|                       |                     | skilled attendant at delivery (%)   |                       |              |                |                   |             |            |
|                       |                     | life expectancy by gender   |                       |              |                |                   |             |            |
|                       |                     | fertility rate  | QT                    | Y            | N              | Sensus 2004 : CSO |             |            |
|                       |                     | mortality rate  | QT                    | Y            | N              | Sensus 2004 : CSO |             |            |
|                       | Health              | number of doctors/health facilities per 1,000 population                      | QT                    | Y            | N              | Sat. Year bc      | 2007        |            |
|                       |                     | ODA - countries/multilaterals   |                       |              |                |                   |             |            |
|                       |                     | ODA - sectors supported   |                       |              |                |                   |             |            |
|                       |                     | ODA - type of support: food aid, program, budget, etc.                        |                       |              |                |                   |             |            |
|                       |                     | INGOs and civil society organizations   | QT                    | Y            | G              | Sat. Year bc      | 2007        |            |
|                       | Aid and Development | MDGs  | QT                    | Y            | N              | MDGs : CSO        | 2007        |            |
|                       |                     | economic policy environment: 5-year plan                                      |                       |              |                |                   |             |            |
|                       | Government Policies | food security strategy  |                       |              |                |                   |             |            |
|                       |                     | nutrition strategy  |                       |              |                |                   |             |            |
|                       |                     | poverty reduction strategy  |                       |              |                |                   |             |            |
|                       |                     | social safety nets  |                       |              |                |                   |             |            |
|                       |                     | water strategy  |                       |              |                |                   |             |            |
|                       |                     | health strategy   |                       |              |                |                   |             |            |
|                       |                     | education strategies: basic education, literacy                               |                       |              |                |                   |             |            |
|                       |                     | agricultural strategy   |                       |              |                |                   |             |            |

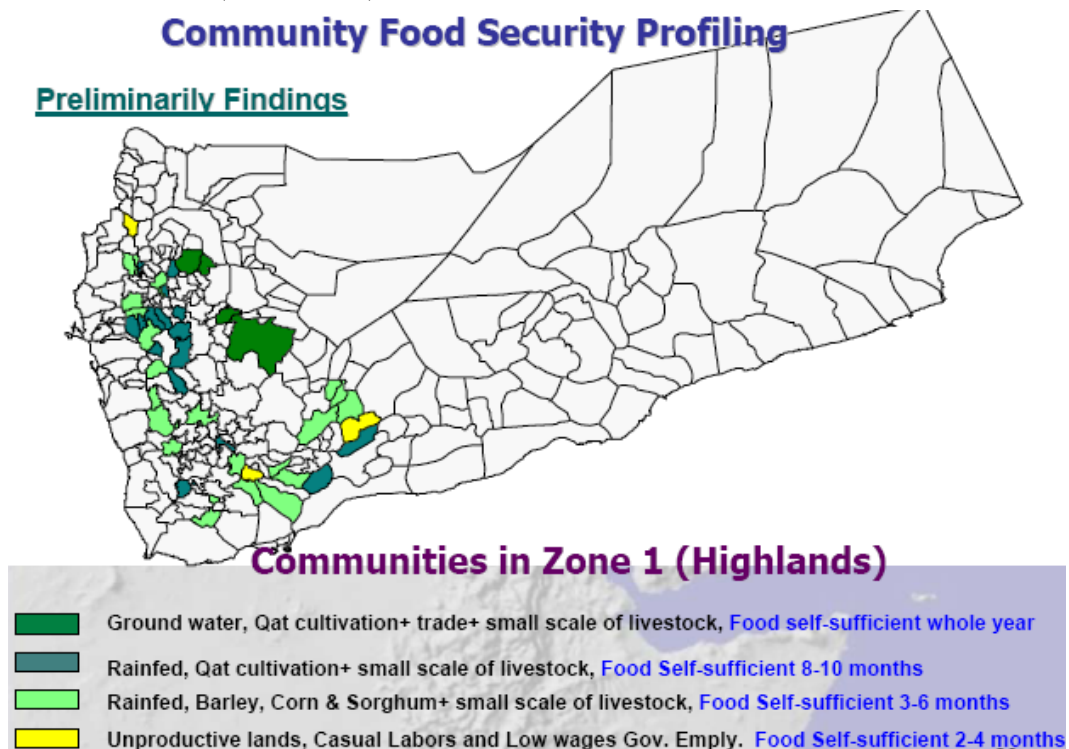
## WFP Yemen – Secondary Data Analysis on Food Security and Vulnerability

**FOOD SECURITY INDICATORS FOR YEMEN (adopted from FSIS and other sources)**

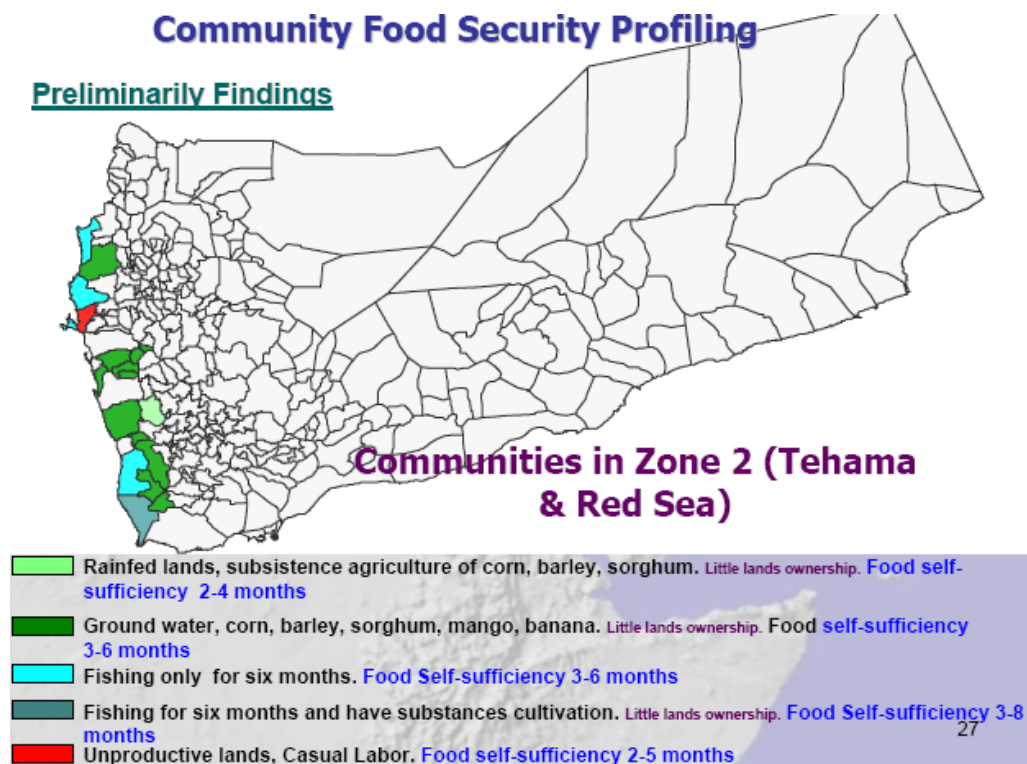
| Food security pillars | Domain               | Indicators  | Type of Data (QT, QL) | Avail. (Y/N) | Coverage (N/G) | Source       | Ref. Year   | Gaps (Y/N) |
|-----------------------|----------------------|---|-----------------------|--------------|----------------|--------------|-------------|------------|
| Food availability     | Land                 | total cultivated area (vs total area, vs cultivable area)   | QT                    | Y            | N              | Sat. Year bc | 2007        |            |
|                       |                      | total irrigated area (vs total cultivated area, vs irrigable area)  | QT                    | Y            | N              | Sat. Year bc | 2007        |            |
|                       |                      | access to agricultural inputs, credit, extension services   |                       |              |                |              |             |            |
|                       | Food production      | agriculture (rainfed, irrigated): yields by crop, total production by crop (incl. Qat)  |                       |              |                |              |             |            |
|                       |                      | livestock: total production, livestock type and numbers   | QT                    | Y            | N              | Sat. Year bc | 2007        |            |
|                       |                      | fisheries: total production, boats, fishers, local/export value   | QT                    | Y            | N              | Sat. Year bc | 2007        |            |
|                       | Food imports         | commercial and aid, quantities, values  |                       |              |                |              |             |            |
| Food access           | Sources of Income    | commercial, quantities, values  |                       |              |                |              |             |            |
|                       |                      | Food exports  |                       |              |                |              |             |            |
|                       |                      | Food stocks   |                       |              |                |              |             |            |
|                       |                      | commercial, public, household - volume, trends  |                       |              |                |              |             |            |
|                       | Expenditure          | labor, salaries   |                       |              |                |              |             |            |
|                       |                      | sales: farm, non-farm, value  |                       |              |                |              |             |            |
|                       |                      | relative contribution to food access  |                       |              |                |              |             |            |
|                       |                      | seasonality of cash resources (seasonal calendars)  | QL                    |              |                |              |             |            |
|                       |                      | % of income spent on food   | QT                    | Y            | G              | HBs :CSO     | 2005 / 2006 |            |
|                       |                      | % of income spent on qat  | QT                    | Y            | G              | HBs :CSO     | 2005 / 2006 |            |
|                       | Employment           | % of income spent on education  | QT                    | Y            | G              | HBs :CSO     | 2005 / 2006 |            |
|                       |                      | % of income spent on health   | QT                    | Y            | G              | HBs :CSO     | 2005 / 2006 |            |
|                       |                      | % of income spent on other  | QT                    | Y            | G              | HBs :CSO     | 2005 / 2006 |            |
|                       | Transfers            | % of people in formal and informal employment   | QT                    | Y            | G              | HBs :CSO     | 2005 / 2006 |            |
|                       |                      | % of people in agriculture & fisheries  | QT                    | Y            | G              | HBs :CSO     | 2005 / 2006 |            |
|                       | Access to resources  | gifts/remittance, food aid, pensions, safety net  | QT                    | Y            | G              | HBs :CSO     | 2005 / 2006 |            |
| Food utilization      | Markets              | livelihood assets - financial, physical, human, natural, social, political (household asset score, human and financial capital score) |                       |              |                |              |             |            |
|                       |                      | prices and trends: wheat, wheat flour, rice, pulses, animal products  |                       |              |                |              |             |            |
|                       |                      | walking distance to markets   |                       |              |                |              |             |            |
|                       |                      | coverage: daily, weekly, monthly markets  |                       |              |                |              |             |            |
|                       | Care practices       | % of mothers exclusively breastfeeding  | QT                    | Y            | G              | Family Heal  | 2003        |            |
|                       |                      | % of mothers partially breastfeeding  | QT                    | Y            | G              | Family Heal  | 2003        |            |
|                       |                      | food preparation, nutritional education   | QT                    | Y            | G              | Family Heal  | 2003        |            |
|                       |                      | disease prevalence  | QT                    | Y            | G              | Family Heal  | 2003        |            |
|                       |                      | HIV/AIDS prevalence   |                       |              |                |              |             |            |
|                       |                      | vaccination coverage  |                       |              |                |              |             |            |
|                       |                      | % of undernourished population  |                       |              |                |              |             |            |
|                       |                      | food consumption (kcal/day) (household food consumption score)  |                       |              |                |              |             |            |
|                       |                      | % of population under 2,100 kcal/day  |                       |              |                |              |             |            |
|                       |                      | % of population moderately malnourished (2,100-3,200 kcal/day)  |                       |              |                |              |             |            |
|                       |                      | # of meals/day  |                       |              |                |              |             |            |
|                       |                      | dietary diversity: proportion of food groups  |                       |              |                |              |             |            |
|                       |                      | Under-5 mortality rate per 1,000 live births  |                       |              |                |              |             |            |
|                       | Health and nutrition | infant mortality rate per 1,000 births  |                       |              |                |              |             |            |
|                       |                      | maternal mortality ratio  |                       |              |                |              |             |            |
|                       |                      | % of infants with low birth weight  |                       |              |                |              |             |            |
|                       |                      | % of <5 suffering from: underweight (severe acute malnutrition)   |                       |              |                |              |             |            |
| Vulnerability         | Water and sanitation | % of <5 suffering from: underweight (moderate acute malnutrition)   |                       |              |                |              |             |            |
|                       |                      | % of <5 suffering from: stunting (chronic malnutrition)   |                       |              |                |              |             |            |
|                       |                      | nutritional status of pregnant and lactating women: weight  |                       |              |                |              |             |            |
|                       |                      | nutritional status of pregnant and lactating women: micronutrient deficiencies  |                       |              |                |              |             |            |
|                       | Hazard               | prevalence of anaemia among pregnant and lactating women in rural   |                       |              |                |              |             |            |
|                       |                      | % households with access to potable water   |                       |              |                |              |             |            |
|                       |                      | % households with access to sanitation  |                       |              |                |              |             |            |
| Vulnerability         | Coping capacity      | types of hazards affecting food access by relative importance (e.g. droughts, floods, pests, disease, degradation, etc)               |                       |              |                |              |             |            |
|                       |                      | location of hazards   |                       |              |                |              |             |            |
|                       |                      | timing/occurrence of hazards  |                       |              |                |              |             |            |
|                       | Hazard               | number of people affected   |                       |              |                |              |             |            |
|                       |                      | coping strategies by relative importance  |                       |              |                |              |             |            |

## Appendix 5: Community Food Security Profiling Maps: Livelihood Strategies and Food Security by Agro-Ecological Zone

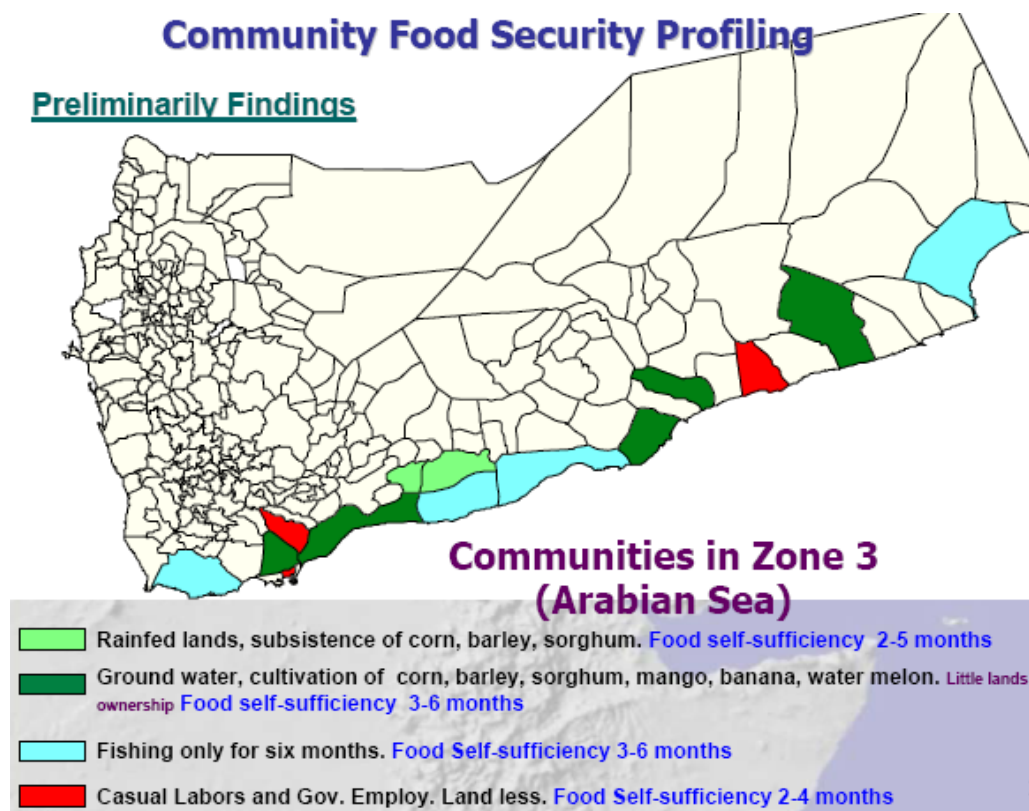
*Communities in Zone 1 (WFP 2003)*



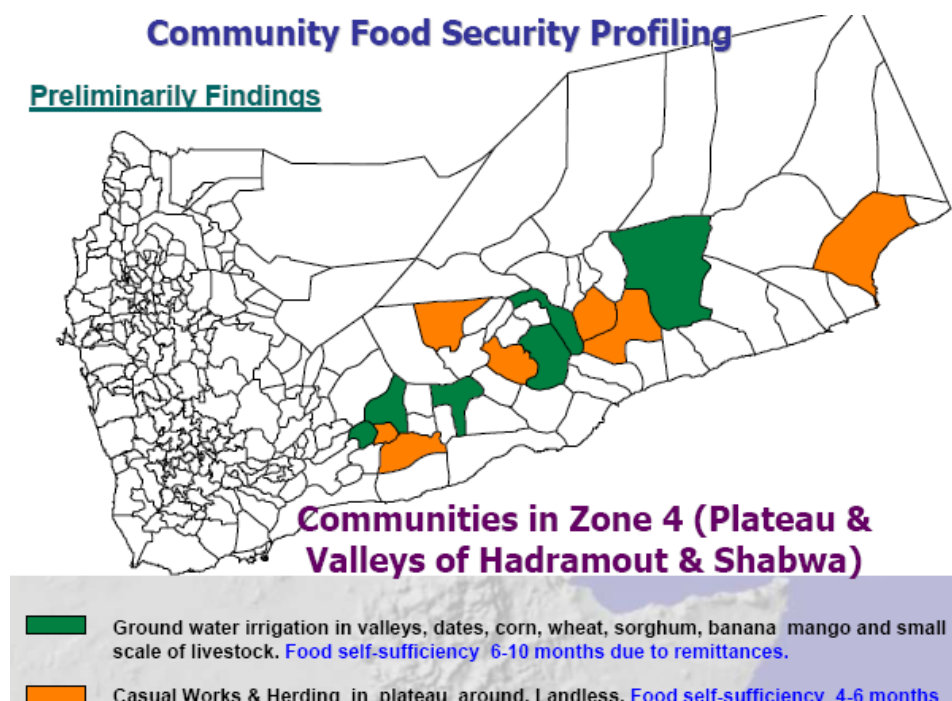
*Communities in Zone 2 (WFP 2003)*



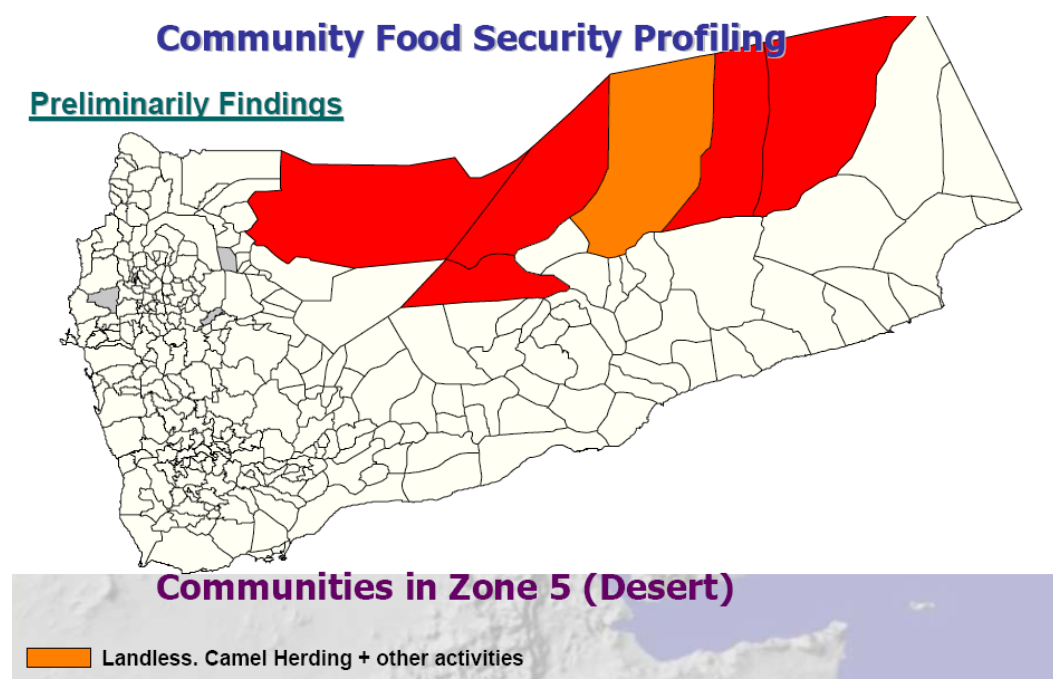
*Communities in Zone 3 (WFP 2003)*



*Communities in Zone 4 (WFP 2003)*



*Communities in Zone 5 (WFP 2003)*



## Appendix 6: Governorate Profiles: Food Security and Vulnerability Analysis

A range of food security and poverty indicators are compiled to create governorate food security profiles. The profiles include a wide set of indicators that are considered to contribute to household food security. A broader view of indicators is pertinent in the context of Yemen, where traditional nutritional indicators of food insecurity are not available at the governorate level. In absence of nutritional indicators, additional factors that affect household food security are included: employment, income, and agricultural indicators. The indicators that have been selected to create governorate profiles include:

| Indicators  | National Average       | Sources                                     |
|---|------------------------|---|
| Agro-ecological zone  |                        | WFP   |
| Area  | 527,970km <sup>2</sup> | TFYDP                                       |
| Number of Districts   | 333                    | TFYDP                                       |
| Population (Urban) 2007   | 6,256,462              |   |
| Population (Rural) 2007   | 15,282,533             |   |
| Population (Total) 2007   | 21,538,995             | CSO 2007                                    |
| % rural - total population  | 71                     |   |
| Food security situation   |                        |   |
| % food insecure households  | 21.70                  |   |
| % households with moderate hunger                                       | 13.80                  |   |
| % households with severe hunger   | 7.90                   | FIVIMS 2003                                 |
| % households vulnerable to food insecurity                              | 20.80                  |   |
| Rank of Governorate with food insecure households (out of 20, 1: worst) |                        |   |
| Poverty Situation   |                        |   |
| Total poverty rate (%)  | 34.78                  |   |
| National poverty rank (out of 21, 1: best)                              | out of 21              |   |
| Urban poverty rate (%)  | 20.70                  |   |
| Rural poverty rate (%)  | 40.10                  |   |
| Change in urban poverty rate 1998-2006 (%)                              | -11.58                 | Poverty Assessment 2007; HBS 1998 & 2005/06 |
| Change in rural poverty rate 1998-2006 (%)                              | -2.40                  |   |
| Number of food poor (HBS) in 1998                                       |                        |   |
| Number of food poor (HBS) in 2006                                       |                        |   |
| Per capita poverty line: urban (YR/month)                               | 5,667                  |   |
| Per capita poverty line: rural (YR/month)                               | 5,377                  |   |
| Net primary enrolment rate: girls                                       | 54                     |   |
| Net primary enrolment rate: boys  | 73                     |   |
| Net primary enrolment rate: total                                       | 64                     | 3rd DPPR 2006                               |
| Access to potable water   | 38.7                   |   |
| Access to sanitation  | 39.2                   |   |
| Doctors per 10,000 population (2004)                                    | 2.7                    |   |
| Unemployment as % of population >15                                     | 7.10                   |   |
| Employed in agriculture, % of total employed                            | 34.10                  |   |
| First rural income source   | 42.70                  | HBS 2005/06                                 |
| Second rural income source  | 9.10                   |   |
| Third rural income source   | 15.60                  |   |
| Cultivated area (% of total area)                                       | 2.90                   |   |
| Farmland/livestock ownership  | 43.70                  |   |
| Female land ownership   | 3.60                   | Agric Census 2003                           |
| Qat production (% of cultivated area)                                   | 10.09                  |   |

Profiles were created for each governorate, including an overview of general conditions, livelihood and food security, poverty and vulnerability. It provides a table with major food security indicators and maps to illustrate characteristics. The profiles are presented in Appendix 3. Results were assessed for a holistic perspective, while governorate classifications are based on secondary sources. The main indicator that was used to categorise governorates is the prevalence of food insecure households. Ideally, nutritional indicators would be used, but these are not available. Moreover, it has to be noted that the reliability of information is limited by the outdated nature of available secondary data. Food security information draws from the 2003 FIVIMS study (FAO 2004), which is outdated due to recent developments. Recent high food price scenarios (see section 6.1.1) have impacted household food security, while nationally representative information on the impacts is lacking. In the absence of better indicators, the 2003 prevalence of food insecure household was selected, as it seemed to best represent the given governorate<sup>4</sup>. The previous sections described the conditions characterising food security, based on data that is available. But what does this information mean in terms of the geographic areas where food insecurity and poverty indicators converge and where potential food insecurity problems may exist?

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<sup>4</sup> Food insecurity findings based on FIVIMS are contrasted with results of the poverty assessment.

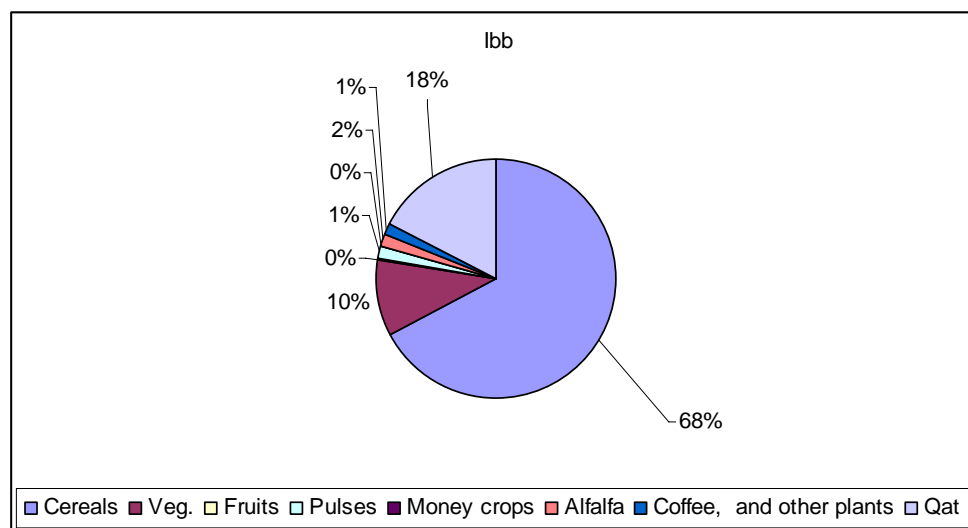
## 1. Ibb Governorate

| Governorate | Indicators  | Value                         | National Average        |
|-------------|---|-------------------------------|-------------------------|
| Ibb         | Agro-ecological zone  | Zone 1                        |                         |
|             | Area  | 5,344 km <sup>2</sup>         | 527,970 km <sup>2</sup> |
|             | Number of Districts   | 20                            | 333                     |
|             | Population (Urban) 2007   | 406,018                       | 6,256,462               |
|             | Population (Rural) 2007   | 1,900,901                     | 15,282,533              |
|             | Population (Total) 2007   | 2,306,919                     | 21,538,995              |
|             | % rural - total population  | 82.40%                        | 71%                     |
|             | Food Security Situation 2003  |                               |                         |
|             | % food insecure households  | 29.40%                        | 21.70%                  |
|             | % households with moderate hunger                                       | 17.20%                        | 13.80%                  |
|             | % households with severe hunger   | 12.20%                        | 7.90%                   |
|             | % households vulnerable to food insecurity                              | 25.63%                        | 20.80%                  |
|             | Rank of Governorate with food insecure households (out of 20, 1: worst) | 4                             |                         |
|             | Poverty Situation 2005/06   |                               |                         |
|             | Total poverty rate (%)  | 30.07%                        | 34.78%                  |
|             | National poverty rank (out of 21, 1: best)                              | 7                             |                         |
|             | Urban poverty rate (%)  | 16.36%                        | 20.70%                  |
|             | Rural poverty rate (%)  | 32.84%                        | 40.10%                  |
|             | Change in urban poverty rate 1998-2006 (%)                              | -11.60%                       | -11.58%                 |
|             | Change in rural poverty rate 1998-2006 (%)                              | -14.84%                       | -2.40%                  |
|             | Number of food poor (HBS) in 1998                                       | 13%                           |                         |
|             | Number of food poor (HBS) in 2006                                       | 8%                            |                         |
|             | Per capita poverty line: urban (YR/month)                               | 5.178                         | 5.667                   |
|             | Per capita poverty line: rural (YR/month)                               | 5.075                         | 5.377                   |
|             | Net primary enrolment rate: girls                                       | 63%                           | 54%                     |
|             | Net primary enrolment rate: boys  | 78%                           | 73%                     |
|             | Net primary enrolment: total  | 71%                           | 64%                     |
|             | Access to potable water   | 38.80%                        | 38.70%                  |
|             | Access to sanitation  | 37.10%                        | 39.20%                  |
|             | Doctors per 10,000 population (2004)                                    | 0.9                           | 2.7                     |
|             | Unemployment as % of population > 15                                    | 6.00%                         | 7.10%                   |
|             | Employed in agriculture, % of total employed                            | 32.80%                        | 34.10%                  |
|             | First rural income source   | Wages & salaries, 37.60%      | 42.70%                  |
|             | Second rural income source  | Self consumption & gifts, 17% | 15.60%                  |
|             | Third rural income source   | Cash & in-kind income, 16.90% | 9.10%                   |
|             | Cultivated area (% of total area)                                       | 9.60%                         | 2.90%                   |
|             | Farmland/livestock ownership  | 48.00%                        | 43.70%                  |
|             | Female land ownership   | 4.10%                         | 3.60%                   |
|             | Qat production (% of cultivated area)                                   | 18%                           | 10%                     |

Located in southern central Yemen is located in the Central and Northern Highlands Zone. Ibb with its high mountains and large valleys covers an area of 5,344km<sup>2</sup>, with a population exceeding 2.3 million. More than 80% of the population lives in rural areas. For decades, Ibb was nicknamed the 'Green Province' for possessing fertile lands and hillside terraces with abundant rainfall, springs and fountains around the year. Besides agriculture, Ibb has a high potential for tourism due to its breath taking panoramic scenery.

*Livelihood Characteristics, Food Security and Poverty*

Ibb has a cultivated area of 51,513 hectares, constituting 9.6% of total area. Agriculture contributes 32.8% to employment, but is not one of the major sources of rural income. Ibb produces a wide variety of cereals, coffee, sugar canes, fruits, vegetables and honey. Cereals account for nearly 70% of cultivated area, while qat occupies a large share with 18%. Nearly half of the population own land and livestock. Nearly 40% of the population has access to potable water and sanitation, placing the governorate around the national average.

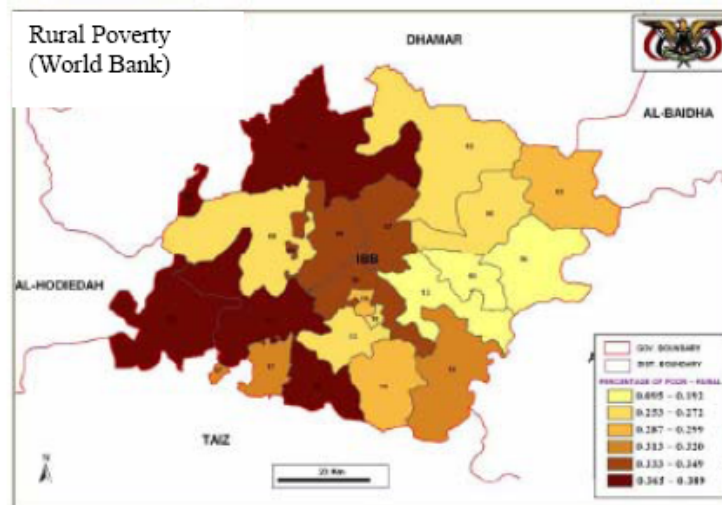
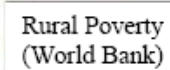
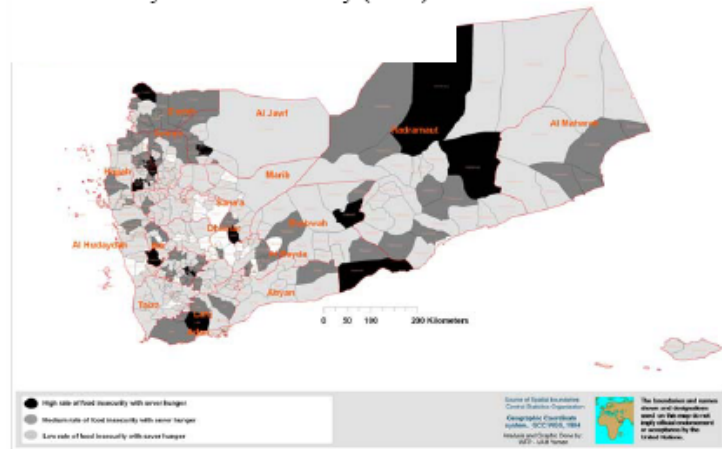
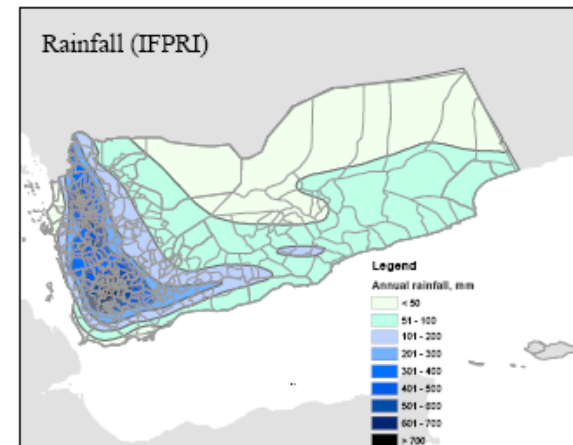
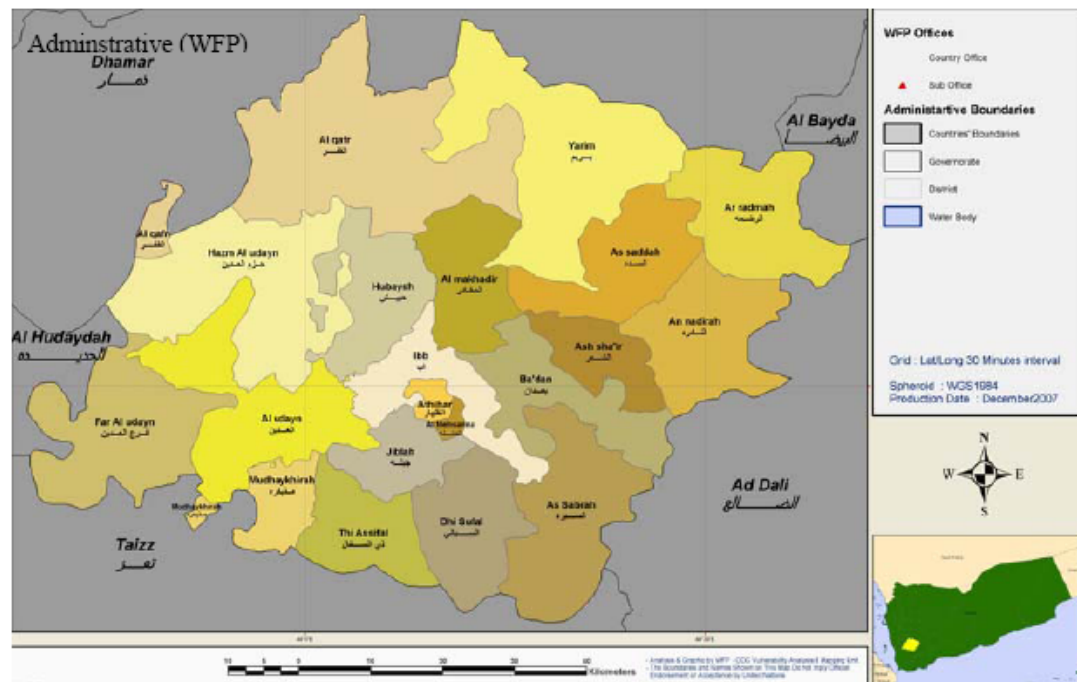


Household average annual income in Ibb amounts to 811,000YR, compared to the national average of 884,000YR. The main source of income is derived from wages and salaries (40%) followed by returns from private business. Ibb is the only governorate that is recorded with high levels of poverty and of food insecurity. 60.2% of households reported that at some point in the past year they could not afford to eat what they normally eat. This is significantly above national average (48%) of households being considered generally food insecure. A larger proportion of households are food insecure with severe hunger (12.2%) and vulnerable to food insecurity (25.6%), compared to nationwide figures. One quarter of Ibb households stated that they feared not having enough to eat at some point in the past year, and 31% reported that a household member skipped a meal and/or did not eat an entire day due to lack of food at some point in the past year. Ibb households have close to average rates of consumption in terms of both the quantity and diversity of food; virtually all consume carbohydrates in the form of bread, rice, and other cereals, 69% consume dairy, slightly more than average eat pulses (67.2%) and animal protein (76.4%), and 59% eat fruits or vegetables. Ibb belongs to the group of six governorates that have the highest proportion of generally food insecure households: in terms of definite food insecurity Ibb is placed 4<sup>th</sup> at the national level with a percentage of 29.4% (21.7% national). With respect to moderate and severe hunger, Ibb is placed 6<sup>th</sup> and 5<sup>th</sup> respectively with 17.2% (13.8% national) and 12.2% (7.9% national). In 3 districts, anthropometry (UNICEF 2003) indicates that 21.4% of children are severely underweight, while 48.2% are severely stunted, placing the governorate below average in child malnutrition.

### *Major Challenges and Strategic Outlook*

People from Ibb have for long been migrating outside of Yemen, especially to the USA and remittances are an important coping strategy. However, residents are not particularly successful in coping with food insecurity, considered the third worst at the national level. Ibb was not able to regain its 'Green Province' reputation due to the lack of adequate access to essential infrastructures. These constraints have limited the degree of private investment. The major development strategy in Ibb has been identified as tourism, as well as turning it into the primary 'food basket' of the country.

## WFP Yemen – Secondary Data Analysis on Food Security and Vulnerability



## 2. Sana'a City

| Governorate | Indicators  | Value                            | National Average        |
|-------------|---|----------------------------------|-------------------------|
| Sana'a City | Agro-ecological zone  | Zone 1                           |                         |
|             | Area  | 381 km <sup>2</sup>              | 527,970 km <sup>2</sup> |
|             | Number of Districts   | 10                               | 333                     |
|             | Population (Urban) 2007   | 1,960,412                        | 6,256,462               |
|             | Population (Rural) 2007   | 46,207                           | 15,282,533              |
|             | Population (Total) 2007   | 2,006,619                        | 21,538,995              |
|             | % rural - total population  | 2.30%                            | 71%                     |
|             | Food Security Situation 2003  |                                  |                         |
|             | % food insecure households  | 13.6%                            | 21.70%                  |
|             | % households with moderate hunger                                       | 5.5%                             | 13.80%                  |
|             | % households with severe hunger   | 2.3%                             | 7.90%                   |
|             | % households vulnerable to food insecurity                              | n. a.                            | 20.80%                  |
|             | Rank of Governorate with food insecure households (out of 20, 1: worst) | 20                               |                         |
|             | Poverty Situation 2005/06   |                                  |                         |
|             | Total poverty rate (%)  | 14.89%                           | 34.78%                  |
|             | National poverty rank (out of 21, 1: best)                              | 1                                |                         |
|             | Urban poverty rate (%)  | 14.98%                           | 20.70%                  |
|             | Rural poverty rate (%)  | 0.0%                             | 40.10%                  |
|             | Change in urban poverty rate 1998-2006 (%)                              | -16.22%                          | -11.58%                 |
|             | Change in rural poverty rate 1998-2006 (%)                              | ...                              | -2.40%                  |
|             | Number of food poor (HBS) in 1998                                       | n. a.                            |                         |
|             | Number of food poor (HBS) in 2006                                       | n. a.                            |                         |
|             | Per capita poverty line: urban (YR/month)                               | 6,009                            | 5.667                   |
|             | Per capita poverty line: rural (YR/month)                               | 6,197                            | 5.377                   |
|             | Net primary enrolment rate: girls                                       | 80%                              | 54%                     |
|             | Net primary enrolment rate: boys  | 83%                              | 73%                     |
|             | Net primary enrolment: total  | 82%                              | 64%                     |
|             | Access to potable water   | 65.00%                           | 38.70%                  |
|             | Access to sanitation  | 92.00%                           | 39.20%                  |
|             | Doctors per 10,000 population (2004)                                    | 9.5                              | 2.7                     |
|             | Unemployment as % of population > 15                                    | 8.3%                             | 7.10%                   |
|             | Employed in agriculture, % of total employed                            | 5.0%                             | 34.10%                  |
|             | First income source   | Wages & salaries, 40.6%          | 42.70%                  |
|             | Second income source  | Self consumption & gifts, 49.10% | 15.60%                  |
|             | Third income source   | Housing rent, 29.60%             | 9.10%                   |
|             | Cultivated area (% of total area)                                       | 22.90%                           | 2.90%                   |
|             | Farmland/livestock ownership  | 8.50%                            | 43.70%                  |
|             | Female land ownership   | 5.80%                            | 3.60%                   |
|             | Qat production (% of cultivated area)                                   | 15%                              | 10%                     |

Sana'a City is the political, administrative, cultural and historic capital of Yemen. The old city of Sana'a is a UNESCO World Heritage site. The city is located at 2,200 masl and occupies an area of 381km<sup>2</sup>. It has a population of nearly two million people in 2007 and is growing at a very fast rate of 5.5% annual population growth. Sana'a is considered as a major large market for both its population and surrounding governorates.

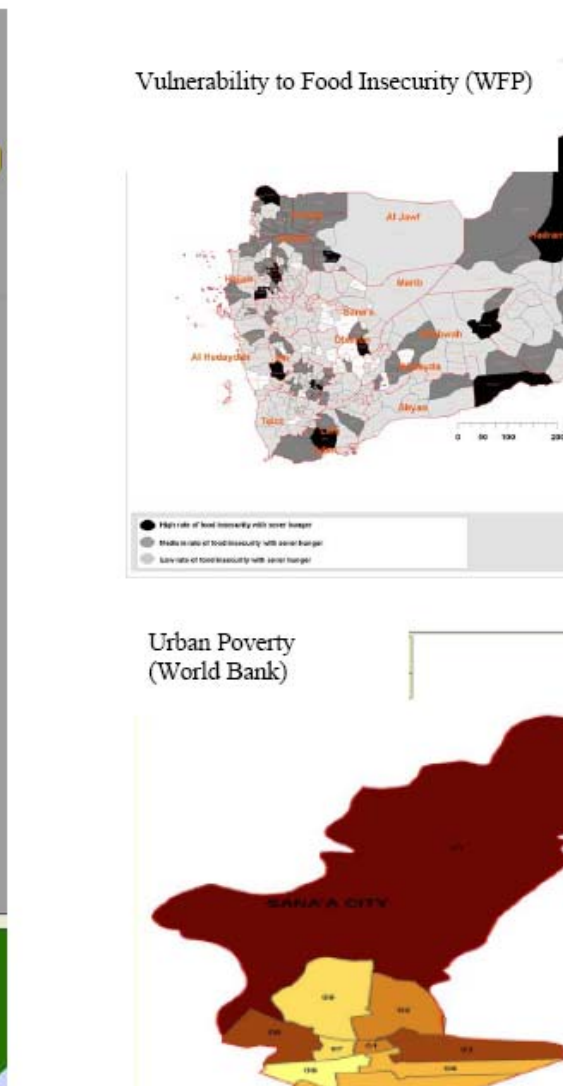
*Livelihood Characteristics, Food Security and Poverty*

The Capital lays on a mountainous valley surrounded by high mountains and benefits from two raining seasons in Spring and Summer with an average of 650 mm of rainfall per year. While a relatively large share of the total city area (over 22%) is cultivated, this contributes only minor to household food security. Nearly 98% of the population lives in the rural areas of this governorate. 65% and 92% have access to safe drinking water.

Household average annual income in Sana'a amounts to 1.5 million YR, as compared to the national average of 884,000 YR. The main source of income is derived from wages and salaries (40.6%) followed by returns from private business activities, whilst other cash and in-kind income resources come into third place. Households who rely on regular employment as their primary source of food are significantly less likely to be food insecure than households who depend on salaries from temporary employment. Sana'a City's large labour market for regular, stable, employment therefore likely contributes to the governorates comparatively favourable food security statistics. Sana'a City has comparatively lower rates of general and definite food insecurity. 27.4% of households stated that they could not eat what they normally eat, nearly half the national average. Additionally, only 13.6% of households were considered vulnerable to food insecurity, and 7.8% were food insecure with hunger. In fact, Sana'a City has the lowest rates of food insecurity with hunger. Sana'a City also ranks favourably in terms of the number of meals eaten and the diversity of food groups consumed. Households consume above average amounts of dairy, pulses, fruits and vegetables, and animal protein. Sana'a City ranked the highest in the country for the percentage of households consuming four to five food groups on a regular basis (95.7%, compared to 62.8% nationwide).

### *Major Challenges and Strategic Outlook*

Since unification, Sana'a City is witnessing a rapid but rather uncontrolled urbanisation phenomena coupled with high population density and in-migration, thus posing immense pressures on infrastructures and public services. It also faces significant structural challenges of poverty and high unemployment rates. Recent reports warn of major water shortages in the next decade, as the Sana'a water basin is not far from being depleted. Air and noise pollutions are well noticed in the capital due to the heavy traffic volume. The qat chewing habit is widely spread amongst the whole population and by far supersedes other expenditures on food and nutrition. The strategic outlook is focusing on to enhance and develop its historic and cultural potentials to become a major tourist city.



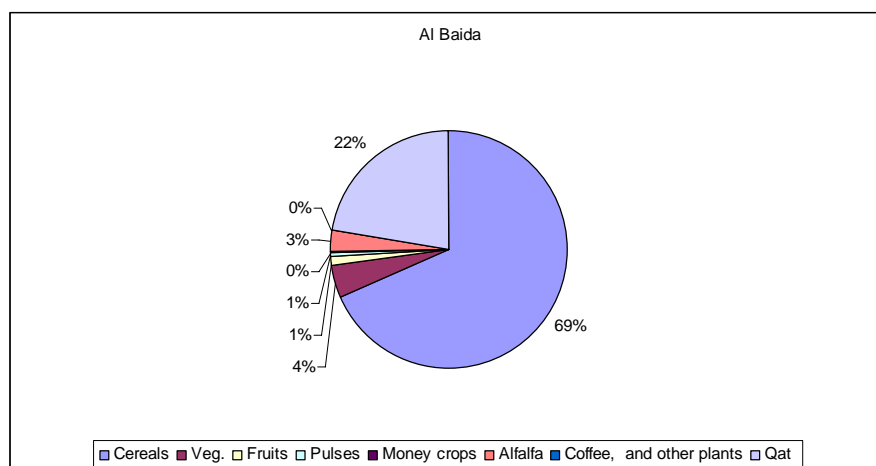
### 3. Al-Baidha Governorate

| Governorate | Indicators  | Value                           | National Average        |
|-------------|---|---------------------------------|-------------------------|
| Al-Baidha   | Agro-ecological zone  | Zone 1                          |                         |
|             | Area  | 9,271 km <sup>2</sup>           | 527,970 km <sup>2</sup> |
|             | Number of Districts   | 20                              | 333                     |
|             | Population (Urban) 2007   | 116,741                         | 6,256,462               |
|             | Population (Rural) 2007   | 507,052                         | 15,282,533              |
|             | Population (Total) 2007   | 623,793                         | 21,538,995              |
|             | % rural - total population  | 81.3%                           | 71%                     |
|             | Food Security Situation 2003  |                                 |                         |
|             | % food insecure households  | 24.50%                          | 21.70%                  |
|             | % households with moderate hunger                                       | 11.60%                          | 13.80%                  |
|             | % households with severe hunger   | 12.90%                          | 7.90%                   |
|             | % households vulnerable to food insecurity                              | 11.10%                          | 20.80%                  |
|             | Rank of Governorate with food insecure households (out of 20, 1: worst) | 7                               |                         |
|             | Poverty Situation 2005/06   |                                 |                         |
|             | Total poverty rate (%)  | 51.85%                          | 34.78%                  |
|             | National poverty rank (out of 21, 1: best)                              | 19                              |                         |
|             | Urban poverty rate (%)  | 16.72%                          | 20.70%                  |
|             | Rural poverty rate (%)  | 59.76%                          | 40.10%                  |
|             | Change in urban poverty rate 1998-2006 (%)                              | -4.12%                          | -11.58%                 |
|             | Change in rural poverty rate 1998-2006 (%)                              | 13.68%                          | -2.40%                  |
|             | Number of food poor (HBS) in 1998                                       | 2.50%                           |                         |
|             | Number of food poor (HBS) in 2006                                       | 6.50%                           |                         |
|             | Per capita poverty line: urban (YR/month)                               | 5.523                           | 5.667                   |
|             | Per capita poverty line: rural (YR/month)                               | 5.465                           | 5.377                   |
|             | Net primary enrolment rate: girls                                       | 41%                             | 54%                     |
|             | Net primary enrolment rate: boys  | 69%                             | 73%                     |
|             | Net primary enrolment: total  | 56%                             | 64%                     |
|             | Access to potable water   | 45.50%                          | 38.70%                  |
|             | Access to sanitation  | 37.10%                          | 39.20%                  |
|             | Doctors per 10,000 population (2004)                                    | 1.2                             | 2.7                     |
|             | Unemployment as % of population > 15                                    | 5.00%                           | 7.10%                   |
|             | Employed in agriculture, % of total employed                            | 26.47%                          | 34.10%                  |
|             | First rural income source   | Wages & salaries, 57.60%        | 42.70%                  |
|             | Second rural income source  | Agriculture & Livestock, 14.70% | 15.60%                  |
|             | Third rural income source   | Cash & in-kind income, 9.10%    | 9.10%                   |
|             | Cultivated area (% of total area)                                       | 7.50%                           | 2.90%                   |
|             | Farmland/livestock ownership  | 57.60%                          | 43.70%                  |
|             | Female land ownership   | 1.80%                           | 3.60%                   |
|             | Qat production (% of cultivated area)                                   | 22%                             | 10%                     |

Al-Baidha is located in the central-southern inland, within the Central and Northern Highlands Zone. It is surrounded by the governorates of Addaleh, Lahej, Abyan, Mareb, Shabwa, Sana'a, Dhamar, and Ibb, all of which are classified as food insecure. Al-Baidha is extended over a surface of 9,271km<sup>2</sup> and encompasses 20 districts with a total population of nearly 624,000 in 2007.

*Livelihood Characteristics, Food Security and Poverty*

Agriculture is considered the main economic activity of Al-Baidha governorate, which is renowned for growing cereals, vegetables and cash crops. Agricultural production is generally rainfed or fed by flash floods, but few dams are available to gather rainfall and floods from surrounding hills and mountains. In Al-Baidha 33,419 hectares are cultivated, out of potentially 69,520 hectares of cultivable land, forming 7.5% of the governorate area. Cereals occupy the bulk of the cultivated area, while qat occupies the second largest area (22%). Access to drinking water is available to 45.5% of Al-Baidha population, compared to the national average of 38.7%.

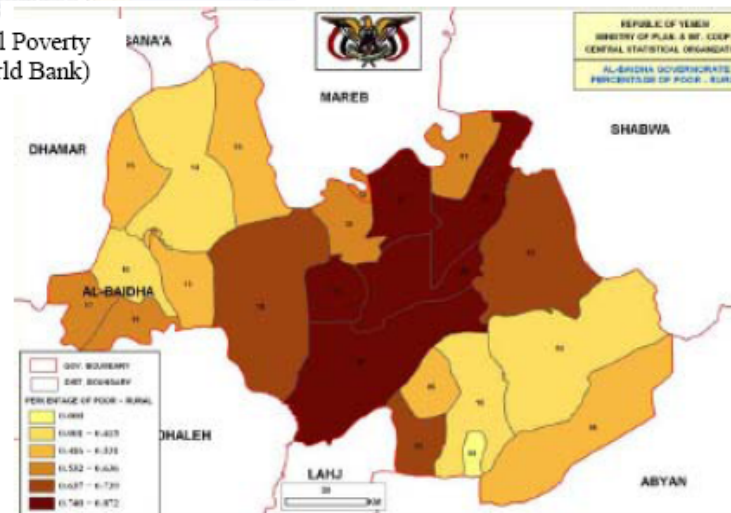
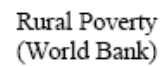
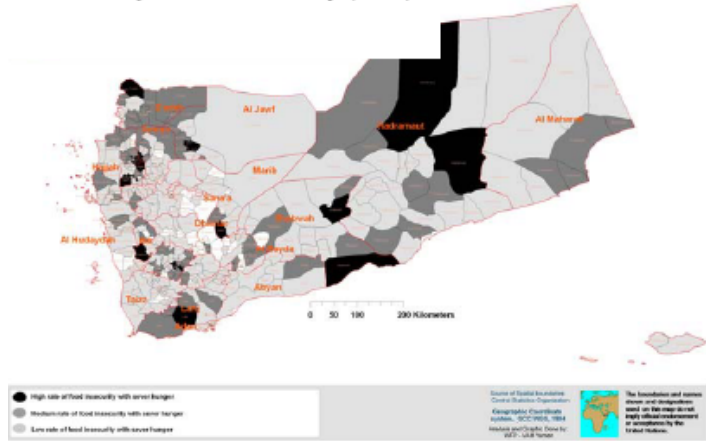
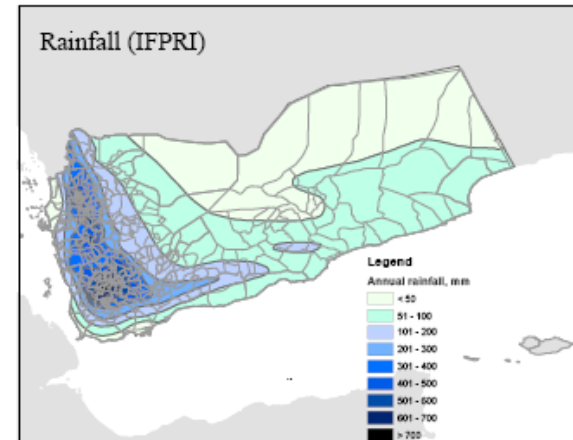
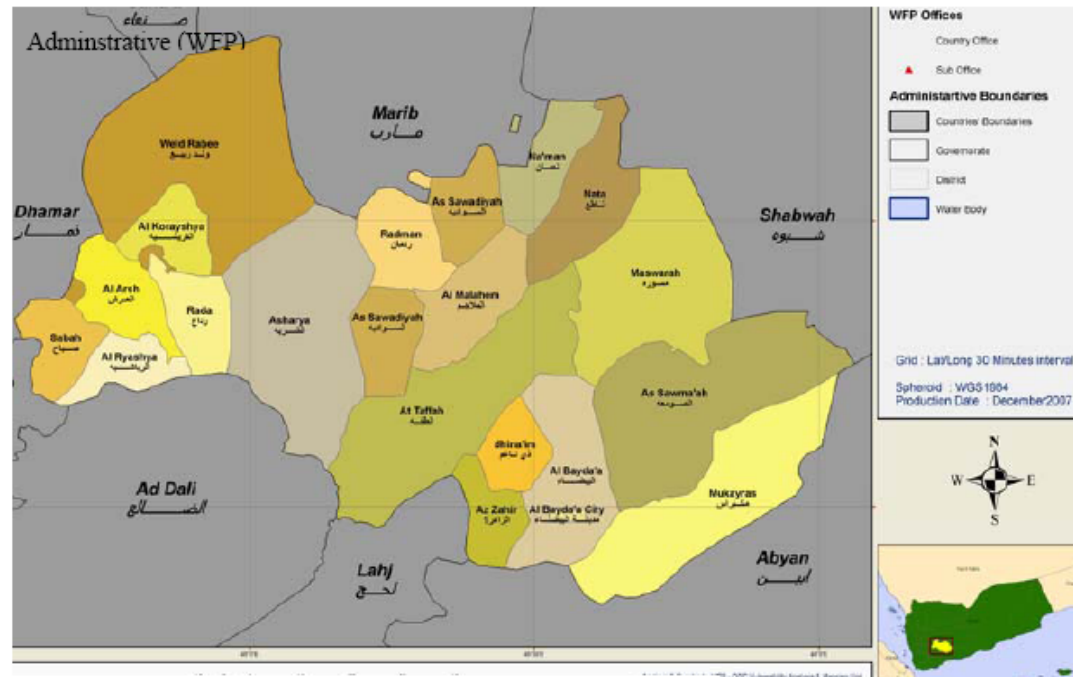


Household average annual income in Al-Baidha amounts to nearly 941,000 YR, as compared to the national average of 884,000 YR. The main source of income is derived from wages and salaries (nearly 58%), followed by returns from private business activities, whilst other cash and in-kind income resources come into third place. Nearly 15.5% of households in Al-Baidha rely on remittances as primary source of purchasing food which is three times the national average. Nearly 42% of households in Al-Baidha reported that they were generally food insecure; that is, that they were not able to eat what they normally eat in the past year. The Poverty Assessment reports higher than average poverty rates as a result of high food prices, particularly for rural areas, where nearly 60% are considered poor. Al-Baidha households also had lower than average rates of vulnerability and food insecurity with hunger. When food insecurity is disaggregated into households with moderate and severe hunger, discrepancies emerge. While Al-Baidha does have comparatively lower rates of general and definite food insecurity overall, it has significantly higher rates of food insecurity with severe hunger compared to the country as a whole. This latter is estimated at 12.9% and placing Al-Baidha in the 4<sup>th</sup> place of the group of top governorates that have recorded the highest proportion of severe hunger. Nearly 14% of households reported that one or more household members had gone an entire day without eating due to lack of food at some point in the past year, compared with the national average of 7.9%. Al-Baidha households have above average consumption rates of all food groups, except for dairy (51.1% compared with 73.1% nationwide). The majority of households consume four to five food groups on a regular basis (66.6%), slightly above the average of 62.8%.

### *Major Challenges and Strategic Outlook*

Al-Baidha has a low population density of 67 people/km<sup>2</sup>. It lacks major infrastructures and public utilities. Road accessibility within and into this governorate is rather basic. Al-Baidha has been facing droughts for the past ten years and use of groundwater pumping became alarming at the local and surrounding areas. Its future outlook focuses on preserving its natural and water resources, developing its basic infrastructures with emphasis on water harvesting structures so that agricultural production and food security are well sustained.

## WFP Yemen – Secondary Data Analysis on Food Security and Vulnerability



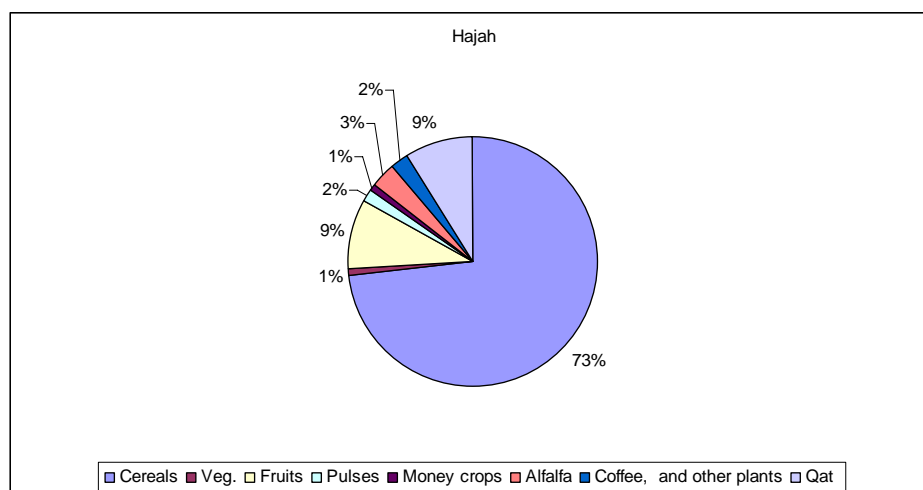
#### 4. Hajja Governorate

| Governorate | Indicators  | Value                            | National Average        |
|-------------|---|----------------------------------|-------------------------|
| Hajja       | Agro-ecological zone  | Zones 1 & 2                      |                         |
|             | Area  | 8,306 km <sup>2</sup>            | 527,970 km <sup>2</sup> |
|             | Number of Districts   | 31                               | 333                     |
|             | Population (Urban) 2007   | 152,718                          | 6,256,462               |
|             | Population (Rural) 2007   | 1,466,140                        | 15,282,533              |
|             | Population (Total) 2007   | 1,618,858                        | 21,538,995              |
|             | % rural - total population  | 91%                              | 71%                     |
|             | Food Security Situation 2003  |                                  |                         |
|             | % food insecure households  | 36%                              | 21.70%                  |
|             | % households with moderate hunger                                       | 19.50%                           | 13.80%                  |
|             | % households with severe hunger   | 16.50%                           | 7.90%                   |
|             | % households vulnerable to food insecurity                              | 24.30%                           | 20.80%                  |
|             | Rank of Governorate with food insecure households (out of 20, 1: worst) | 3                                |                         |
|             | Poverty Situation 2005/06   |                                  |                         |
|             | Total poverty rate (%)  | 47.53%                           | 34.78%                  |
|             | National poverty rank (out of 21, 1: best)                              | 17                               |                         |
|             | Urban poverty rate (%)  | 20.90%                           | 20.70%                  |
|             | Rural poverty rate (%)  | 50.02%                           | 40.10%                  |
|             | Change in urban poverty rate 1998-2006 (%)                              | -15.72%                          | -11.58%                 |
|             | Change in rural poverty rate 1998-2006 (%)                              | -7.96%                           | -2.40%                  |
|             | Number of food poor (HBS) in 1998                                       | 7%                               |                         |
|             | Number of food poor (HBS) in 2006                                       | 14.50%                           |                         |
|             | Per capita poverty line: urban (YR/month)                               | 5.626                            | 5.667                   |
|             | Per capita poverty line: rural (YR/month)                               | 5.401                            | 5.377                   |
|             | Net primary enrolment rate: girls                                       | 35%                              | 54%                     |
|             | Net primary enrolment rate: boys  | 62%                              | 73%                     |
|             | Net primary enrolment: total  | 49%                              | 64%                     |
|             | Access to potable water   | 17.10%                           | 38.70%                  |
|             | Access to sanitation  | 9.30%                            | 39.20%                  |
|             | Doctors per 10,000 population (2004)                                    | 0.7                              | 2.7                     |
|             | Unemployment as % of population > 15                                    | 6.20%                            | 7.10%                   |
|             | Employed in agriculture, % of total employed                            | 53%                              | 34.10%                  |
|             | First rural income source   | Wages & salaries, 64.10%         | 42.70%                  |
|             | Second rural income source  | Agriculture & Livestock, 12.50%  | 15.60%                  |
|             | Third rural income source   | Self consumption & gifts, 11.10% | 9.10%                   |
|             | Cultivated area (% of total area)                                       | 16.70%                           | 2.90%                   |
|             | Farmland/livestock ownership  | 46.70%                           | 43.70%                  |
|             | Female land ownership   | 1.70%                            | 3.60%                   |
|             | Qat production (% of cultivated area)                                   | 9%                               | 10%                     |

Hajja is the northwestern most Yemen and surrounded by high mountains reaching 3,000 masl. It covers the Central and Northern Highland as well as The Tihama Plain Zones. It extends to the north to border Saudi Arabia and on to the west to reach the Red Sea with a coastal line of 128km, in addition to 34 islands. Mining and queries are potential areas for economic growth in this governorate with high endowment in natural resources. Hajja is also well known for its historic and therapeutic tourism potentials. It Hajja covers a surface of 8,306 km<sup>2</sup>. From a total population of 1.6 million, 91% live in rural areas.

### *Livelihood Characteristics, Food Security and Poverty*

Hajja is considered one of the most important agriculture areas of Yemen with its mountain terraces and green valleys. Water is abundant and its land is highly fertile. Despite its islands and wealthy coastal line, fisheries in Hajja did not exceed 1,500 tons in 2005 which represents only 0.63% of Yemen's total fish production. 114,088 hectares are cultivated in Hajja, nearly 18% of its land area, are large share in national comparison. The largest area, 73% is cultivated with cereals, while qat and fruits come in second with 9% each. More than half of the population is employed in agriculture, while more than 12% of rural incomes are derived from this sector. Accessibility to drinking water is available to only 17.1% of Hajja population as compared to the national average of 38.7%.

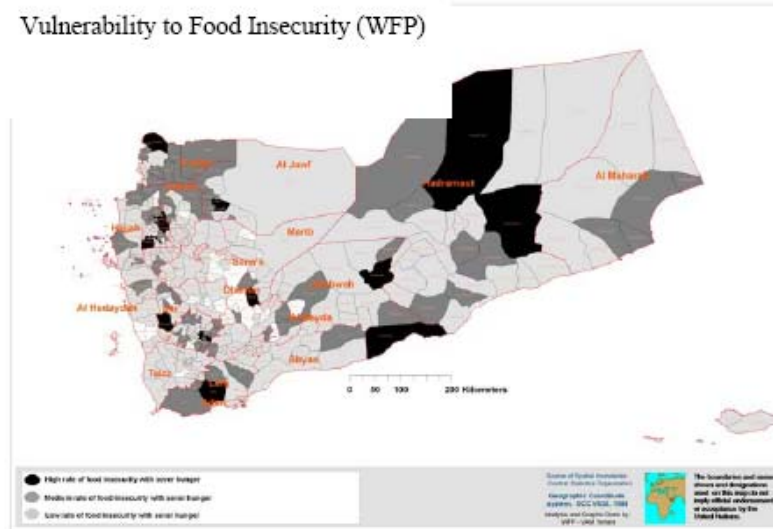


Household average annual income in Hajja amounts to nearly 743,000 YR (national average 884,000 YR). By far the main source of income are wages and salaries (64.1%) followed by returns from agriculture and animal production whilst values from self consumption and gifts come into third place. Compared to the national level, food insecurity is particularly prevalent in Hajja with the second highest rate after Sa'ada. Around 66% percent of households reported that at some point in the past year, they were not able to eat what they normally eat. Additionally, more than a quarter were vulnerable to food insecurity. Over one third of all households were definitely food insecure, and a striking 18% were found to be with severe hunger. Large intra-governorate differences occur in Hajja with 14.2% of households suffering from moderate hunger in Mustaba district to 95.3% in Bani al-Awwam district. Proportionally fewer households in Hajja consume dairy, pulses, and animal protein. However, at 83%, Hajja does have one of the highest rates of fruit and vegetable consumption in the country. Slightly more than half of all households eat four to five food groups. Hajja belongs to the group of six governorates that have recorded the highest proportion of generally food insecure households: In moderate and severe food insecure household term, Hajja is placed 3<sup>rd</sup> at the national level with a high percentage of 36.0% (21.7% national level). In moderate hunger terms, Hajja is also placed 3<sup>rd</sup> with a percentage of 19.5% (13.8% national level). However, in severe hunger terms, Hajja is placed 2<sup>nd</sup> at the national level with 16.5% (7.9% national level).

Within 3 districts of Hajja surveyed by UNICEF in 2003, malnutrition in children was widespread, with 20.6% of children being underweight and 27.7% stunted. In national comparison, these are the least favourable results nationwide. Relatively favourable results for this governorate are limited to some indicators concerning child care, breastfeeding, and maternal care.

### *Major Challenges and Strategic Outlook*

Although Hajja is bordering the conflict zone of Sa'ada, security within it is well maintained. Its promising sectors such as fisheries, tourism, ports facilities, virgin islands, and natural resources are generally underdeveloped and underutilized. Hajja with its high population density of 193 person/km<sup>2</sup> (nearly five times the national average) and population being scattered in their majority in mountainous rural areas, will require immense investments in all types of basic infrastructures and human development aspects. Hajja is considered a high potential area which could secure food for its population and those of the surrounding governorates, if proper management and utilization of its wealthy sea and land are put in place. At the same time, investment in basic infrastructure along with developing its human resource capacity, will certainly enable Hajja to play a major role in national economic growth. Hajja could also develop into a major transit and trade hub with neighbouring Saudi Arabia and beyond, by sea and land.



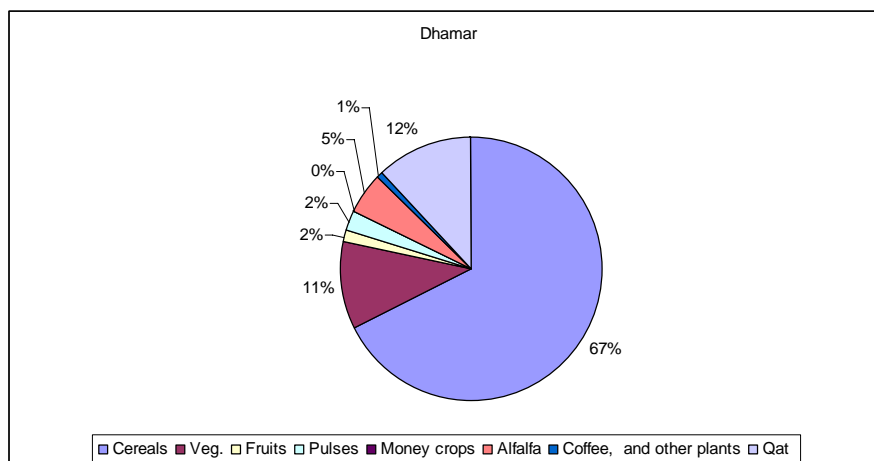
## 5. Dhamar Governorate

| Governorate | Indicators  | Value                            | National Average        |
|-------------|---|----------------------------------|-------------------------|
| Dhamar      | Agro-ecological zone  | Zone 1                           |                         |
|             | Area  | 7,586 km <sup>2</sup>            | 527,970 km <sup>2</sup> |
|             | Number of Districts   | 12                               | 333                     |
|             | Population (Urban) 2007   | 203,445                          | 6,256,462               |
|             | Population (Rural) 2007   | 1,251,835                        | 15,282,533              |
|             | Population (Total) 2007   | 1,455,280                        | 21,538,995              |
|             | % rural - total population  | 86.00%                           | 71%                     |
|             | Food Security Situation 2003  |                                  |                         |
|             | % food insecure households  | 19.20%                           | 21.70%                  |
|             | % households with moderate hunger                                       | 11.50%                           | 13.80%                  |
|             | % households with severe hunger   | 7.70%                            | 7.90%                   |
|             | % households vulnerable to food insecurity                              | 24.60%                           | 20.80%                  |
|             | Rank of Governorate with food insecure households (out of 20, 1: worst) | 11                               |                         |
|             | Poverty Situation 2005/06   |                                  |                         |
|             | Total poverty rate (%)  | 25.84%                           | 34.78%                  |
|             | National poverty rank (out of 21, 1: best)                              | 5                                |                         |
|             | Urban poverty rate (%)  | 29.73%                           | 20.70%                  |
|             | Rural poverty rate (%)  | 25.28%                           | 40.10%                  |
|             | Change in urban poverty rate 1998-2006 (%)                              | -15.72%                          | -11.58%                 |
|             | Change in rural poverty rate 1998-2006 (%)                              | -7.96%                           | -2.40%                  |
|             | Number of food poor (HBS) in 1998                                       | 7%                               |                         |
|             | Number of food poor (HBS) in 2006                                       | 5%                               |                         |
|             | Per capita poverty line: urban (YR/month)                               | 5.737                            | 5.667                   |
|             | Per capita poverty line: rural (YR/month)                               | 5.654                            | 5.377                   |
|             | Net primary enrolment rate: girls                                       | 38%                              | 54%                     |
|             | Net primary enrolment rate: boys  | 75%                              | 73%                     |
|             | Net primary enrolment: total  | 58%                              | 64%                     |
|             | Access to potable water   | 28.60%                           | 38.70%                  |
|             | Access to sanitation  | 24.40%                           | 39.20%                  |
|             | Doctors per 10,000 population (2004)                                    | 0.6                              | 2.7                     |
|             | Unemployment as % of population > 15                                    | 4.50%                            | 7.10%                   |
|             | Employed in agriculture, % of total employed                            | 35%                              | 34.10%                  |
|             | First rural income source   | Wages & salaries, 33.90%         | 42.70%                  |
|             | Second rural income source  | Self-consumption & gifts, 27.30% | 15.60%                  |
|             | Third rural income source   | Private business, 14.20%         | 9.10%                   |
|             | Cultivated area (% of total area)                                       | 13.20%                           | 2.90%                   |
|             | Farmland/livestock ownership  | 64.80%                           | 43.70%                  |
|             | Female land ownership   | 3.50%                            | 3.60%                   |
|             | Qat production (% of cultivated area)                                   | 12%                              | 10%                     |

Dhamar governorate is located in central Yemen, 100km south of Sana'a Governorate. It is part of the Central and Northern Highland Zone. It is surrounded by the governorates of Sana'a, Rayma, Hodeida, Ibb and Al-Baidha. Dhamar occupies of 7,586km<sup>2</sup> and has an estimated population of 1.5 million in 2007. It is well known for its historic sites with abundant natural and volcanic water resources and thermal baths. Mines and queries are the promising economic sectors in the governorate. `Otoma'area in Dhamar is considered the largest protected natural reserve in Yemen.

*Livelihood Characteristics, Food Security and Poverty*

The governorate has a large share of cultivated area (more than 13%) and agriculture in Dhamar is largely rainfed during the summer season. Irrigation is becoming more widespread, posing a significant threat through overutilization of groundwater resources. 67% of the cultivated land are under cereal production, while qat accounts for 12%. Access to drinking water is available to 28.6% of the population, compared to the national average of 38.7%.

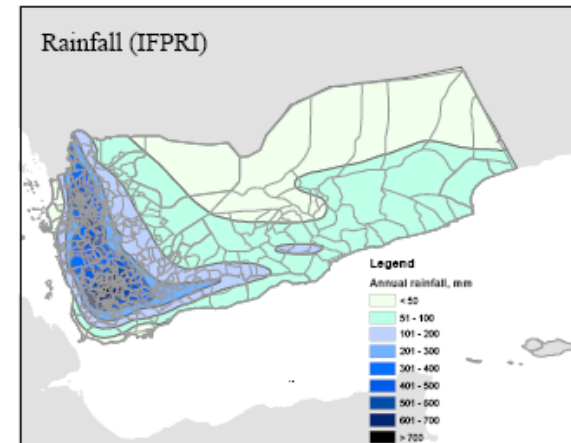
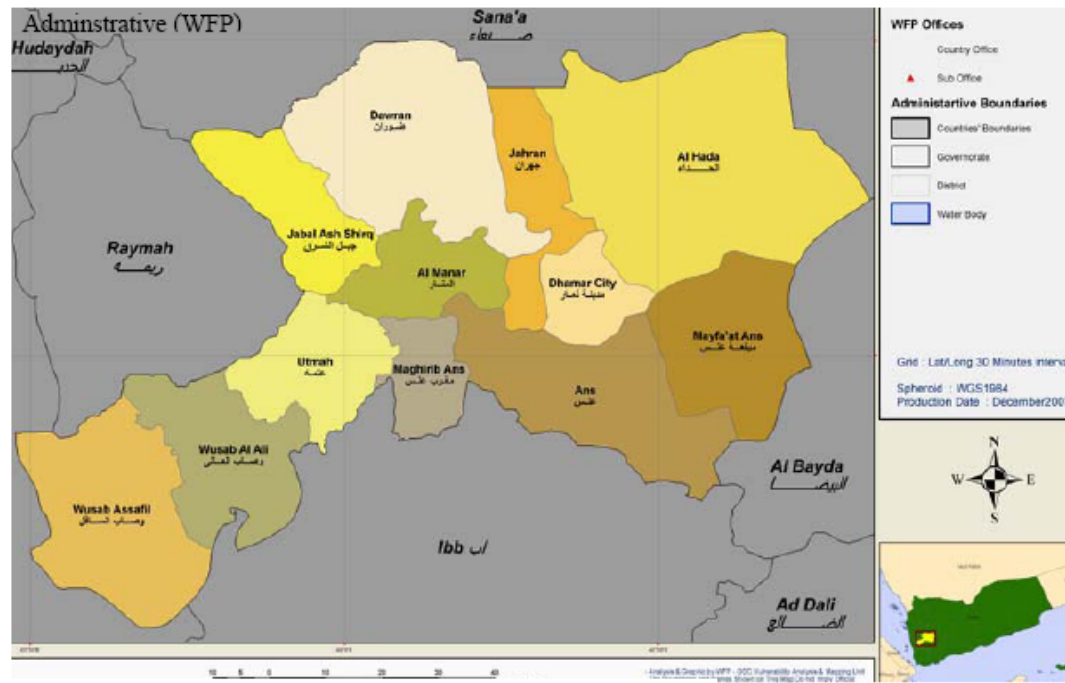


Household average annual income in Dhamar amounts to nearly 830,000 YR (national: 884,000 YR). The main source of income is derived from wages and salaries followed by self-consumption and returns from private businesses. Dhamari households' rates of general food insecurity are similar to national averages. Around 48% of households reported that at some point in the past year they could not afford to eat what they normally eat. A slightly larger percentage of households are vulnerable to food insecurity (26%) in comparison to all households (22%). However, Dhamar has a slightly lower than average proportion of households that are food insecure with hunger (20%). Dhamar has only small variations from national averages in terms of the types of food consumed. However, when examining the number of food groups consumed on a regular basis, responses indicate that households do have a less varied diet than the average. Slightly less than the average regularly consume pulses (50.2%), fruits or vegetables (45.2%), and animal protein (52.4%), and slightly more consume dairy products (84.6%). Less than half eat four to five food groups regularly (44.5%), and more than a quarter (twice national average) eats only two food groups a day.

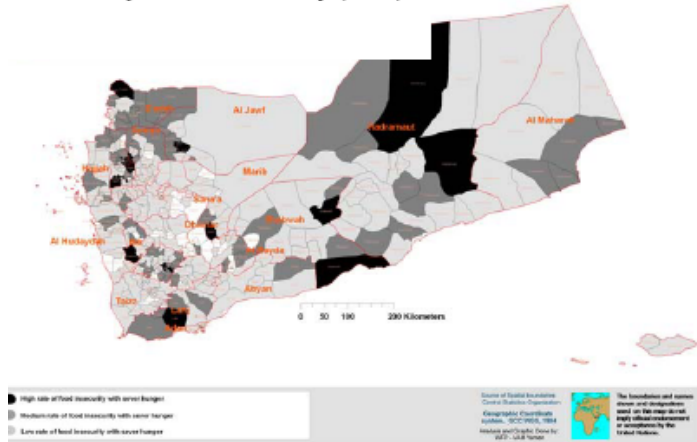
#### *Major Challenges and Strategic Outlook*

Dhamar is generally secure and stable but certainly lacks of basic infrastructures and public utilities, especially in its rural areas where 86% of its population reside. Water depletion is one of major challenges. The other is rapid urbanisation, which is affecting its agricultural areas, where houses and buildings are randomly constructed. Poverty in Dhamar is well noticed, as children begging in the streets are many. For Dhamar to be able to exploit its natural and promising sectors, many isolated districts and remote areas need to be brought into the development process. Overall, mining, quarrying, tourism and agro-business present important potentials for Dhamar to reach its strategic goals.

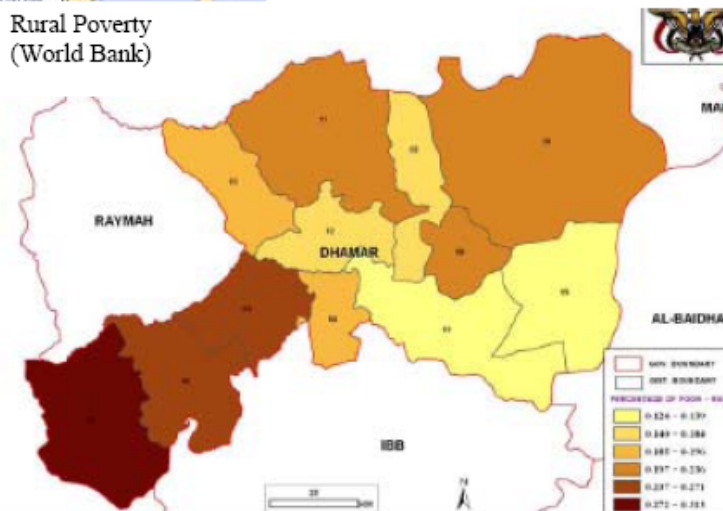
# WFP Yemen – Secondary Data Analysis on Food Security and Vulnerability



Vulnerability to Food Insecurity (WFP)



Rural Poverty (World Bank)



## 6. Sa'ada Governorate

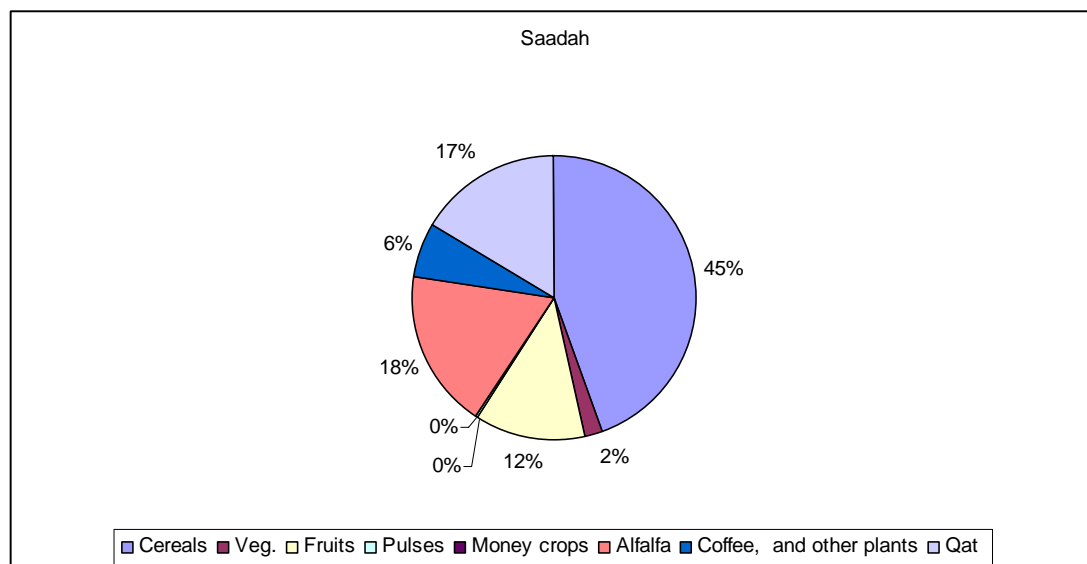
| Governorate | Indicators  | Value                            | National Average        |
|-------------|---|----------------------------------|-------------------------|
| Sa'ada      | Agro-ecological zone  | Zone 1 & 5                       |                         |
|             | Area  | 12,368 km <sup>2</sup>           | 527,970 km <sup>2</sup> |
|             | Number of Districts   | 14                               | 333                     |
|             | Population (Urban) 2007   | 118,526                          | 6,256,462               |
|             | Population (Rural) 2007   | 651,249                          | 15,282,533              |
|             | Population (Total) 2007   | 769,775                          | 21,538,995              |
|             | % rural - total population  | 84.60%                           | 71%                     |
|             | Food Security Situation 2003  |                                  |                         |
|             | % food insecure households  | 39.90%                           | 21.70%                  |
|             | % households with moderate hunger                                       | 20.90%                           | 13.80%                  |
|             | % households with severe hunger   | 19%                              | 7.90%                   |
|             | % households vulnerable to food insecurity                              | 25%                              | 20.80%                  |
|             | Rank of Governorate with food insecure households (out of 20, 1: worst) | 2                                |                         |
|             | Poverty Situation 2005/06   |                                  |                         |
|             | Total poverty rate (%)  | 16.55%                           | 34.78%                  |
|             | National poverty rank (out of 21, 1: best)                              | 3                                |                         |
|             | Urban poverty rate (%)  | 18.18%                           | 20.70%                  |
|             | Rural poverty rate (%)  | 16.23%                           | 40.10%                  |
|             | Change in urban poverty rate 1998-2006 (%)                              | 1.22%                            | -11.58%                 |
|             | Change in rural poverty rate 1998-2006 (%)                              | 8.32%                            | -2.40%                  |
|             | Number of food poor (HBS) in 1998                                       | 2.50%                            |                         |
|             | Number of food poor (HBS) in 2006                                       | 1%                               |                         |
|             | Per capita poverty line: urban (YR/month)                               | 5.136                            | 5.667                   |
|             | Per capita poverty line: rural (YR/month)                               | 5.111                            | 5.377                   |
|             | Net primary enrolment rate: girls                                       | 30%                              | 54%                     |
|             | Net primary enrolment rate: boys  | 61%                              | 73%                     |
|             | Net primary enrolment: total  | 46%                              | 64%                     |
|             | Access to potable water   | 16.10%                           | 38.70%                  |
|             | Access to sanitation  | 16.70%                           | 39.20%                  |
|             | Doctors per 10,000 population (2004)                                    | 0.1                              | 2.7                     |
|             | Unemployment as % of population > 15                                    | 5.80%                            | 7.10%                   |
|             | Employed in agriculture, % of total employed                            | 50%                              | 34.10%                  |
|             | First rural income source   | Wages & salaries, 29.30%         | 42.70%                  |
|             | Second rural income source  | Private business, 24.60%         | 15.60%                  |
|             | Third rural income source   | Self consumption & gifts, 22.70% | 9.10%                   |
|             | Cultivated area (% of total area)                                       | 3.30%                            | 2.90%                   |
|             | Farmland/livestock ownership  | 64.20%                           | 43.70%                  |
|             | Female land ownership   | 1.50%                            | 3.60%                   |
|             | Qat production (% of cultivated area)                                   | 17%                              | 10%                     |

Sa'ada governorate is located in the northwestern part of Yemen, bordering Saudi Arabia. It occupies an area of 12,368 km<sup>2</sup> with a population of 770,000 in 2007 of which 85% live in rural areas. Since 2004 Sa'ada is riddled by war, leaving more than 130,000 people displaced (see SECTION for detailed description of the conflict and its impacts).

### *Livelihood Characteristics, Food Security and Poverty*

Sa'ada possesses highly productive arable lands, terraces and valleys. It is considered one of the important 'food baskets' of Yemen. However, conflict has severely affected

economic activity and its potential remains to be exploited. Sa'ada's economy relies largely on agriculture and livestock and, to a lesser degree on remittances from migrating workers. Rainfed agriculture takes place in the summer season. Sa'ada has 40,722 hectares of cultivable land, of which around three-quarters are currently cultivated – mainly by cereals (45%), cash crops (18%) and qat (17%). Climate change has prompted farmers to revitalise irrigation systems, thus significantly contributing to groundwater depletion in the Sa'ada water basin. Access to drinking water is available only to 16.1% of Sa'ada population as compared to the national average of 38.7%.

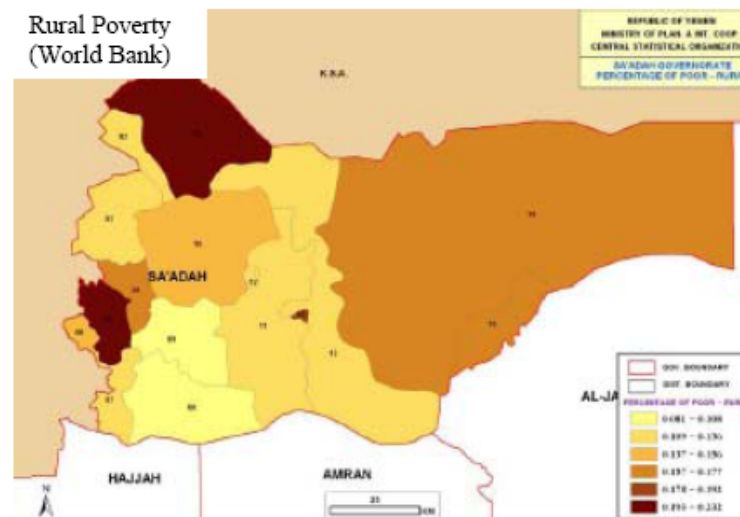
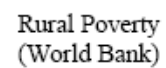
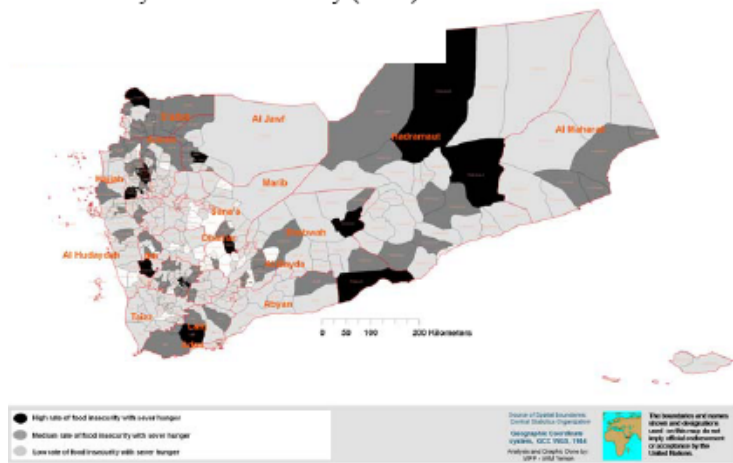
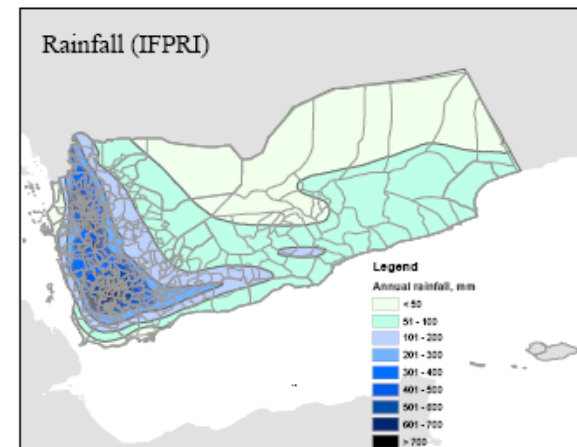
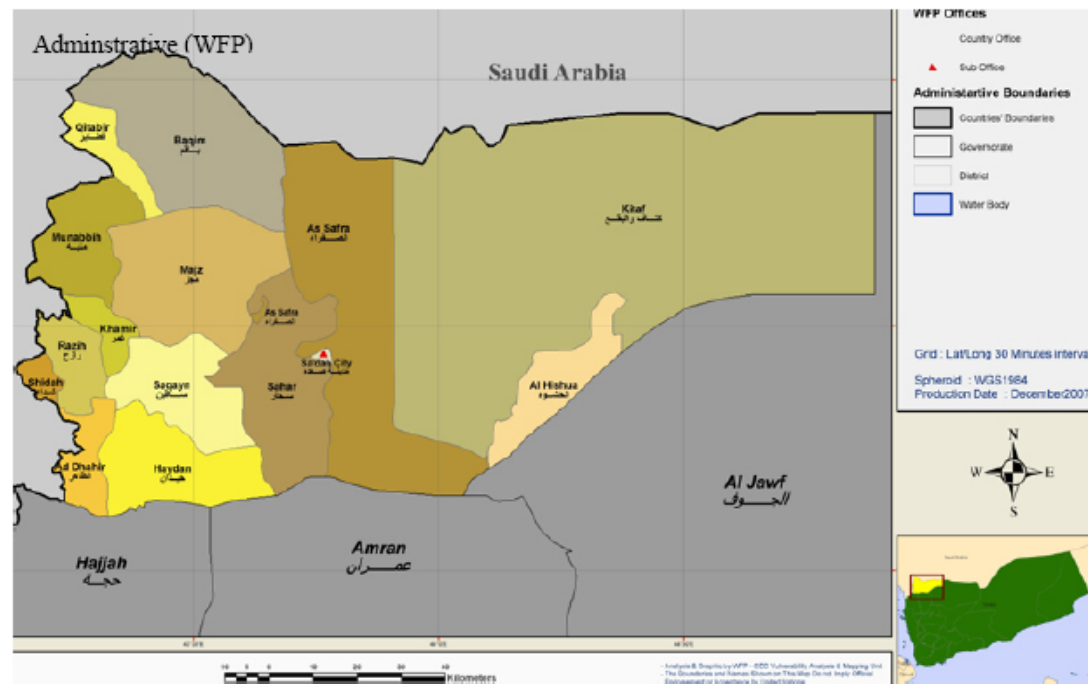


Household average annual income in Sa'ada amounts to nearly one million YR (national: 884,000 YR). The main source of income is derived from wages and salaries followed by private business activities and self-consumption and gifts. Nearly 70% of households were generally food insecure (national: 47.6%). One quarter of households stated that at some point in the past year they were afraid that they would not be able to meet their food needs, and 42% of households had one or more adults who skipped a meal and/or went an entire day without eating due to lack of food. Sa'ada has the highest rates of general and definite food insecurity in the mountainous region of Yemen. It belongs to the group of six governorates that have recorded the highest proportion of generally food insecure households. In moderate and severe food insecure term, Sa'ada is 2<sup>nd</sup> in the nation with a high 39.9% (21.7% national). In moderate hunger terms, it is placed 2<sup>nd</sup> with 20.9% (13.8% national). However, in severe hunger terms, Sa'ada is first with 20.0% (7.9% national level). In spite of Sa'ada's high percentage of households with severe hunger, it ranks slightly above average in terms of food consumption. Only 1.4% consumed only food group on a regular basis, one third the national average of 4.%. Additionally, households reported close to average rates of consumption of dairy, pulses, fruits and vegetables, and animal protein.

#### *Major challenges and Strategic Outlook*

Sa'ada is well known for the scattered nature of its population distribution. Prior to the start of the war in 2003, it suffered from extreme shortages in its basic infrastructures, road accessibility and public utilities, as well as water scarcity. In recent years, the already limited livelihood situation of its population further deteriorated. As a result, tens of thousands of people have been displaced (see SECTION for more detail). Reconstruction of Sa'ada and resettling its IDPs has become a national and international priority. But the strategic outlook for Sa'ada remains in developing the governorate as an important agricultural centre, focusing on the production of export crops for Saudi Arabia, as well as becoming a trade free zone for the Gulf States.

## WFP Yemen – Secondary Data Analysis on Food Security and Vulnerability



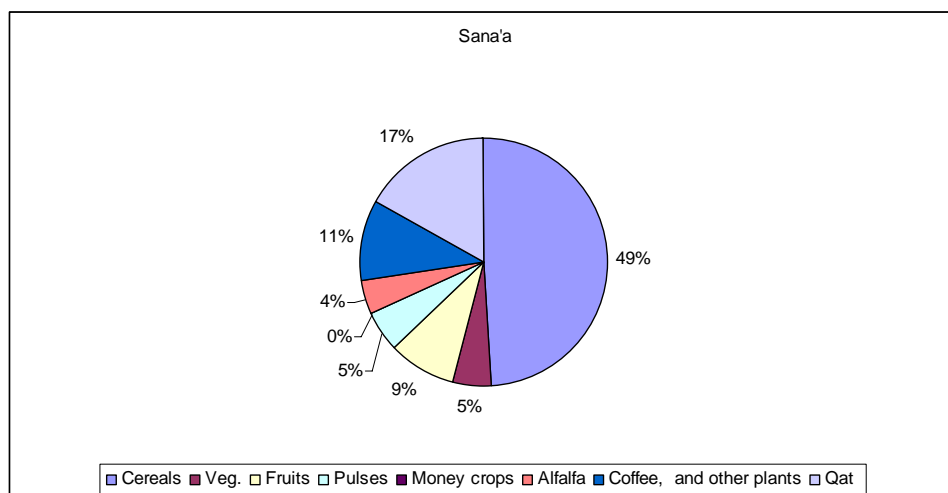
## 7. Sana'a Governorate

| Governorate | Indicators  | Value                            | National Average        |
|-------------|---|----------------------------------|-------------------------|
| Sana'a      | Agro-ecological zone  | Zone 1                           |                         |
|             | Area  | 11,961km <sup>2</sup>            | 527,970 km <sup>2</sup> |
|             | Number of Districts   | 16                               | 333                     |
|             | Population (Urban) 2007   | 27,295                           | 6,256,462               |
|             | Population (Rural) 2007   | 959,761                          | 15,282,533              |
|             | Population (Total) 2007   | 987,056                          | 21,538,995              |
|             | % rural - total population  | 97.20%                           | 71%                     |
|             | Food Security Situation 2003  |                                  |                         |
|             | % food insecure households  | 9.60%                            | 21.70%                  |
|             | % households with moderate hunger                                       | 5.20%                            | 13.80%                  |
|             | % households with severe hunger   | 4.40%                            | 7.90%                   |
|             | % households vulnerable to food insecurity                              | 14.70%                           | 20.80%                  |
|             | Rank of Governorate with food insecure households (out of 20, 1: worst) | 19                               |                         |
|             | Poverty Situation 2005/06   |                                  |                         |
|             | Total poverty rate (%)  | 28.13%                           | 34.78%                  |
|             | National poverty rank (out of 21, 1: best)                              | 6                                |                         |
|             | Urban poverty rate (%)  | 14.89%                           | 20.70%                  |
|             | Rural poverty rate (%)  | 28.13%                           | 40.10%                  |
|             | Change in urban poverty rate 1998-2006 (%)                              | 1.22%                            | -11.58%                 |
|             | Change in rural poverty rate 1998-2006 (%)                              | 8.32%                            | -2.40%                  |
|             | Number of food poor (HBS) in 1998                                       | 3.50%                            |                         |
|             | Number of food poor (HBS) in 2006                                       | 3%                               |                         |
|             | Per capita poverty line: urban (YR/month)                               | 6.009                            | 5.667                   |
|             | Per capita poverty line: rural (YR/month)                               | 5.339                            | 5.377                   |
|             | Net primary enrolment rate: girls                                       | 46%                              | 54%                     |
|             | Net primary enrolment rate: boys  | 75%                              | 73%                     |
|             | Net primary enrolment: total  | 61%                              | 64%                     |
|             | Access to potable water   | 35.60%                           | 38.70%                  |
|             | Access to sanitation  | 31.60%                           | 39.20%                  |
|             | Doctors per 10,000 population (2004)                                    | 2.4                              | 2.7                     |
|             | Unemployment as % of population > 15                                    | 5.50%                            | 7.10%                   |
|             | Employed in agriculture, % of total employed                            | 63%                              | 34.10%                  |
|             | First rural income source   | Agriculture & livestock, 30.40%  | 42.70%                  |
|             | Second rural income source  | Wages & salaries, 25.30%         | 15.60%                  |
|             | Third rural income source   | Self consumption & gifts, 19.70% | 9.10%                   |
|             | Cultivated area (% of total area)                                       | 9.40%                            | 2.90%                   |
|             | Farmland/livestock ownership  | 71.90%                           | 43.70%                  |
|             | Female land ownership   | 1.50%                            | 3.60%                   |
|             | Qat production (% of cultivated area)                                   | 17%                              | 10%                     |

Sana'a governorate is located at the center of the middle plateau of Yemen and stretches over 11,961 km<sup>2</sup> with a population of around one million. The capital city is Rudha. Sana'a is composed of 16 districts and possesses a multiple variety of potential economic activities such as agriculture, tourism and mining.

*Livelihood Characteristics, Food Security and Poverty*

Sana'a produces a wide variety of agricultural products such as fruits, coffee and honey. Sana'a has a fairly large share of cultivable land and 136,596 hectares are under production of cereals (49%), qat (17%) and coffee (11%) as major crops. Terrace cultivation is the typical form of farming in Sana'a and production is generally rainfed and reliant on flash floods. However, irrigation via groundwater pumping is expanding rapidly, especially for qat – placing heavy strain on already scarce water resources and depleting deep aquifers. More than 60% of the population is employed in the agricultural sector, while the population is obtaining more than 30% of incomes from agricultural production. Access to drinking water is available to 35.6% of the population, only slightly lower than the national average).

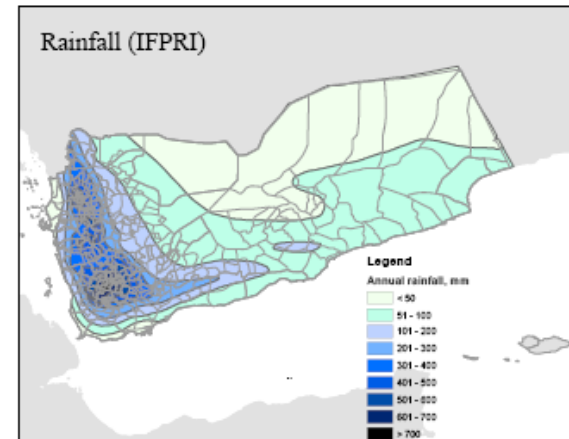
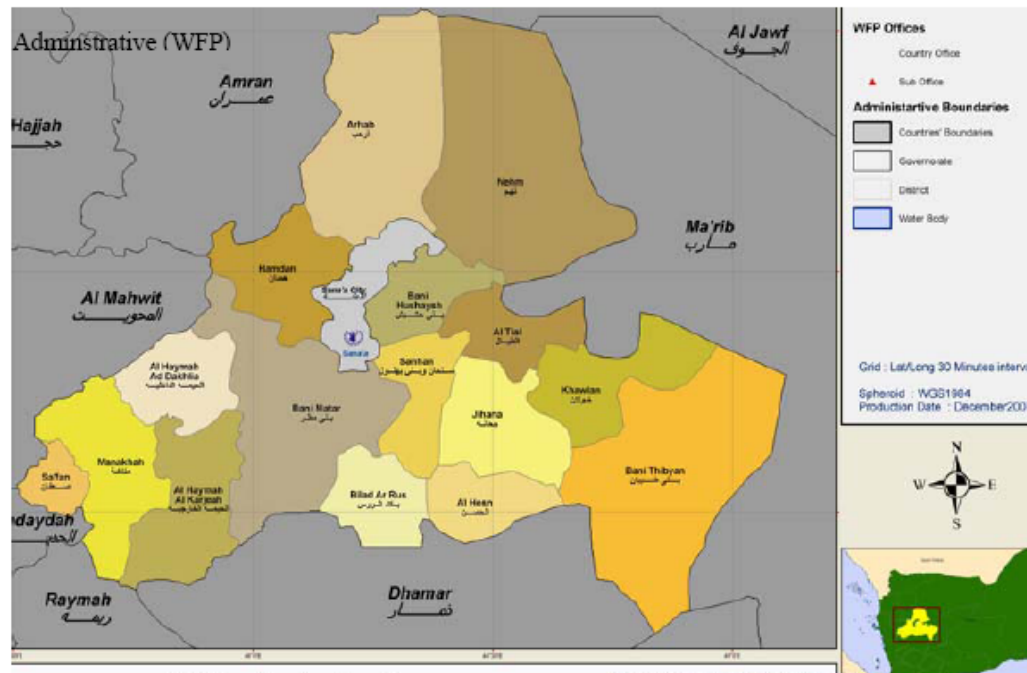


Sana'a governorate has a lower proportion of generally food insecure and definitely food insecure households. Less than one third (31.2%) of households reported that they were generally food insecure. 16% stated that they feared not being able to meet their food needs, significantly below the national average of 22%. Sana'a residents are the most successful in coping with food shortages. In terms of definite food insecurity, 9.6% of households stated that one or more household members skipped a meal and/or did not eat an entire day due to lack of food. Household average annual income amounts to nearly 885,433 YR, similar to the national average. The main source of income is derived from agriculture and livestock followed by self consumption and private business. UNICEF (2003) reported that 13.9% and 36.9% of children were severely underweight and stunted, respectively.

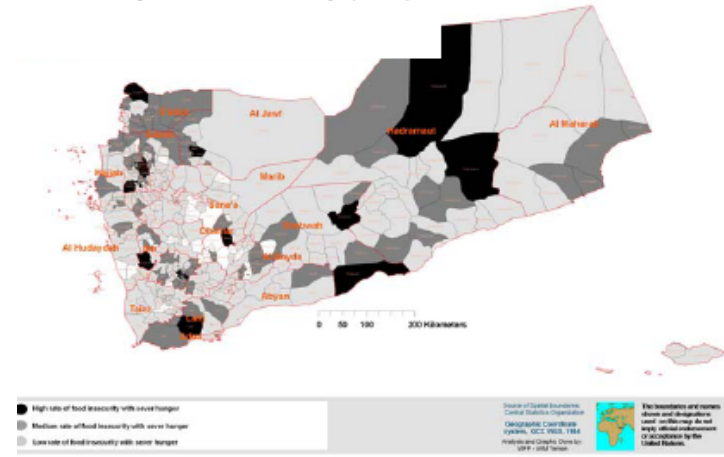
#### *Major Challenges and Strategic Outlook*

Along with Sana'a City, the large abuse of water pumping is depleting the Sana'a water basin at a very high pace. The majority of the population lives in rural areas and largely depends on public services and utilities provided by the adjacent Sana'a capital. Recent reports are alarmingly warning against complete water depletion of the Sana'a basin by 2025, thus severely threatening the livelihood of 4 million people by that time. Informal and temporary labour is widely spread amongst Sana'a's working population and thus rendering them more vulnerable to food insecurity. The governorate aims to exploit its natural resources and tourism potentials and safeguard its water basin, in addition to being a large agricultural market for the capital and surrounding governorates.

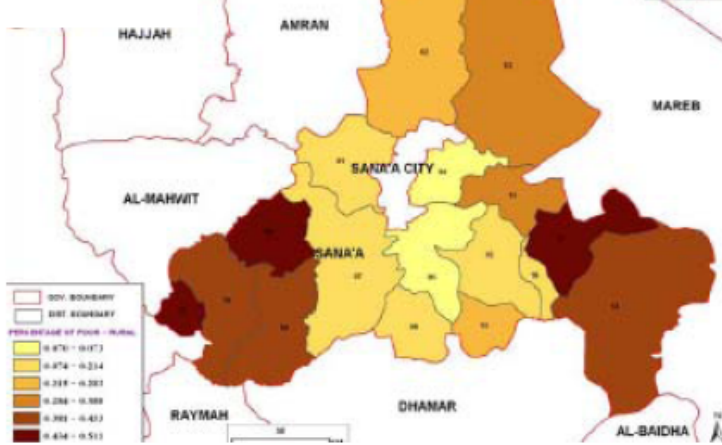
# WFP Yemen – Secondary Data Analysis on Food Security and Vulnerability



## Vulnerability to Food Insecurity (WFP)



## Rural Poverty (World Bank)



## 8. Al-Mahweet Governorate

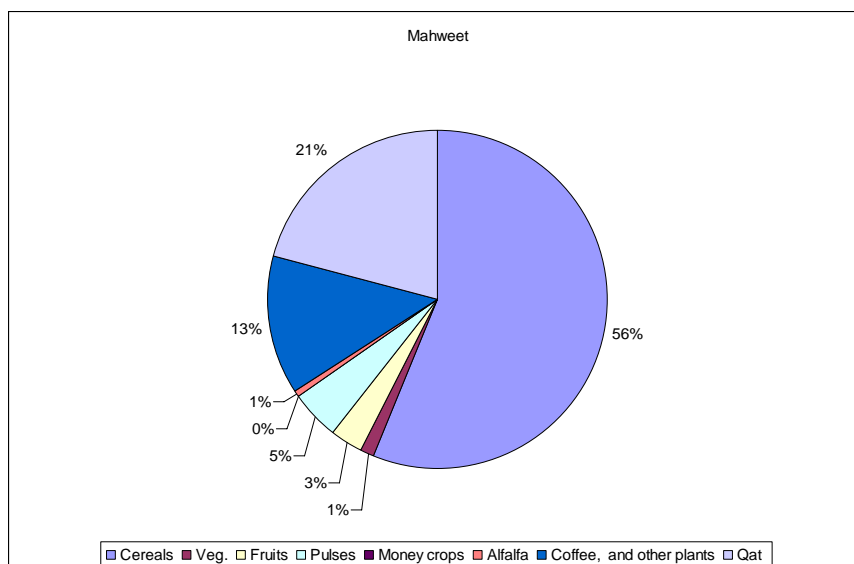
| Governorate | Indicators  | Value                            | National Average        |
|-------------|---|----------------------------------|-------------------------|
| Al-Mahweet  | Agro-ecological zone  | Zone 1                           |                         |
|             | Area  | 2,332 km <sup>2</sup>            | 527,970 km <sup>2</sup> |
|             | Number of Districts   | 9                                | 333                     |
|             | Population (Urban) 2007   | 39,276                           | 6,256,462               |
|             | Population (Rural) 2007   | 499,943                          | 15,282,533              |
|             | Population (Total) 2007   | 539,219                          | 21,538,995              |
|             | % rural - total population  | 93%                              | 71%                     |
|             | Food Security Situation 2003  |                                  |                         |
|             | % food insecure households  | 14.90%                           | 21.70%                  |
|             | % households with moderate hunger                                       | 10.20%                           | 13.80%                  |
|             | % households with severe hunger   | 4.70%                            | 7.90%                   |
|             | % households vulnerable to food insecurity                              | 25.60%                           | 20.80%                  |
|             | Rank of Governorate with food insecure households (out of 20, 1: worst) | 15                               |                         |
|             | Poverty Situation 2005/06   |                                  |                         |
|             | Total poverty rate (%)  | 30.75%                           | 34.78%                  |
|             | National poverty rank (out of 21, 1: best)                              | 8                                |                         |
|             | Urban poverty rate (%)  | 21.90%                           | 20.70%                  |
|             | Rural poverty rate (%)  | 31.48%                           | 40.10%                  |
|             | Change in urban poverty rate 1998-2006 (%)                              | -15.72%                          | -11.58%                 |
|             | Change in rural poverty rate 1998-2006 (%)                              | -7.96%                           | -2.40%                  |
|             | Number of food poor (HBS) in 1998                                       | 2%                               |                         |
|             | Number of food poor (HBS) in 2006                                       | 1%                               |                         |
|             | Per capita poverty line: urban (YR/month)                               | 5.361                            | 5.667                   |
|             | Per capita poverty line: rural (YR/month)                               | 5.199                            | 5.377                   |
|             | Net primary enrolment rate: girls                                       | 54%                              | 54%                     |
|             | Net primary enrolment rate: boys  | 77%                              | 73%                     |
|             | Net primary enrolment: total  | 66%                              | 64%                     |
|             | Access to potable water   | 24.80%                           | 38.70%                  |
|             | Access to sanitation  | 18.80%                           | 39.20%                  |
|             | Doctors per 10,000 population (2004)                                    | 1.2                              | 2.7                     |
|             | Unemployment as % of population > 15                                    | 3.40%                            | 7.10%                   |
|             | Employed in agriculture, % of total employed                            | 37%                              | 34.10%                  |
|             | First rural income source   | Wages & salaries, 60.90%         | 42.70%                  |
|             | Second rural income source  | Self consumption & gifts, 13.90% | 15.60%                  |
|             | Third rural income source   | Agriculture & livestock, 10.00%  | 9.10%                   |
|             | Cultivated area (% of total area)                                       | 9.60%                            | 2.90%                   |
|             | Farmland/livestock ownership  | 70.30%                           | 43.70%                  |
|             | Female land ownership   | 2.90%                            | 3.60%                   |
|             | Qat production (% of cultivated area)                                   | 21%                              | 10%                     |

Al-Mahweet is located in the northwestern part of Yemen, west of Sana'a. It is surrounded by the governorates of Hodeida, Hajja, Amran and Sana'a. Al-Mahweet occupies an area of 2,332km<sup>2</sup> and has a total population of 539,215 of which 93% live in its rural mountainous areas. Shebam, Kawkaban and Al-Tawelah, to name just a few, are historic towns that are considered as natural museums. Most recently, important archaeological discoveries that date back to 2000 BC were made. Agricultural terraces, edging villages and

fortified towers are also some of Al-Mahweet tourism potentials. It also possesses, but rather unexploited, primary potentials for granite, marble and glass industries.

#### *Livelihood Characteristics, Food Security and Poverty*

Nearly 10% of the total area of the governorate is cultivated with cereals (56%), qat (21%) and coffee (13%). Al-Mahweet inhabitants depend largely on agricultural activities, of which coffee, fruits, and honey are the most prominent. Access to drinking water is available to 24.8% of the population, as compared to the national average of 38.7%.

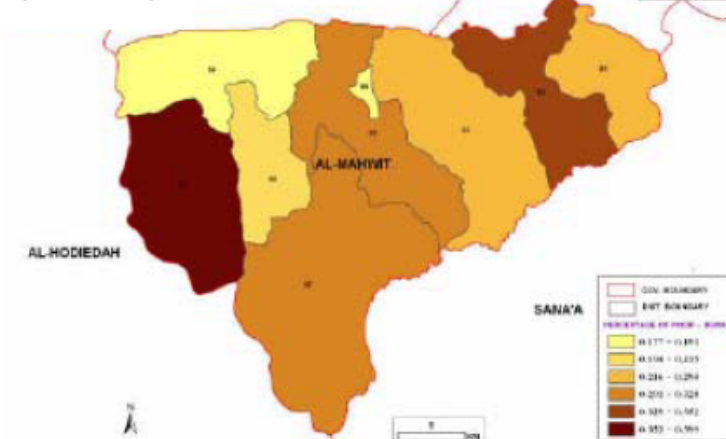
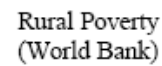
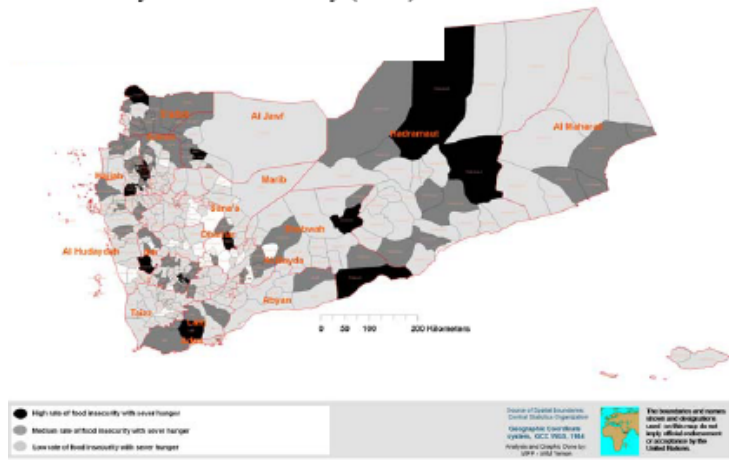
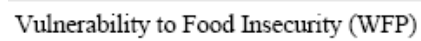
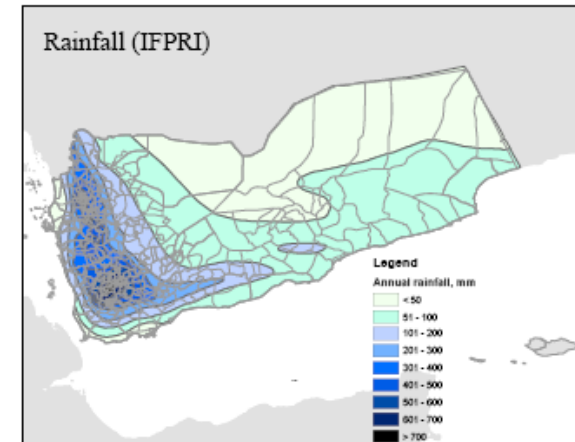
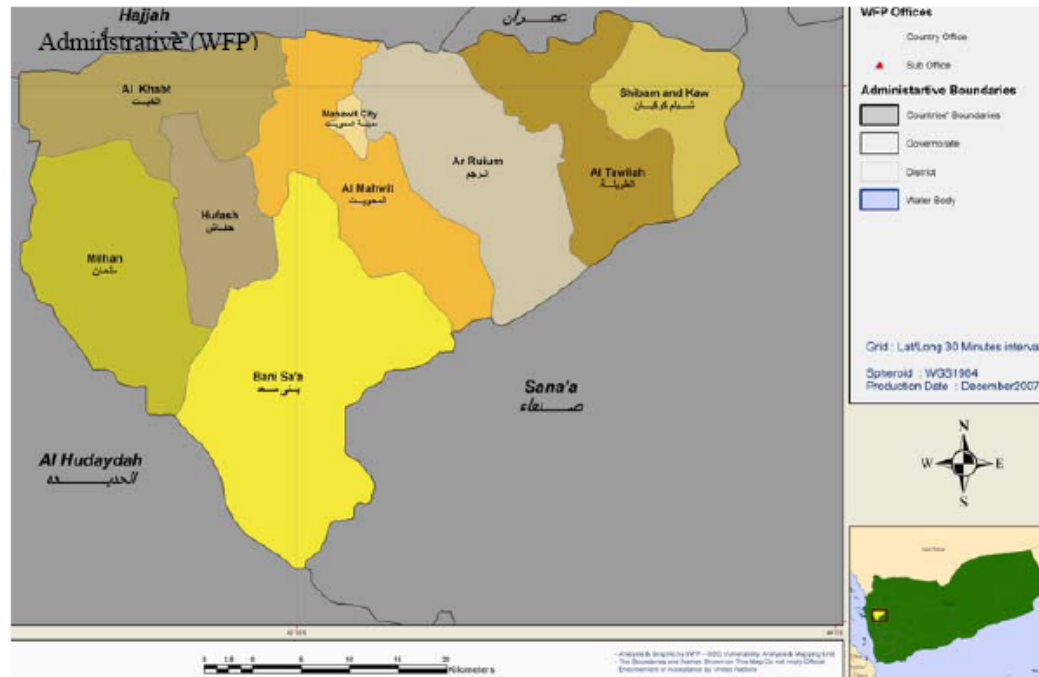


Household average annual income in Al-Mahweet amounts to nearly 757,000 YR (national average: 884,000 YR). The main source of income is derived from wages and salaries followed by self-consumption and gifts, whilst returns from agriculture and animal production come into third. It has average rates of general food insecurity (47.4%). Similar to Dhamar, Al-Mahweet has above average rates of households vulnerable to food insecurity (27%), and a comparatively lower proportion of definitely food insecure households with hunger (16%). It also has particularly low rates of food insecurity with severe hunger (4.7%). Al-Mahweet households are slightly above average in terms of food consumption. Over 90% of Mahweeti households regularly eat dairy products, and approximately three quarters consume some form of animal protein and fruits and vegetables regularly. Furthermore, 70% eat from four to five food groups on a regular basis, compared with 62.8% nationwide.

#### *Major Challenges and Strategic Outlook*

Although Al-Mahweet possesses a wide range of promising but unexploited advantages, traditional subsistence farming remains the main source of its economic resources. Developing Al-Mahweet is hindered by its difficult topography, limited infrastructures and the extent of its unskilled labour force. These represent major set backs for private investment to exploit its agricultural, industrial and tourism opportunities. Being a natural museum, it is a location that is naturally gifted with abundant rainfall throughout the year and the governorate should be able with moderate investments in its manpower and infrastructures to attract investment in developing its natural resources and sustaining the livelihood of its inhabitants.

## WFP Yemen – Secondary Data Analysis on Food Security and Vulnerability



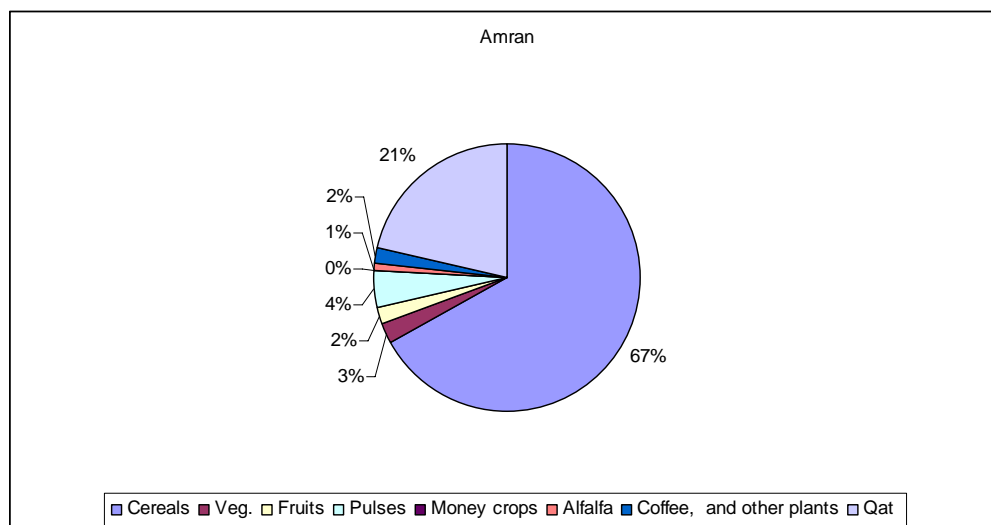
## 9. Amran Governorate

| Governorate | Indicators  | Value                            | National Average        |
|-------------|---|----------------------------------|-------------------------|
| Amran       | Agro-ecological zone  | Zone 1                           |                         |
|             | Area  | 7,900 km <sup>2</sup>            | 527,970 km <sup>2</sup> |
|             | Number of Districts   | 20                               | 333                     |
|             | Population (Urban) 2007   | 159,694                          | 6,256,462               |
|             | Population (Rural) 2007   | 778,097                          | 15,282,533              |
|             | Population (Total) 2007   | 937,791                          | 21,538,995              |
|             | % rural - total population  | 83.00%                           | 71%                     |
|             | Food Security Situation 2003  |                                  |                         |
|             | % food insecure households  | 15.20%                           | 21.70%                  |
|             | % households with moderate hunger                                       | 9.20%                            | 13.80%                  |
|             | % households with severe hunger   | 6%                               | 7.90%                   |
|             | % households vulnerable to food insecurity                              | 19.20%                           | 20.80%                  |
|             | Rank of Governorate with food insecure households (out of 20, 1: worst) | 14                               |                         |
|             | Poverty Situation 2005/06   |                                  |                         |
|             | Total poverty rate (%)  | 63.93%                           | 34.78%                  |
|             | National poverty rank (out of 21, 1: best)                              | 21                               |                         |
|             | Urban poverty rate (%)  | 33.93%                           | 20.70%                  |
|             | Rural poverty rate (%)  | 70.60%                           | 40.10%                  |
|             | Change in urban poverty rate 1998-2006 (%)                              | 1.22%                            | -11.58%                 |
|             | Change in rural poverty rate 1998-2006 (%)                              | 8.32%                            | -2.40%                  |
|             | Number of food poor (HBS) in 1998                                       | 4.50%                            |                         |
|             | Number of food poor (HBS) in 2006                                       | 10.50%                           |                         |
|             | Per capita poverty line: urban (YR/month)                               | 5.802                            | 5.667                   |
|             | Per capita poverty line: rural (YR/month)                               | 5.814                            | 5.377                   |
|             | Net primary enrolment rate: girls                                       | 46%                              | 54%                     |
|             | Net primary enrolment rate: boys  | 84%                              | 73%                     |
|             | Net primary enrolment: total  | 65%                              | 64%                     |
|             | Access to potable water   | 23.40%                           | 38.70%                  |
|             | Access to sanitation  | 32.70%                           | 39.20%                  |
|             | Doctors per 10,000 population (2004)                                    | 1.1                              | 2.7                     |
|             | Unemployment as % of population > 15                                    | 5.30%                            | 7.10%                   |
|             | Employed in agriculture, % of total employed                            | 55%                              | 34.10%                  |
|             | First rural income source   | Wages & salaries, 33.50%         | 42.70%                  |
|             | Second rural income source  | Agriculture & livestock, 22.90%  | 15.60%                  |
|             | Third rural income source   | Self consumption & gifts, 20.50% | 9.10%                   |
|             | Cultivated area (% of total area)                                       | 13.40%                           | 2.90%                   |
|             | Farmland/livestock ownership  | 75.80%                           | 43.70%                  |
|             | Female land ownership   | 1.70%                            | 3.60%                   |
|             | Qat production (% of cultivated area)                                   | 21%                              | 10%                     |

Amran governorate is located in the mountainous northwestern part of Yemen, between Sana'a and Sa'ada governorates. Amran occupies a surface of 7,900 km<sup>2</sup> and includes 20 administrative districts with 938,000 inhabitants in 2007, of which 83% live in the rural areas.

*Livelihood Characteristics, Food Security and Poverty*

A relatively large proportion of Amran is cultivated, with cereal (67%) and qat (21%) being the major crops. Accessibility to drinking water is available to only 23.4% of Amran population as compared to the national average of 38.7%.



Amran is among the poorest governorates nationwide. Its total poverty rate neared 64% against a national average of 34.8% in 2005. Moreover, its rural poverty rate has increased by 8.3% from 1998-2006 to reach a high record of 70.6% against a national rural average of 40.1%. Poverty rates in Amran have increased and are amongst the highest as a result of the high food prices, with 54% of the rural population being food poor. Despite this, Amran has below average rates of moderate and severe hunger given its large fertile cultivated lands that are known for their cereal, fruit, vegetable and cash crop production. Household average annual income in Amran amounts to nearly 812,000 YR (national average 884,000 YR). The main source of income is derived from wages and salaries followed by returns from private business and agriculture and animal production. Similar to other mountain districts, Amran has a considerably lower proportion of households that are food insecure with moderate hunger (9%) and severe hunger (6%). Amrani households consume a wider variety of foods on a more regular basis compared with national averages. More than three quarters of households consume dairy, fruits and vegetables, and animal proteins regularly, and 67% eat pulses. Three quarters of all households eat from four to five food groups on a regular basis. UNICEF 2003 assessed malnourishment of children and found that 42.2% were severely stunted and 14.5% severely underweight. Child immunization is also of major concern in Amran, particularly the high proportions of children not receiving any immunization. Special mention is made of the very large household sizes, excessively high fertility, and high child labour levels in this governorate.

### *Major challenges and Strategic Outlook*

Qat production in Amran is growing at a high pace and contributing to depleting its water resources. Spate irrigation is also widely used for cereal production. Its scattered population over the hills and mountains represent a major challenge in providing basic services and necessary infrastructures. For instance public utilities such as electricity are only available to 28.6% of its population; public sewage system is only extended to 4.1% and paved roads do not exceed 0.2 km for every 1,000 inhabitants. Amran possesses high agricultural potentials that need to be developed so that it becomes a center for exporting agriculture products to Saudi Arabia and the Horn of Africa.



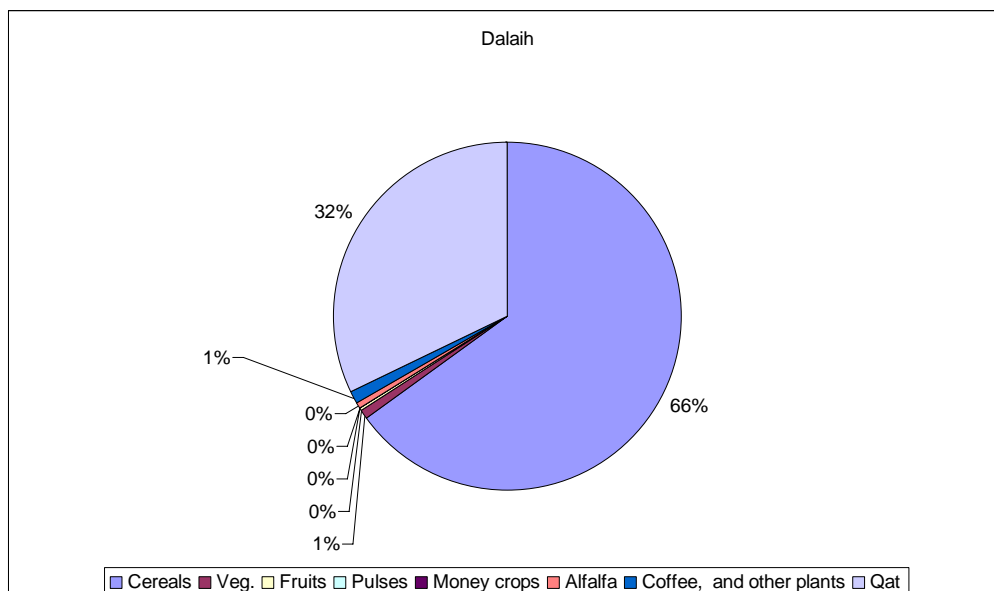
**10. Addaleh Governorate**

| Governorate | Indicators  | Value                           | National Average        |
|-------------|---|---------------------------------|-------------------------|
| Addaleh     | Agro-ecological zone  | Zone 1                          |                         |
|             | Area  | 4,099 km <sup>2</sup>           | 527,970 km <sup>2</sup> |
|             | Number of Districts   | 9                               | 333                     |
|             | Population (Urban) 2007   | 68,778                          | 6,256,462               |
|             | Population (Rural) 2007   | 451,167                         | 15,282,533              |
|             | Population (Total) 2007   | 519,945                         | 21,538,995              |
|             | % rural - total population  | 86.80%                          | 71%                     |
|             | Food Security Situation 2003  |                                 |                         |
|             | % food insecure households  | 13.50%                          | 21.70%                  |
|             | % households with moderate hunger                                       | 7.80%                           | 13.80%                  |
|             | % households with severe hunger   | 5.70%                           | 7.90%                   |
|             | % households vulnerable to food insecurity                              | 11.40%                          | 20.80%                  |
|             | Rank of Governorate with food insecure households (out of 20, 1: worst) | 17                              |                         |
|             | Poverty Situation 2005/06   |                                 |                         |
|             | Total poverty rate (%)  | 44.24%                          | 34.78%                  |
|             | National poverty rank (out of 21, 1: best)                              | 13                              |                         |
|             | Urban poverty rate (%)  | 46.37%                          | 20.70%                  |
|             | Rural poverty rate (%)  |                                 | 40.10%                  |
|             | Change in urban poverty rate 1998-2006 (%)                              | -4.12%                          | -11.58%                 |
|             | Change in rural poverty rate 1998-2006 (%)                              | 13.68%                          | -2.40%                  |
|             | Number of food poor (HBS) in 1998                                       | 2%                              |                         |
|             | Number of food poor (HBS) in 2006                                       | 1%                              |                         |
|             | Per capita poverty line: urban (YR/month)                               | 5.571                           | 5.667                   |
|             | Per capita poverty line: rural (YR/month)                               | 5.533                           | 5.377                   |
|             | Net primary enrolment rate: girls                                       | 69%                             | 54%                     |
|             | Net primary enrolment rate: boys  | 83%                             | 73%                     |
|             | Net primary enrolment: total  | 76%                             | 64%                     |
|             | Access to potable water   | 22.10%                          | 38.70%                  |
|             | Access to sanitation  | 23.70%                          | 39.20%                  |
|             | Doctors per 10,000 population (2004)                                    | 2.1                             | 2.7                     |
|             | Unemployment as % of population > 15                                    | 9.10%                           | 7.10%                   |
|             | Employed in agriculture, % of total employed                            | 49%                             | 34.10%                  |
|             | First rural income source   | Wages & salaries, 25.90%        | 42.70%                  |
|             | Second rural income source  | Agriculture & livestock, 25.20% | 15.60%                  |
|             | Third rural income source   | Cash & in-kind income, 16.30%   | 9.10%                   |
|             | Cultivated area (% of total area)                                       | 3.40%                           | 2.90%                   |
|             | Farmland/livestock ownership  | 57.50%                          | 43.70%                  |
|             | Female land ownership   | 3.10%                           | 3.60%                   |
|             | Qat production (% of cultivated area)                                   | 32%                             | 10%                     |

Addaleh is located in the central southern mountainous region of Yemen. It is surrounded by four governorates of Lahej, Taiz, Ibb, and Al-Baidah. It has a surface of 4,100km<sup>2</sup> split into 9 districts. The population in 2007 was 520,000, while 86.8% live in rural areas.

*Livelihood Characteristics, Food Security and Poverty*

Addaleh cultivates 3.4% of its area, while cereals (66%) and qat (32%) make up the bulk of the cultivated area. The mainstream economy is based on agriculture and supported by the tourism sector for possessing natural spring and sulfuric waters and baths of which 'Damt Bath' is the most pronounced. Access to drinking water is only available to 22.1% of Addaleh population as compared to the national average of 38.7%.

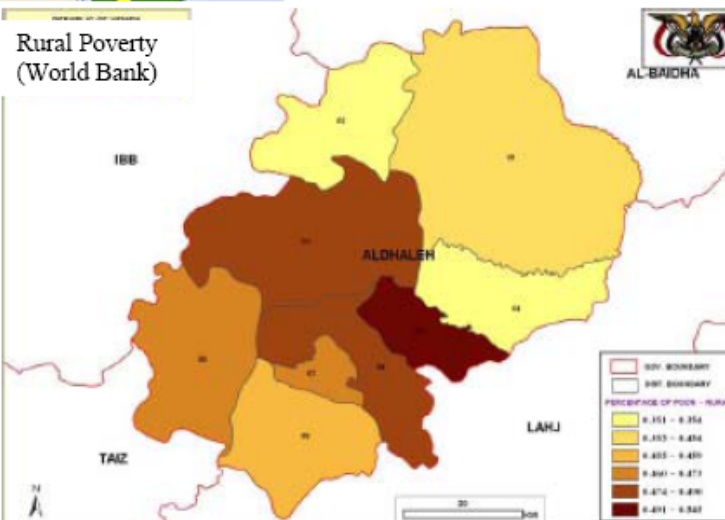
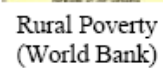
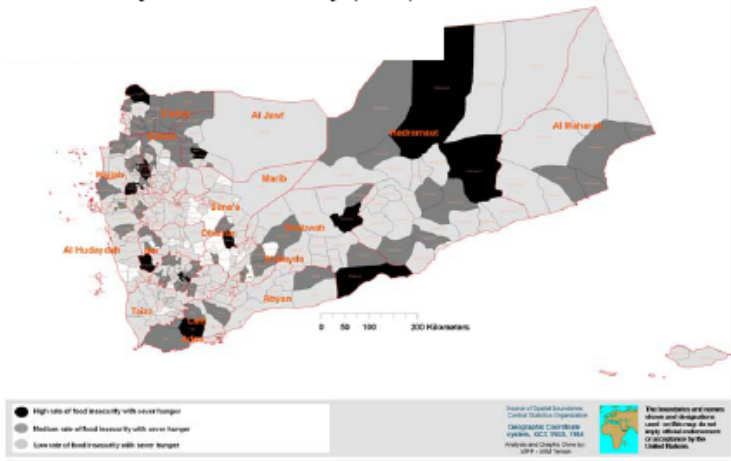
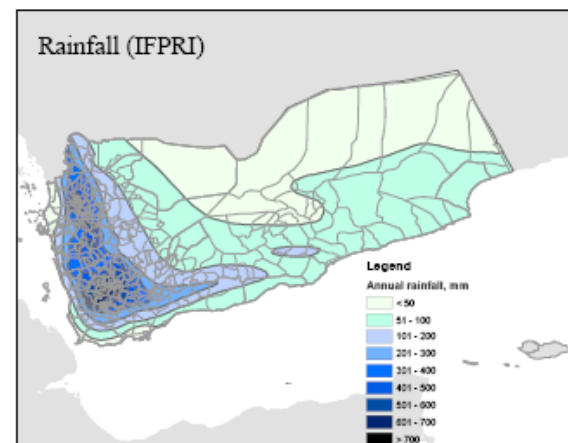
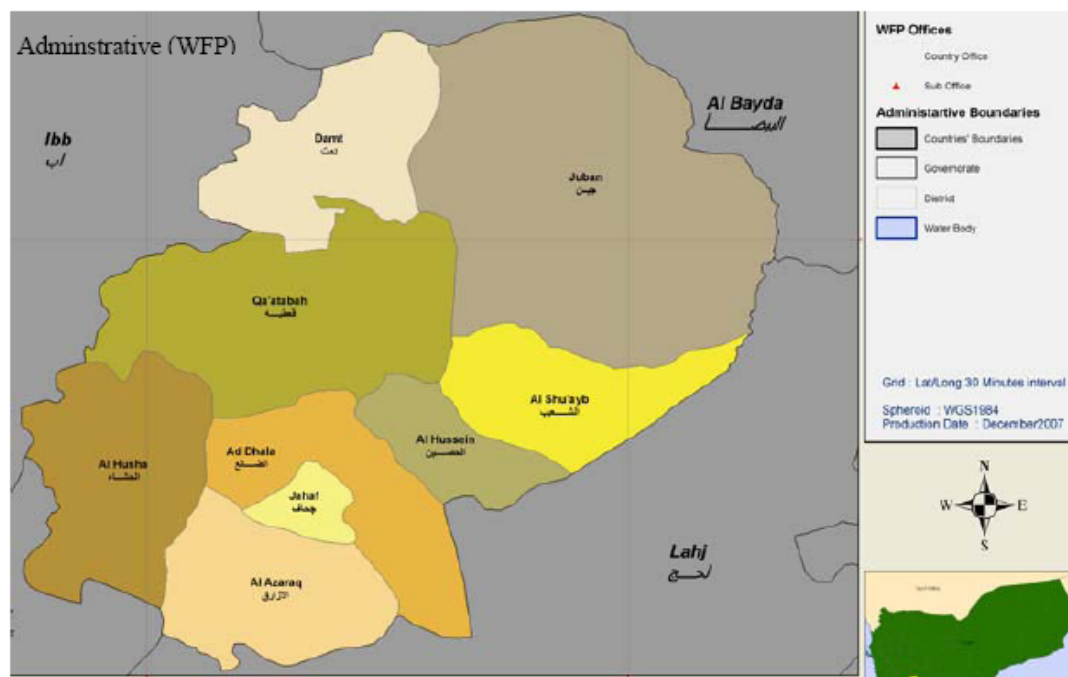


Household average annual income in Addaleh amounts to nearly 730,000 YR (national: 884,000 YR). The main source of income is derived from wages and salaries followed by sales of agriculture and animal production and other cash and in-kind income. The prevalence rate of general food insecurity in Addaleh is one of the lowest nationwide. Addaleh presents a complex picture. In terms of general food insecurity, 27.9% of households reported that they feared not having enough food for the household at some point in the past year. This is significantly below the national average of 48%. Addaleh had proportionately fewer households vulnerable to food insecurity and households considered to be definitely food insecure. 12% stated that they feared not having enough to eat, and 13.5% had an adult who had skipped a meal and/or went an entire day without eating due to lack of food. However, in terms of the types of food consumed and the frequency of consumption, households in Addaleh rank significantly below national averages. While close to three quarters of all Yemeni households consume dairy and animal protein on a regular basis, in Addaleh, only 57% and 58% do, respectively. Similarly, less than half of all households consume pulses and fruits and vegetables. Furthermore, Addaleh lags only behind Lahej in the numbers of food groups eaten. 12.9% of households, more than three times the average, reported eating only one food group on a regular basis. Likewise, only 37.5% eat from four to five food groups regularly, compared with 62.8% nationwide. In two districts, UNICEF (2003) reported that 22.6% and 32% of children were severely underweight and stunted. Addaleh was also found to be below average with respect to child labour of girls, water and sanitation. The findings concerning child immunization in this governorate give the most cause for alarm, however.

### *Major Challenges and Strategic Outlook*

Addaleh faces major structural issues for having a rather challenging topography, scattered population in its mountains, limited cultivable land, water scarcity, limited natural resources, not to mention its shortages in basic infrastructures and a high poverty rate of 44.2%. All of which have triggered repeated riots over the recent years, thus leading to increasing political and social tensions and instabilities. Solving the above mentioned issues can surely transform Al-Daleh into a prime tourism area.

## WFP Yemen – Secondary Data Analysis on Food Security and Vulnerability





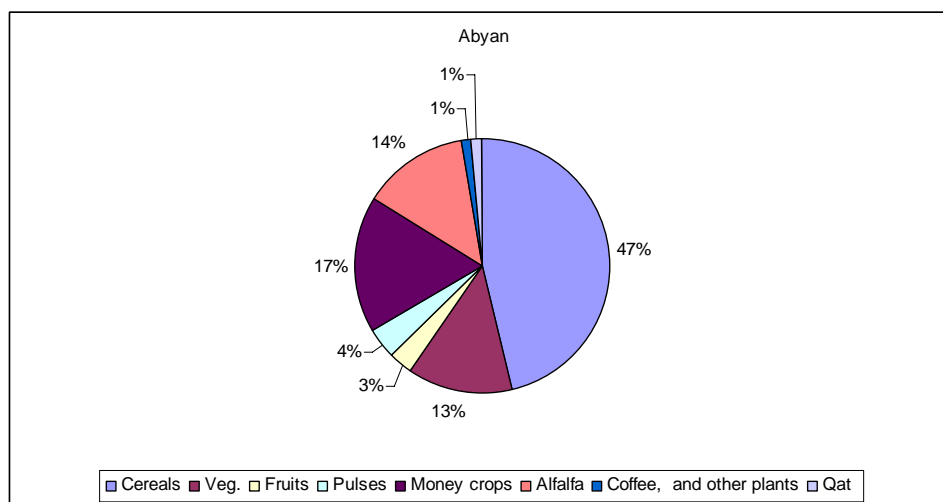
**11. Abyan Governorate**

| Governorate | Indicators  | Value                            | National Average        |
|-------------|---|----------------------------------|-------------------------|
| Abyan       | Agro-ecological zone  | Zone 3 & 4                       |                         |
|             | Area  | 16,445 km <sup>2</sup>           | 527,970 km <sup>2</sup> |
|             | Number of Districts   | 10                               | 333                     |
|             | Population (Urban) 2007   | 120,414                          | 6,256,462               |
|             | Population (Rural) 2007   | 348,006                          | 15,282,533              |
|             | Population (Total) 2007   | 468,420                          | 21,538,995              |
|             | % rural - total population  | 74.30%                           | 71%                     |
|             | Food Security Situation 2003  |                                  |                         |
|             | % food insecure households  | 12.70%                           | 21.70%                  |
|             | % households with moderate hunger                                       | 6.10%                            | 13.80%                  |
|             | % households with severe hunger   | 6.60%                            | 7.90%                   |
|             | % households vulnerable to food insecurity                              | 22.10%                           | 20.80%                  |
|             | Rank of Governorate with food insecure households (out of 20, 1: worst) | 18                               |                         |
|             | Poverty Situation 2005/06   |                                  |                         |
|             | Total poverty rate (%)  | 45.68%                           | 34.78%                  |
|             | National poverty rank (out of 21, 1: best)                              | 14                               |                         |
|             | Urban poverty rate (%)  | 31.37%                           | 20.70%                  |
|             | Rural poverty rate (%)  | 50.44%                           | 40.10%                  |
|             | Change in urban poverty rate 1998-2006 (%)                              | -4.12%                           | -11.58%                 |
|             | Change in rural poverty rate 1998-2006 (%)                              | 13.68%                           | -2.40%                  |
|             | Number of food poor (HBS) in 1998                                       | 2%                               |                         |
|             | Number of food poor (HBS) in 2006                                       | 3%                               |                         |
|             | Per capita poverty line: urban (YR/month)                               | 5.831                            | 5.667                   |
|             | Per capita poverty line: rural (YR/month)                               | 5.799                            | 5.377                   |
|             | Net primary enrolment rate: girls                                       | 61%                              | 54%                     |
|             | Net primary enrolment rate: boys  | 81%                              | 73%                     |
|             | Net primary enrolment: total  | 71%                              | 64%                     |
|             | Access to potable water   | 44.6%                            | 38.70%                  |
|             | Access to sanitation  | 50.5%                            | 39.20%                  |
|             | Doctors per 10,000 population (2004)                                    | 4.5                              | 2.7                     |
|             | Unemployment as % of population > 15                                    | 7.80%                            | 7.10%                   |
|             | Employed in agriculture, % of total employed                            | 49.00%                           | 34.10%                  |
|             | First rural income source   | Wages & salaries, 48.10%         | 42.70%                  |
|             | Second rural income source  | Cash & in-kind income, 18.10%    | 15.60%                  |
|             | Third rural income source   | Self consumption & gifts, 14.70% | 9.10%                   |
|             | Cultivated area (% of total area)                                       | 3.60%                            | 2.90%                   |
|             | Farmland/livestock ownership  | 49.00%                           | 43.70%                  |
|             | Female land ownership   | 2.10%                            | 3.60%                   |
|             | Qat production (% of cultivated area)                                   | 1%                               | 10%                     |

Abyan governorate in southern central Yemen borders Aden on the Gulf of Aden, its capital town is Zunjubar. Abyan is extended over an area of 16,445km<sup>2</sup> with a population of 468,000 in 2007, scattered over 11 districts. Abyan is composed of two agro-ecological zones: the Central and Northern Highlands, which possesses abundant variety of mining and quarries, and the Southern coast of 270km that is abundant with fish and crustacean stocks. Abyan is well known for its highly productive lands with abundant water resources that produce cotton and all types of exotic fruits.

### *Livelihood Characteristics, Food Security and Poverty*

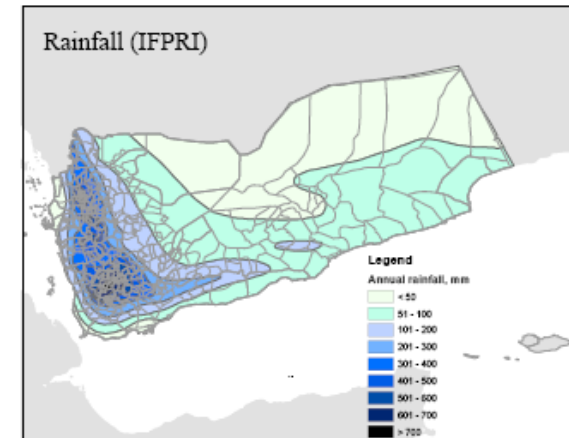
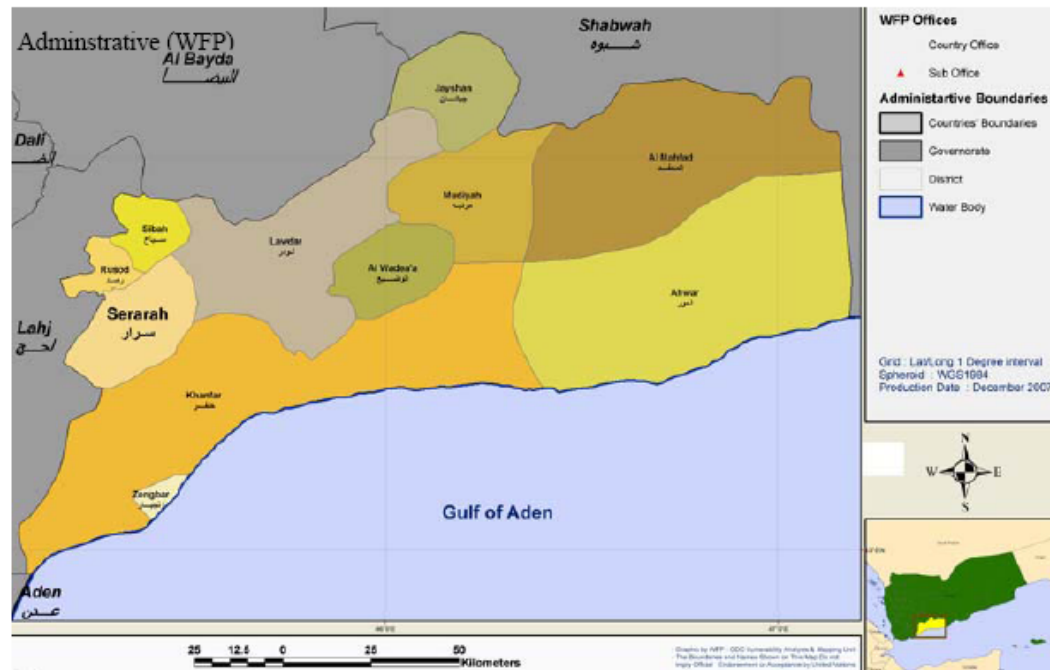
Abyan cultivated 3.6% of its total area. 47% of the area is cultivated with cereals, while cash crops (17%), alfalfa (14%) and vegetables (13%) account for most of the acreage. The majority of the labour force works in agriculture and fish production activities. However, fish catching did not exceed 14,000 tons in 2005 for lack of fishing ports, boats and advanced fishing means and storage capacities. Access to drinking water is available to 44.6% of Abyan population as compared to the national average of 38.7%.



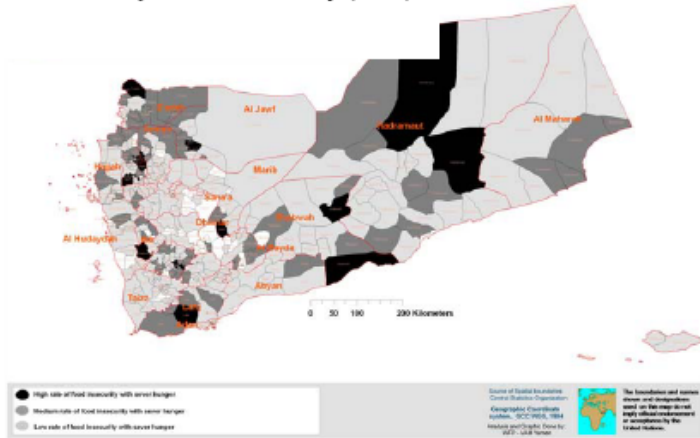
Household average annual income in Abyan amounts to nearly 720,000 YR, as compared to the national average of 884,000 YR. The main source of income is derived from wages and salaries followed by other cash and in-kind resources and by private business activities. One third of households in Abyan rely on salaries from regular employment as their main source of bulk food. Households depending on regular employment are significantly less likely to be food insecure than with households depending on salaries from temporary employment. Abyan's proportion of households generally and definitely food insecure fall relatively below national averages. 40.3% of households are generally food insecure (48% nationwide), and only 12.7% are food insecure with hunger (21.7% nationally). Abyan is the most extreme in terms of intra-governorate disparities with rates of moderate hunger of 2.2% in Mudiyah district and 83.1% in Jayshan. 2.5% of households eat just two or less meals per day, this is a comparatively high number. Less than half of all households reported regularly consuming dairy products and pulses, and slightly less than the average consumed fruits or vegetables. However, Abyan does have relatively high rates of animal protein consumption (85.8%). Only slightly more than half of all households eat from four to five food groups on a regular basis. UNICEF (2003) reported 35.4% and 8.6% of severe stunting and underweight when surveying three districts. The governorate is above average for education, child rights, and child mortality, but below average for water and sanitation.

### *Major Challenges and Strategic Outlook*

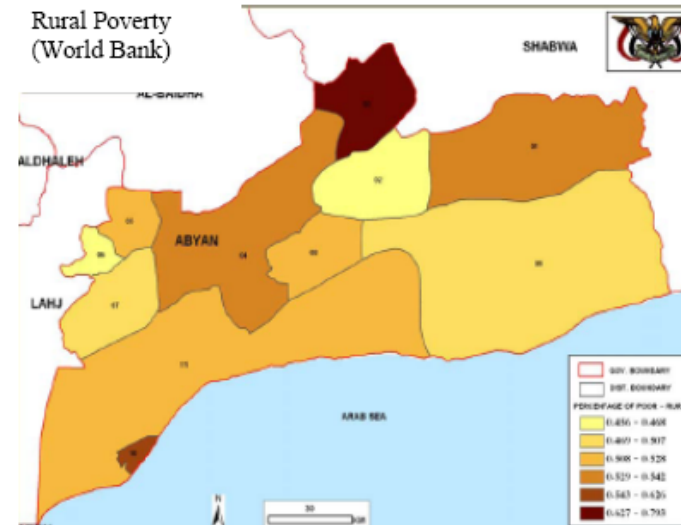
Abyan faces immense shortages in its basic infrastructures and public utilities. Abyani's have the unfortunate reputation of solving their social and personal problems by revenge. Rioting and opposing government policies are frequent in this area. Such acts affect its socio-economic stability. Once the overall political and security situations settle down, Abyan should be able to develop its wide variety of highly promising economic sectors such as tourism, fishing, mining and quarrying.



Vulnerability to Food Insecurity (WFP)



Rural Poverty (World Bank)



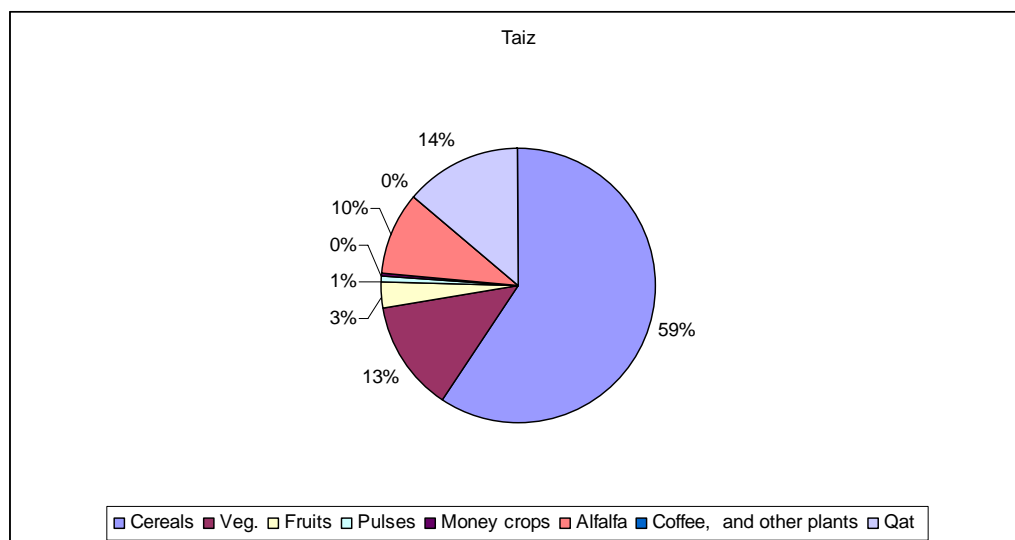
**12. Taiz Governorate**

| Governorate | Indicators  | Value                            | National Average        |
|-------------|---|----------------------------------|-------------------------|
| Taiz        | Agro-ecological zone  | Zone 1 & 2                       |                         |
|             | Area  | 10,009 km <sup>2</sup>           | 527,970 km <sup>2</sup> |
|             | Number of Districts   | 23                               | 333                     |
|             | Population (Urban) 2007   | 579,949                          | 6,256,462               |
|             | Population (Rural) 2007   | 2,009,820                        | 15,282,533              |
|             | Population (Total) 2007   | 2,589,769                        | 21,538,995              |
|             | % rural - total population  | 77.60%                           | 71%                     |
|             | Food Security Situation 2003  |                                  |                         |
|             | % food insecure households  | 19.60%                           | 21.70%                  |
|             | % households with moderate hunger                                       | 16.80%                           | 13.80%                  |
|             | % households with severe hunger   | 2.80%                            | 7.90%                   |
|             | % households vulnerable to food insecurity                              | 20.70%                           | 20.80%                  |
|             | Rank of Governorate with food insecure households (out of 20, 1: worst) | 10                               |                         |
|             | Poverty Situation 2005/06   |                                  |                         |
|             | Total poverty rate (%)  | 37.80%                           | 34.78%                  |
|             | National poverty rank (out of 21, 1: best)                              | 12                               |                         |
|             | Urban poverty rate (%)  | 23.66%                           | 20.70%                  |
|             | Rural poverty rate (%)  | 41.51%                           | 40.10%                  |
|             | Change in urban poverty rate 1998-2006 (%)                              | -11.60%                          | -11.58%                 |
|             | Change in rural poverty rate 1998-2006 (%)                              | -14.84%                          | -2.40%                  |
|             | Number of food poor (HBS) in 1998                                       | 16%                              |                         |
|             | Number of food poor (HBS) in 2006                                       | 14%                              |                         |
|             | Per capita poverty line: urban (YR/month)                               | 5.596                            | 5.667                   |
|             | Per capita poverty line: rural (YR/month)                               | 5.267                            | 5.377                   |
|             | Net primary enrolment rate: girls                                       | 66%                              | 54%                     |
|             | Net primary enrolment rate: boys  | 81%                              | 73%                     |
|             | Net primary enrolment: total  | 74%                              | 64%                     |
|             | Access to potable water   | 31.10%                           | 38.70%                  |
|             | Access to sanitation  | 39.70%                           | 39.20%                  |
|             | Doctors per 10,000 population (2004)                                    | 0.2                              | 2.7                     |
|             | Unemployment as % of population > 15                                    | 7.10%                            | 7.10%                   |
|             | Employed in agriculture, % of total employed                            | 24.49%                           | 34.10%                  |
|             | First rural income source   | Wages & salaries, 36.10%         | 42.70%                  |
|             | Second rural income source  | Self consumption & gifts, 19.10% | 15.60%                  |
|             | Third rural income source   | Cash & in-kind income, 15.90%    | 9.10%                   |
|             | Cultivated area (% of total area)                                       | 5.80%                            | 2.90%                   |
|             | Farmland/livestock ownership  | 50.00%                           | 43.70%                  |
|             | Female land ownership   | 6.10%                            | 3.60%                   |
|             | Qat production (% of cultivated area)                                   | 14%                              | 10%                     |

Taiz governorate is located at the southwestern corner of Yemen, bordering the Red Sea and the four governorates at Lahej, Addaleh, Ibb and Hodeida. It is composed of the Central and Northern Highlands and The Tihama Plain Zones. Taiz population density is as high as 260 people/km<sup>2</sup> with a population estimated at 2.6 million in 2007, of which 77.6% live in rural areas. Taiz claims 11% of all private businesses according to the 2004 census, thus placing it in the second rank after Sana'a city at the national level. Taiz offers a wide variety of tourism with its high mountains, natural spring and sulfuric water and ancient historic sites.

### *Livelihood Characteristics, Food Security and Poverty*

Taiz with its international airport and historic port of Al-Makha (Mokka) proclaims a wide variety of economic activities to include large arable lands, immense agricultural terraces, medium sized industrial plants and a coastal line of 153km by the Red Sea. Fish production in Taiz amounted to 3,600 tons in 2005, which is 1.5% of total national production. 58,154 hectares in Taiz are cultivated, with cereals (59%), qat (14%) and cash crops (13%) accounting for the major share. Access to drinking water is available to 31.1% of the population as compared to the national average of 38.7%.

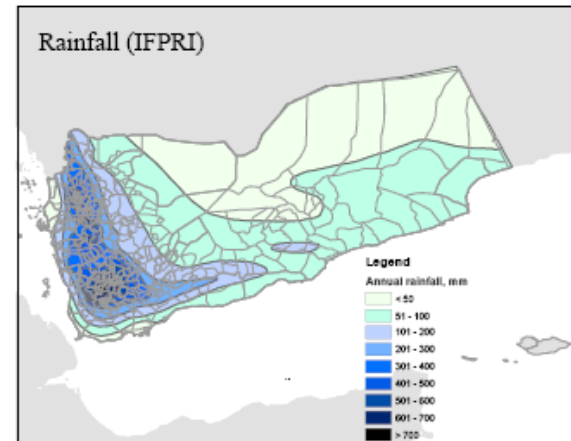
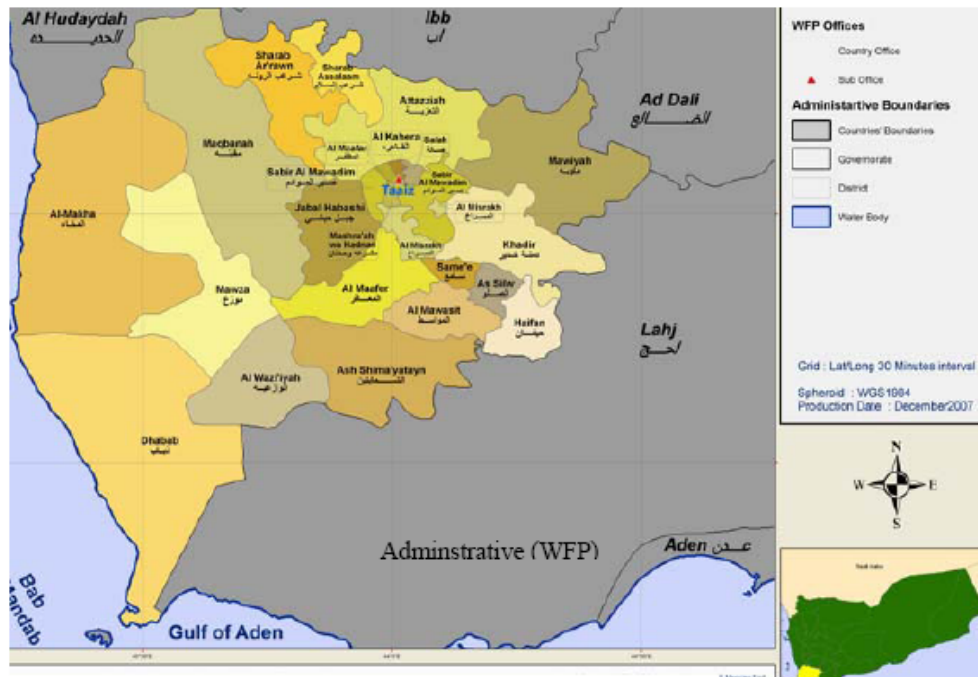


Household average annual income in Taiz amounts to nearly 657,000 YR as compared to the national average of 884,000 YR. The main source of income is derived from wages and salaries followed by returns from private businesses and other cash and in-kind income resources. The proportion of generally food insecure and food insecure with hunger populations in Taiz largely mirrors national averages. Around 47% reported that they could not afford to eat what they normally ate at some point in the past year. Another 22% stated that they feared not being able to have enough to eat, and 19.6% were found to be food insecure with hunger. However, Taiz does have a significantly lower percentage of households with severe hunger. Only 2.8%, two and a half times less the national average, of Taizi households reported that a member had foregone eating for an entire day due to lack of food. Taiz has slightly below average consumption rates for the major food groups, including dairy (68.7%), pulses (55.2%), fruits and vegetables (62.6%) and animal protein (68.1%). Close to one quarter of all households also consume only one to two food groups daily.

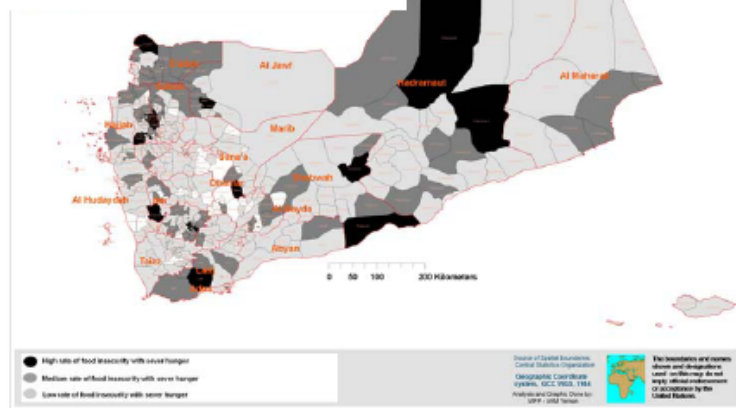
### *Major Challenges and Strategic Outlook*

In general, Taiz benefits from political, social and security stabilities. Its human resources until the Gulf War in 1990 were the main source of immigrant labourers in Saudi Arabia. Their returns home since then have indeed created imbalances in Taiz population density and physical, social and livelihood requirements. Taiz is facing major water and rainfall shortages, seasonal flooding, soil erosion, and increasing salinity of its water basins, all of which are affecting its agriculture production and the livelihood of its population. Its concentration of medium sized industrial plants makes up and complements food security aspects. Taiz with its air and marine ports, along with its other potentials and promising sectors and a large number of skilled to semi-skilled labourers can be a leading development pole of Yemen.

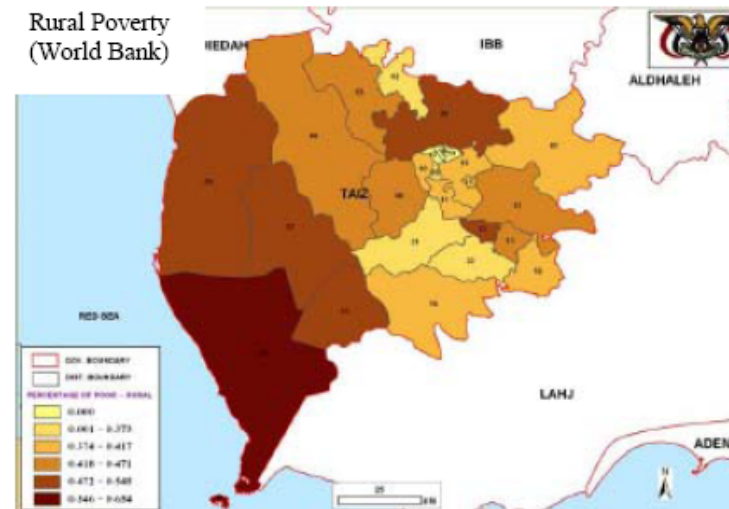
# WFP Yemen – Secondary Data Analysis on Food Security and Vulnerability



Vulnerability to Food Insecurity (WFP)



Rural Poverty (World Bank)



**13. Hodeida Governorate**

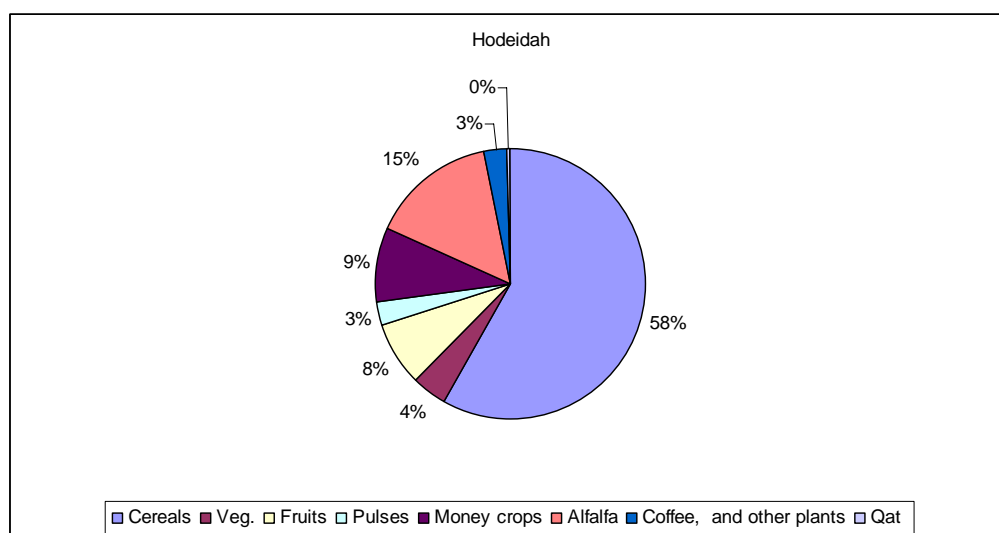
| Governorate | Indicators  | Value                           | National Average        |
|-------------|---|---------------------------------|-------------------------|
| Hodeida     | Agro-ecological zone  | Zone 2                          |                         |
|             | Area  | 13,252 km <sup>2</sup>          | 527,970 km <sup>2</sup> |
|             | Number of Districts   | 26                              | 333                     |
|             | Population (Urban) 2007   | 836,153                         | 6,256,462               |
|             | Population (Rural) 2007   | 1,534,291                       | 15,282,533              |
|             | Population (Total) 2007   | 2,370,444                       | 21,538,995              |
|             | % rural - total population  | 64.70%                          | 71%                     |
|             | Food Security Situation 2003  |                                 |                         |
|             | % food insecure households  | 24.70%                          | 21.70%                  |
|             | % households with moderate hunger                                       | 18.90%                          | 13.80%                  |
|             | % households with severe hunger   | 5.80%                           | 7.90%                   |
|             | % households vulnerable to food insecurity                              | 23.10%                          | 20.80%                  |
|             | Rank of Governorate with food insecure households (out of 20, 1: worst) | 6                               |                         |
|             | Poverty Situation 2005/06   |                                 |                         |
|             | Total poverty rate (%)  | 31.72%                          | 34.78%                  |
|             | National poverty rank (out of 21, 1: best)                              | 9                               |                         |
|             | Urban poverty rate (%)  | 21.58%                          | 20.70%                  |
|             | Rural poverty rate (%)  | 36.43%                          | 40.10%                  |
|             | Change in urban poverty rate 1998-2006 (%)                              | -15.72%                         | -11.58%                 |
|             | Change in rural poverty rate 1998-2006 (%)                              | -7.96%                          | -2.40%                  |
|             | Number of food poor (HBS) in 1998                                       | 11%                             |                         |
|             | Number of food poor (HBS) in 2006                                       | 11.50%                          |                         |
|             | Per capita poverty line: urban (YR/month)                               | 5.020                           | 5.667                   |
|             | Per capita poverty line: rural (YR/month)                               | 4.981                           | 5.377                   |
|             | Net primary enrolment rate: girls                                       | 39%                             | 54%                     |
|             | Net primary enrolment rate: boys  | 57%                             | 73%                     |
|             | Net primary enrolment: total  | 48%                             | 64%                     |
|             | Access to potable water   | 48.30%                          | 38.70%                  |
|             | Access to sanitation  | 47.60%                          | 39.20%                  |
|             | Doctors per 10,000 population (2004)                                    | 1.1                             | 2.7                     |
|             | Unemployment as % of population > 15                                    | 6.50%                           | 7.10%                   |
|             | Employed in agriculture, % of total employed                            | 39.00%                          | 34.10%                  |
|             | First rural income source   | Wages & salaries, 47.40%        | 42.70%                  |
|             | Second rural income source  | Private business, 17.80%        | 15.60%                  |
|             | Third rural income source   | Agriculture & livestock, 11.50% | 9.10%                   |
|             | Cultivated area (% of total area)                                       | 0.30%                           | 2.90%                   |
|             | Farmland/livestock ownership  | 27.00%                          | 43.70%                  |
|             | Female land ownership   | 4.00%                           | 3.60%                   |
|             | Qat production (% of cultivated area)                                   | 0%                              | 10%                     |

Hodeida is located in central western Yemen, bordering the Red Sea. With its strategically located port Hodeida represents a relay between the Red Sea and the southwestern mountainous plateau of Yemen. Hodeida occupies a surface of 13,252km<sup>2</sup> and has a population of around 2.4 million (2007), of which 64.7% live in rural areas. With this sizeable population, Hodeida is placed 2<sup>nd</sup> at the national level after the adjacent Taiz governorate. According to the 2004 census, Hodeida has about 36,850 private and government enterprises, representing 9% of total enterprises and placing Hodeida in the fourth position after the Capital, Taiz and Ibb. Next to Hodeida main sea port, the port of Salif is

another economic gate for exporting salt, cement and gypsum. Hodeida is well known for its historic towns, such as ‘Zabed’, which is a UNESCO World Heritage site that must be protected and safeguarded. In addition to 300km of coast line, a group of islands, in particular ‘Kamran’ and ‘Haneesh’, forms a promising basis for tourism.

#### *Livelihood Characteristics, Food Security and Poverty*

Only a very small percentage of the total area (0.3%) can be utilised for agriculture. Out of 314,777 hectares of cultivable land only 224,773 hectares are currently cultivated, with cereal (58%), alfalfa (15%) and cash crops (9%) making up the majority. Agriculture is mostly irrigated from flash floods from distant mountains. Spate irrigation is also widely used. The Tihama Plain of this governorate is well known for its livestock rearing and for producing enough cereals to supply other governorates, such as Taiz. Fish production in Hodeida stabilized around 22,000 tons/year between 2000 and 2005. A new modern fishing sea port with an initial cost of \$8 million will be operational in 2010 with the intention of meeting the growing demand of the fishery sector and to retrieve pressure from the current over crowded seaport. Access to drinking water is available to 48.3% of the population as compared to the national average of 38.7%.

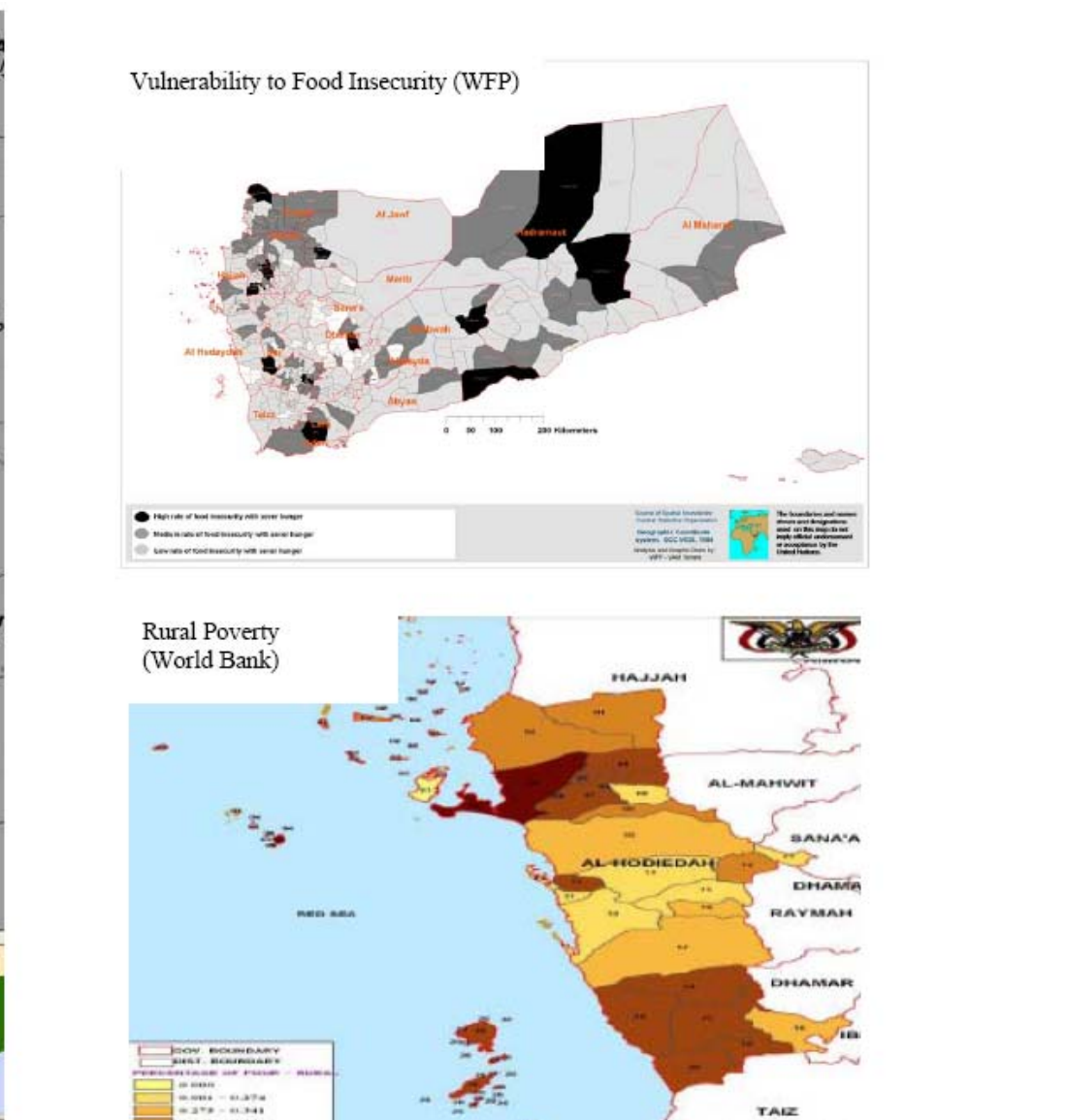


Household average annual income in Hodeida amounts to nearly 894,000 YR, compared to the national average of 884,000 YR. The main source of income is derived from wages and salaries followed by returns from private businesses and sales from agriculture and animal production. Hodeida belongs to the group of six governorates that have recorded the highest proportion of generally food increase households. In moderate and severe food insecure household terms, Hodeida is placed 6<sup>th</sup> at the national level with a percentage of 24.7% (21.7% national level). In moderate hunger terms, Hodeida is placed 4<sup>th</sup> with a percentage of 18.9% (13.8% national level). However, in severe hunger terms, Hodeida is within the national level of 7.9%. In spite of these comparatively high rates of food insecurity, Hodeida does rank favourably in terms of the variety of food consumed. More than 80% of households regularly consume dairy and fruits and vegetables, and 60% eat pulses. Perhaps most notably, 92.4% regularly consume some form of animal protein, surpassed only by Sana'a City and Aden. Hodeida also comes in significantly above average concerning the number of food groups consumed. Again following behind Sana'a City and Aden, Hodeida has one of the highest percentages of households that regularly consume four to five food groups (83.7%). UNICEF (2003) measured child malnutrition in five districts and found that 40.1% and 25.6% of children are severely stunted and underweight, respectively. The results for Hodeida suggest that child care, especially concerning diarrhoea, and child malnutrition require special attention. This could help reduce the high child mortality levels found in this

governorate. While the prevalence of female genital mutilation in Hodeida is second only to that in Al-Mahra, the findings indicate a considerable proportion of women who want this practice to be discontinued. Hodeida has worse than average for child mortality, incidence and treatment of child illnesses, and child malnutrition; and is somewhat better than average for child labour, drinking water, and child immunization.

#### *Major Challenges and Strategic Outlook*

Hodeida has a high population density of over 180/km<sup>2</sup>. Health and environment factors coupled with high climate temperatures and extreme humidity are unbearable most of the year. Most of Yemen's three million malaria infected people live in the Tihama Plain, which constitute a good part of this governorate. Its two main sea ports are largely incapable to compete commercially with nearby ports on the Red Sea. Public utilities, such as electricity are only accessible to 25% of the population and another 5-8% is produced privately. Fish production is extremely underdeveloped and not exceeding 9% of total Yemeni production in 2004 albeit its 300km coastline and the large group of islands it possesses in the Red Sea. Hodeida possesses great potentials for increasing agricultural, industrial, commercial, tourism and maritime transportation, as well as the fisheries sectors. These promising sectors, if exploited efficiently, can dramatically upgrade the livelihood of Hodeida residents and enhance Yemen's economic growth as a whole.



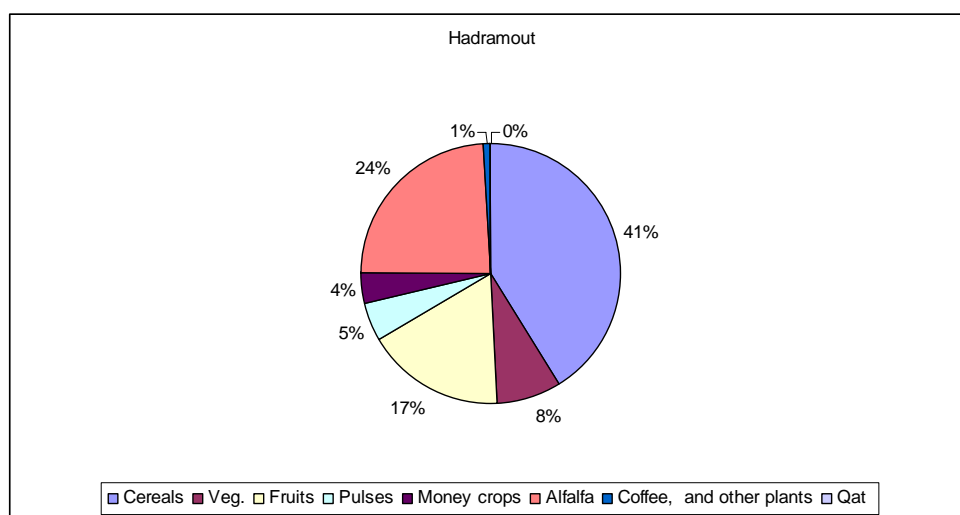
**14. Hadramout Governorate**

| Governorate | Indicators  | Value                         | National Average        |
|-------------|---|-------------------------------|-------------------------|
| Hadramout   | Agro-ecological zone  | Zones 3, 4 & 5                |                         |
|             | Area  | 167,749 km <sup>2</sup>       | 527,970 km <sup>2</sup> |
|             | Number of Districts   | 30                            | 333                     |
|             | Population (Urban) 2007   | 521,101                       | 6,256,462               |
|             | Population (Rural) 2007   | 605,254                       | 15,282,533              |
|             | Population (Total) 2007   | 1,126,355                     | 21,538,995              |
|             | % rural - total population  | 53.70%                        | 71%                     |
|             | Food Security Situation 2003  |                               |                         |
|             | % food insecure households  | 16.60%                        | 21.70%                  |
|             | % households with moderate hunger                                       | 11.50%                        | 13.80%                  |
|             | % households with severe hunger   | 5.10%                         | 7.90%                   |
|             | % households vulnerable to food insecurity                              | 21%                           | 20.80%                  |
|             | Rank of Governorate with food insecure households (out of 20, 1: worst) | 12                            |                         |
|             | Poverty Situation 2005/06   |                               |                         |
|             | Total poverty rate (%)  | 35.59%                        | 34.78%                  |
|             | National poverty rank (out of 21, 1: best)                              | 11                            |                         |
|             | Urban poverty rate (%)  | 31.45%                        | 20.70%                  |
|             | Rural poverty rate (%)  | 39.17%                        | 40.10%                  |
|             | Change in urban poverty rate 1998-2006 (%)                              | -6.11%                        | -11.58%                 |
|             | Change in rural poverty rate 1998-2006 (%)                              | 9.51%                         | -2.40%                  |
|             | Number of food poor (HBS) in 1998                                       | 6%                            |                         |
|             | Number of food poor (HBS) in 2006                                       | 3%                            |                         |
|             | Per capita poverty line: urban (YR/month)                               | 5.667                         | 5.667                   |
|             | Per capita poverty line: rural (YR/month)                               | 5.589                         | 5.377                   |
|             | Net primary enrolment rate: girls                                       | 60%                           | 54%                     |
|             | Net primary enrolment rate: boys  | 73%                           | 73%                     |
|             | Net primary enrolment: total  | 66%                           | 64%                     |
|             | Access to potable water   | 79.00%                        | 38.70%                  |
|             | Access to sanitation  | 65.50%                        | 39.20%                  |
|             | Doctors per 10,000 population (2004)                                    | 4.2                           | 2.7                     |
|             | Unemployment as % of population > 15                                    | 9.70%                         | 7.10%                   |
|             | Employed in agriculture, % of total employed                            | 13.60%                        | 34.10%                  |
|             | First rural income source   | Wages & salaries, 36.90%      | 42.70%                  |
|             | Second rural income source  | Cash & in-kind income, 21.50% | 15.60%                  |
|             | Third rural income source   | Private business, 13.70%      | 9.10%                   |
|             | Cultivated area (% of total area)                                       | 0.30%                         | 2.90%                   |
|             | Farmland/livestock ownership  | 10.80%                        | 43.70%                  |
|             | Female land ownership   | 2.30%                         | 3.60%                   |
|             | Qat production (% of cultivated area)                                   | 0%                            | 10%                     |

Hadramout is located in eastern Yemen, with the capital city of Al Mukalla. It is the largest governorate in Yemen with a considerable area of 167,749 km<sup>2</sup>, i.e. 36% of the total area of Yemen but with a population of just 1.1 million in 2007 (46.3% of them being urban). Administratively, Hadramout is composed of two main geographical areas. The first encompasses 14 districts stretching over Hadramout valley and its desert zone, whilst the second covers 16 districts over the coastal line (including Socotra Island) and the highlands. Hadramout was severely affected by the widespread flooding that swept it in October 2008 (see SECTION).

### *Livelihood Characteristics, Food Security and Poverty*

Hadramout is well known for its economic diversity that includes agricultural production of honey, dates, tobacco, cotton and fisheries (with a coastal line of 750km not including Socatra). Its fisheries production is placed first at the national level with average annual production of 65,000 tons in 2005 as compared to 30,400 tons in 2000. Hadramout has the largest and deepest unexploited water basin in Yemen. This Governorate is well known for its ancient cities such as Shebam, Tarim, Seyoun and Shahr, with extremely high potentials for tourism and oil and gas exploitations. Moreover, Hadramouti in large numbers have since decades migrated into neighbouring Saudi Arabia and a large proportion of them became extremely wealthy. Their remittances and investments in Yemen, however, are considered disproportionate to their wealth, due to the unfavourable investment environment in Yemen. The governorate has a very minor percentage of cultivated area, on which cereals (41%), alfalfa (24%) and fruits (17%) make the largest shares. Access to drinking water is available to 79% of Hadramout's population as compared to the national average of 38.7%.



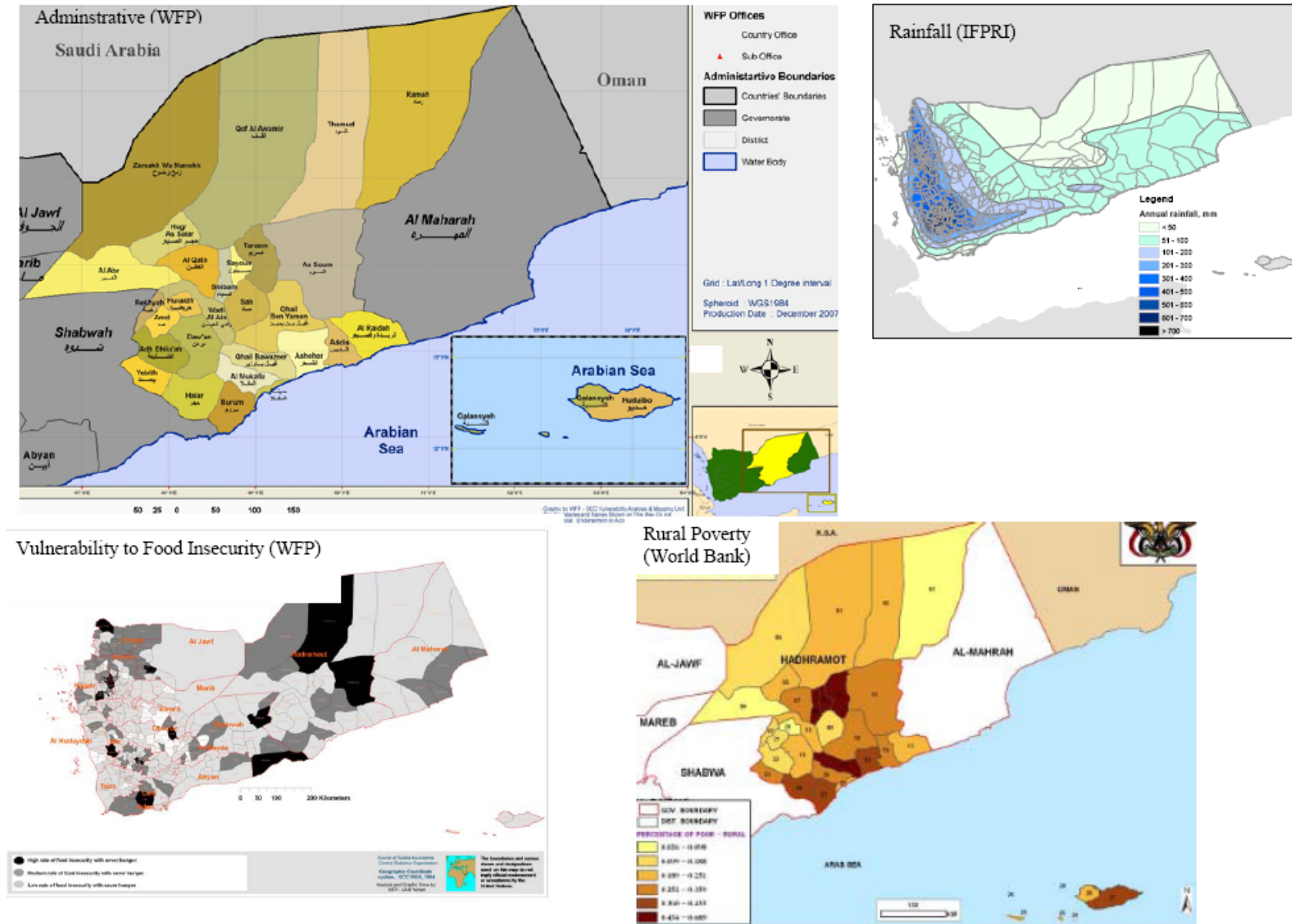
Household average annual income in Hadramout amounts to nearly one million YR (national average: 884,000 YR). The main source of income is derived from wages and salaries followed by returns from private businesses and other cash and in-kind resources. Hadramout has one of the highest proportions of households who acquire their food from income from commercial activities (7.7%, compared with 4.2 percent nationwide). It also has close to twice the national average of households receiving remittances to meet their food needs. While a comparatively large percentage of households in Hadramout may be receiving money from these two sources, they still make up a low proportion of the governorate population. Hadramout's household rates of food insecurity are close to national averages on most measures. 43.6% of households were found to be generally food insecure, slightly below the national average. Rates of vulnerability (22%) and food insecurity with moderate hunger (11.5%) and severe hunger (5.1%) closely mirror the nationwide situation. Hadramouti households have average rates of consumption of fruits and vegetables, but below average rates for dairy and pulses. Households do, however, have particularly high rates of consumption of animal protein, largely fish. Around 58.7% of households consume four to five food groups on a regular basis, slightly below the 62.8% nationwide average.

### *Major Challenges and Strategic Outlook*

Hadramout has a very low population density of 6 people/km<sup>2</sup>, and thus a scarcity of human resources to exploit its highly promising economic sectors coupled with insufficiencies in its basic infrastructures. In October 2008 Hadramout was faced with severe floods and inundation. Most of its agricultural productive lands and basic infrastructures were severely

affected and called upon national and international emergency aid. Two major terrorism acts on tourists took place in Hadramout in 2008 and 2009, thus affecting severely this promising sector and intimidating potential local and foreign investors. The strategic goal is to transform Hadramout into the second largest economic and trade centre thus making it, after Aden, the second economic capital. Investment environment in Yemen has to be seriously addressed so that Hadramouti wealthy migrants reinvest part of their wealth in home country.

# WFP Yemen – Secondary Data Analysis on Food Security and Vulnerability



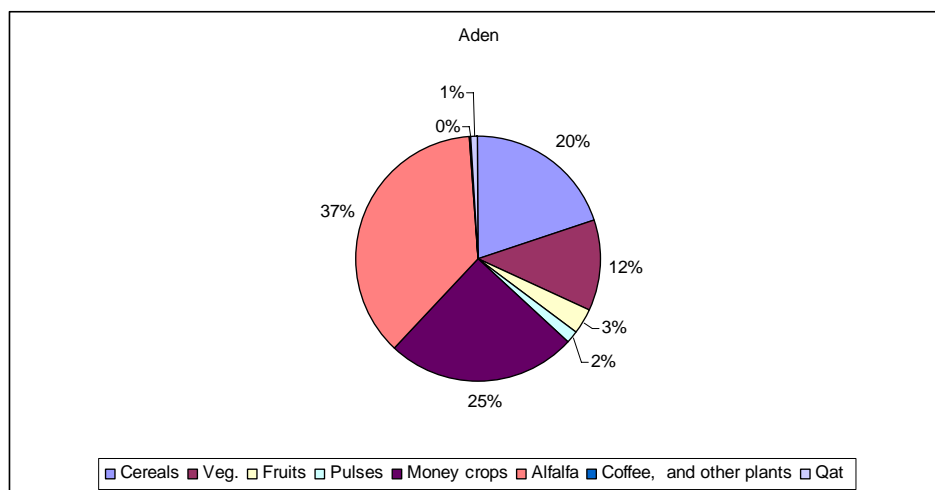
**15. Aden Governorate**

| Governorate | Indicators  | Value                     | National Average        |
|-------------|---|---------------------------|-------------------------|
| Aden        | Agro-ecological zone  | Zones 3                   |                         |
|             | Area  | 6,980km <sup>2</sup>      | 527,970 km <sup>2</sup> |
|             | Number of Districts   | 8                         | 333                     |
|             | Population (Urban) 2007   | 654,099                   | 6,256,462               |
|             | Population (Rural) 2007   | 0                         | 15,282,533              |
|             | Population (Total) 2007   | 654,099                   | 21,538,995              |
|             | % rural - total population  | 0                         | 71%                     |
|             | Food Security Situation 2003  |                           |                         |
|             | % food insecure households  | 14.60%                    | 21.70%                  |
|             | % households with moderate hunger                                       | 6.60%                     | 13.80%                  |
|             | % households with severe hunger   | 8%                        | 7.90%                   |
|             | % households vulnerable to food insecurity                              | 16.90%                    | 20.80%                  |
|             | Rank of Governorate with food insecure households (out of 20, 1: worst) | 16                        |                         |
|             | Poverty Situation 2005/06   |                           |                         |
|             | Total poverty rate (%)  | 16.88%                    | 34.78%                  |
|             | National poverty rank (out of 21, 1: best)                              | 4                         |                         |
|             | Urban poverty rate (%)  | 16.88%                    | 20.70%                  |
|             | Rural poverty rate (%)  | entirely urban            | 40.10%                  |
|             | Change in urban poverty rate 1998-2006 (%)                              | -21.15%                   | -11.58%                 |
|             | Change in rural poverty rate 1998-2006 (%)                              | entirely urban            | -2.40%                  |
|             | Number of food poor (HBS) in 1998                                       | 2%                        |                         |
|             | Number of food poor (HBS) in 2006                                       | less than 1%              |                         |
|             | Per capita poverty line: urban (YR/month)                               | 6.079                     | 5.667                   |
|             | Per capita poverty line: rural (YR/month)                               | entirely urban            | 5.377                   |
|             | Net primary enrolment rate: girls                                       | 75%                       | 54%                     |
|             | Net primary enrolment rate: boys  | 80%                       | 73%                     |
|             | Net primary enrolment: total  | 77%                       | 64%                     |
|             | Access to potable water   | 88.00%                    | 38.70%                  |
|             | Access to sanitation  | 91.20%                    | 39.20%                  |
|             | Doctors per 10,000 population (2004)                                    | 13.5                      | 2.7                     |
|             | Unemployment as % of population > 15                                    | 13.70%                    | 7.10%                   |
|             | Employed in agriculture, % of total employed                            | 3%                        | 34.10%                  |
|             | First income source   | Regular employment, 71.2% | 42.70%                  |
|             | Second income source  | Cash & in-kind income     | 15.60%                  |
|             | Third income source   | Renting houses            | 9.10%                   |
|             | Cultivated area (% of total area)                                       | 0.30%                     | 2.90%                   |
|             | Farmland/livestock ownership  | 0.90%                     | 43.70%                  |
|             | Female land ownership   | 14.70%                    | 3.60%                   |
|             | Qat production (% of cultivated area)                                   | 1%                        | 10%                     |

Aden is located in southwestern Yemen, bordering the Gulf of Aden. It is well known for its exceptional geographic location at the heart of international shipping lines of the Arabian Sea and the Gulf of Aden. Aden is considered the main economic and trade capital of Yemen and proclaimed to be the first industrial and commercial free zone, notwithstanding its tourism potentials in addition to possessing an important oil refinery and a medium size water desalination plant. Aden is composed of 8 districts with a total area of 6,980km<sup>2</sup> and a population of around 654,100. Population is growing at 3.8% annually as opposed to the national average of 3.0%.

*Livelihood Characteristics, Food Security and Poverty*

Aden is classified in its totality as an urban area. Access to drinking water is available to 88% of the population as compared to the national average of 38.7%. Aden fish production averaged 12,000 tons/year over the period 2000-2005. It has only small cultivated area, of which 37% is alfalfa, 25% is cash crops and 20% is coffee. Together with Addaleh, Sana'a, and Lahej, Aden has the lowest proportion of food insecure households.

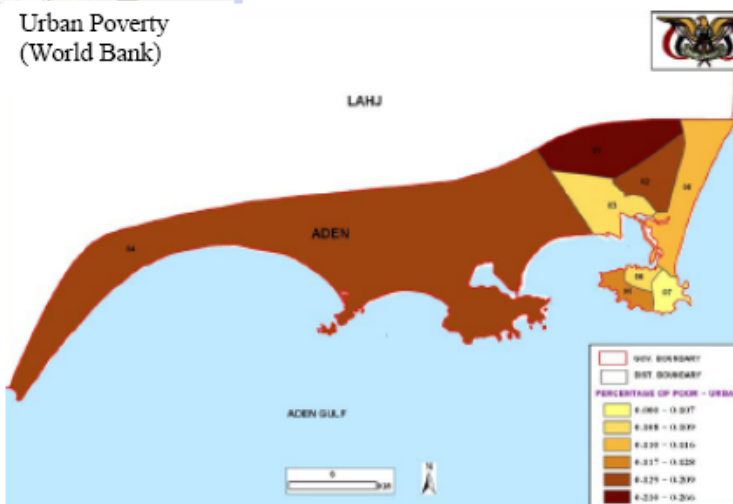
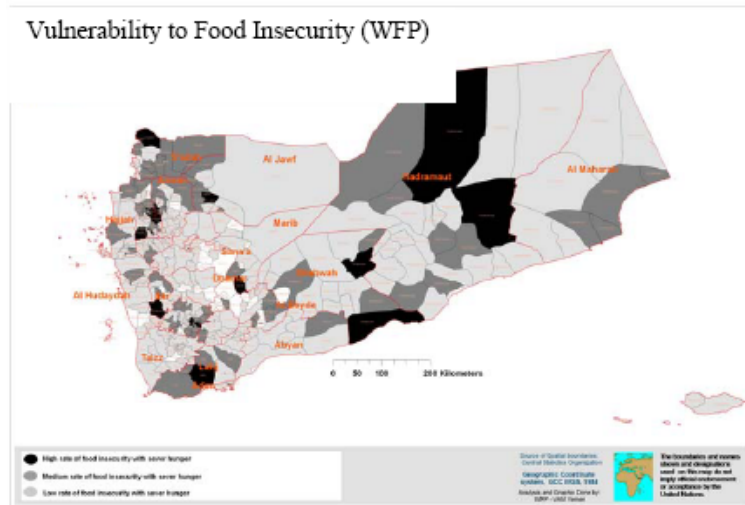
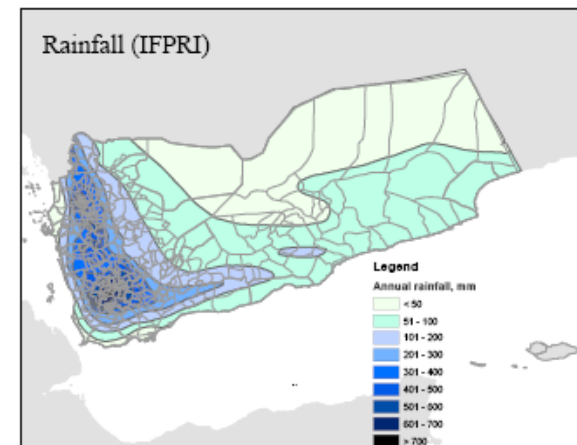
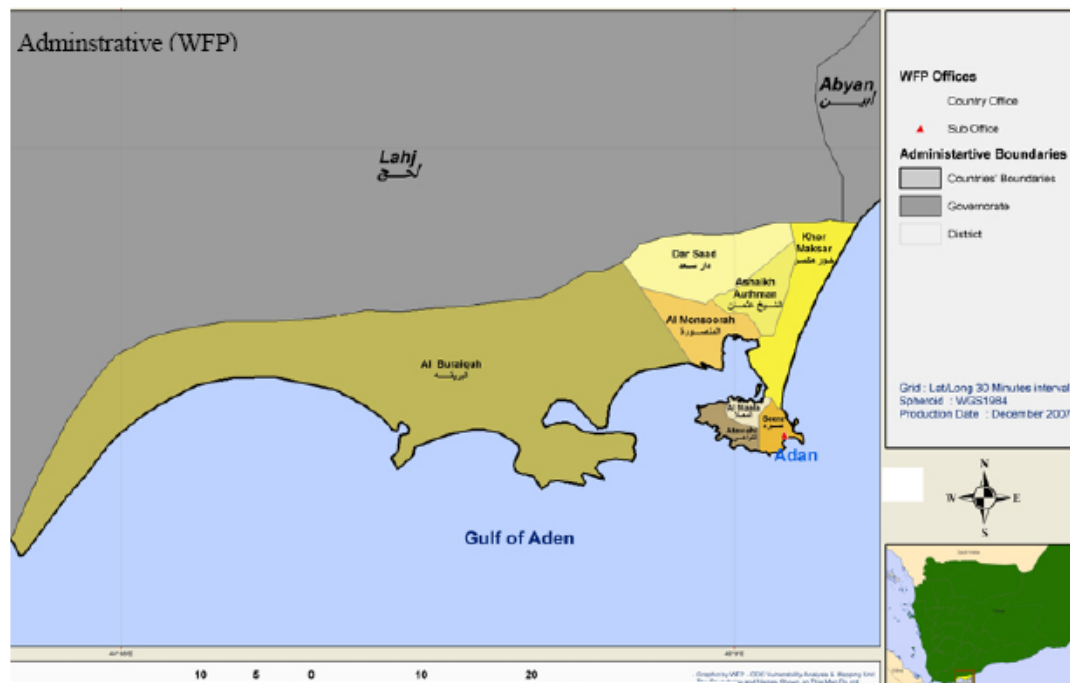


Household average annual income in Aden amounts to 924,000 YR (national average: 884,000 YR). The main source of income is derived from wages and salaries followed by other cash and in-kind income resources and from renting houses. Not surprisingly, 71.2% of households in Aden rely on salaries from regular employment as their main source of bulk food. This is close more than four times the national average. Households who rely on regular employment as their primary source of food are significantly less likely to be food insecure than households who depend on salaries from temporary employment. Adeni households registered below average rates of general food insecurity, vulnerability to food insecurity, and definite food insecurity with hunger. Slightly more than one third of households were found to be generally food insecure, and 18% were considered vulnerable to food insecurity. 14.6% are food insecure with hunger, with slightly more than half with severe hunger (8%) compared with moderate hunger (6.6%). Households in Aden eat particularly varied diets compared with average Yemeni households. Nearly 93% of Aden consume four to five food groups on a regular basis, significantly above the national average of 62.8%.

### *Major Challenges and Strategic Outlook*

Political and security instabilities in Aden and its surrounding governorates have severely affected the investment climate that Aden with its free zone was expected to benefit from. For instance, the terrorist attacks on the USS Cole in 2000 and on a French oil tanker in 2002 have seriously intimidated potential investors for years after. This has adversely affected the livelihood of Aden in all of its dimensions at a time when high food, commodities and utilities prices were taking place. Rainfall in Aden is scarce and not exceed 25mm. Aden depends largely in its water supply from nearby wells from Lahj and Abyan governorates. Aden is the main recipient of Somali refugees with a total number exceeding 20,000 registered by UNHCR living in Basateen within Aden; in addition to another 10,000 Somali refugees located in nearby Kharaz. Unknown but large number of unregistered Somali and Ethiopian refugees put additional pressures on Aden infrastructures, public services, employment, housing, utilities and commodities. The strategic outlook of Aden is to enhance its role as a leading national, regional and international free zone and enabling it to benefit from its exceptional geographic location in becoming a major tourist area in the region.

## WFP Yemen – Secondary Data Analysis on Food Security and Vulnerability



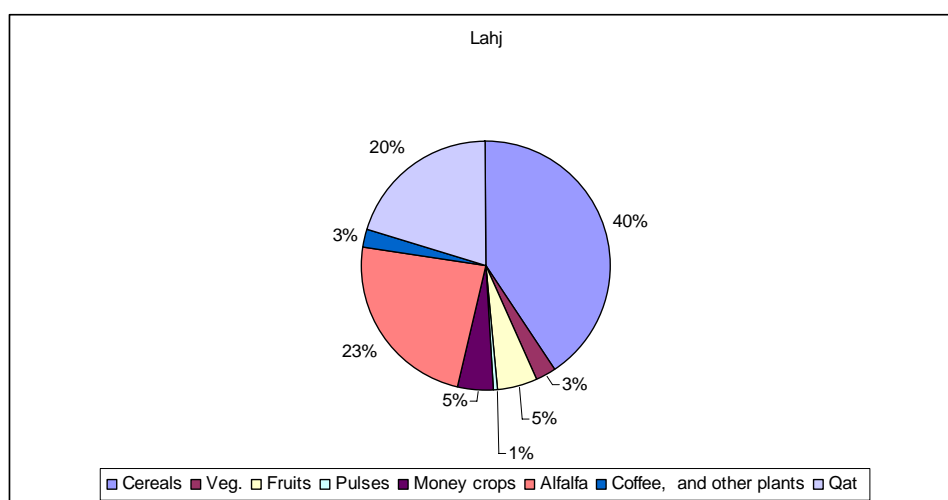
**16. Lahej Governorate**

| Governorate | Indicators  | Value                            | National Average        |
|-------------|---|----------------------------------|-------------------------|
| Lahej       | Agro-ecological zone  | Zones 1&3                        |                         |
|             | Area  | 12,697 km <sup>2</sup>           | 527,970 km <sup>2</sup> |
|             | Number of Districts   | 15                               | 333                     |
|             | Population (Urban) 2007   | 67,941                           | 6,256,462               |
|             | Population (Rural) 2007   | 716,471                          | 15,282,533              |
|             | Population (Total) 2007   | 784,412                          | 21,538,995              |
|             | % rural - total population  | 91.30%                           | 71%                     |
|             | Food Security Situation 2003  |                                  |                         |
|             | % food insecure households  | 23.10%                           | 21.70%                  |
|             | % households with moderate hunger                                       | 11.90%                           | 13.80%                  |
|             | % households with severe hunger   | 11.20%                           | 7.90%                   |
|             | % households vulnerable to food insecurity                              | 10.40%                           | 20.80%                  |
|             | Rank of Governorate with food insecure households (out of 20, 1: worst) | 9                                |                         |
|             | Poverty Situation 2005/06   |                                  |                         |
|             | Total poverty rate (%)  | 47.20%                           | 34.78%                  |
|             | National poverty rank (out of 21, 1: best)                              | 16                               |                         |
|             | Urban poverty rate (%)  | 22.90%                           | 20.70%                  |
|             | Rural poverty rate (%)  | 49.49%                           | 40.10%                  |
|             | Change in urban poverty rate 1998-2006 (%)                              | -4.12%                           | -11.58%                 |
|             | Change in rural poverty rate 1998-2006 (%)                              | 13.68%                           | -2.40%                  |
|             | Number of food poor (HBS) in 1998                                       | 4%                               |                         |
|             | Number of food poor (HBS) in 2006                                       | 5%                               |                         |
|             | Per capita poverty line: urban (YR/month)                               | 5.421                            | 5.667                   |
|             | Per capita poverty line: rural (YR/month)                               | 5.404                            | 5.377                   |
|             | Net primary enrolment rate: girls                                       | 56%                              | 54%                     |
|             | Net primary enrolment rate: boys  | 77%                              | 73%                     |
|             | Net primary enrolment: total  | 67%                              | 64%                     |
|             | Access to potable water   | 38.60%                           | 38.70%                  |
|             | Access to sanitation  | 34.10%                           | 39.20%                  |
|             | Doctors per 10,000 population (2004)                                    | 3.4                              | 2.7                     |
|             | Unemployment as % of population > 15                                    | 10.90%                           | 7.10%                   |
|             | Employed in agriculture, % of total employed                            | 20%                              | 34.10%                  |
|             | First rural income source   | Wages & salaries, 41.50%         | 42.70%                  |
|             | Second rural income source  | Cash & in-kind income, 16.50%    | 15.60%                  |
|             | Third rural income source   | Self consumption & gifts, 15.60% | 9.10%                   |
|             | Cultivated area (% of total area)                                       | 2%                               | 2.90%                   |
|             | Farmland/livestock ownership  | 50.70%                           | 43.70%                  |
|             | Female land ownership   | 3.40%                            | 3.60%                   |
|             | Qat production (% of cultivated area)                                   | 20%                              | 10%                     |

Lahej, with the major town of Al Hawtta, is located at the southwestern corner of Yemen overlooking the southern entrance of both the Red Sea and the Gulf of Aden. Lahej covers an area of 12,697 km<sup>2</sup>, with a population of 784,412 residing in its 15 administrative districts. Lahej rural population accounts for 91.3% of its total.

*Livelihood Characteristics, Food Security and Poverty*

Lahej represents a geographical extension of Aden governorate, but is ranked 16 of 21 governorates given its high poverty rate of 47.2% and a rural poverty rate of 49.5% against a national average of 40%. It is worth noting that this latter has increased by 13.7% from 1998 to 2006, whereas the national average of rural poverty decreased by 2.4%. Nonetheless positive signs are taking place in improving the overall livelihood of Lahej population. For instance, fish production increased from nil in 2000 to 7.3 tons in 2005. a cement plant with a capacity of 1,100 million tons yearly was expected to be completed in 2007. 2% of the area is cultivated, with cereals (40%), alfalfa (23%) and qat (20%) accounting for the majority. Lahej coastline is 250km long and offers fisheries potential, along with potential arable lands, water abundance and the near by Aden free zone it should be able to attract local and foreign investments. Access to drinking water is available to 38.6% of Lahej population as compared to the national average of 38.7%.

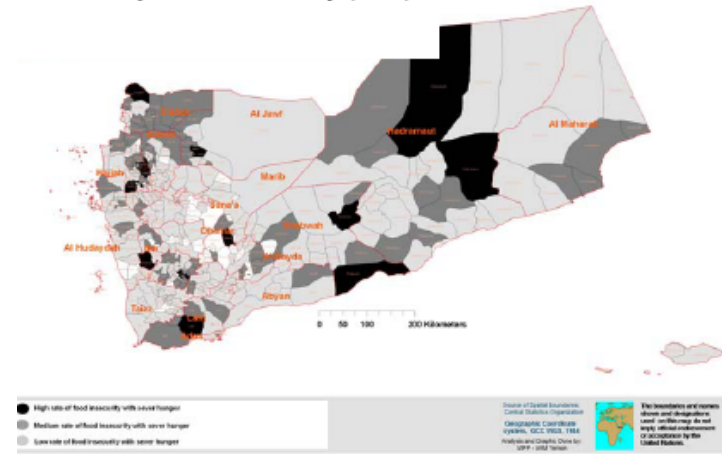
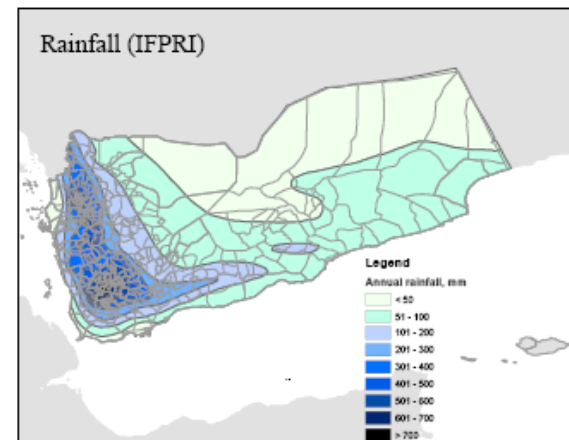
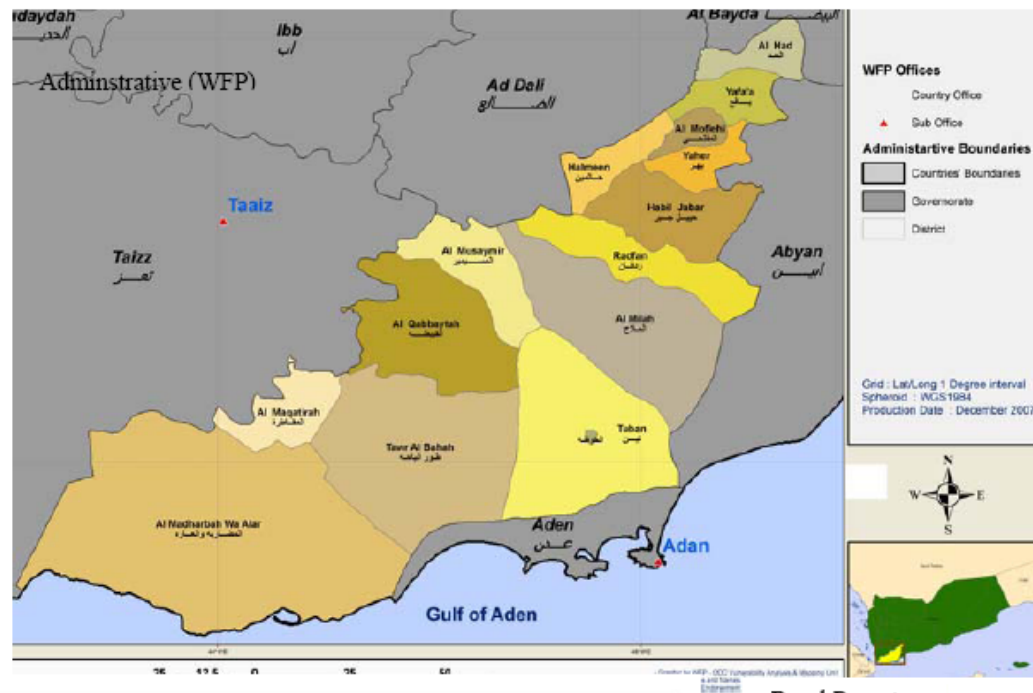


Household average annual income in Lahej amounts to nearly 659,000 YR (national average: 884,000 YR). The main source of income is derived from wages and salaries followed by other cash and in-kind income and self-consumption and gifts. Lahej presents somewhat of a paradox. Compared to national rates of general food insecurity, fewer Laheji households reported that at some point in the past year they had not been able to afford to eat what they normally eat. Additionally, only 11% are considered vulnerable to food insecurity, half the national average of 22%. However, Lahej also ranked as one of the governorates with the highest rates of food insecurity with severe hunger, at 11.2%. Additionally, proportionally more households in Lahej eat only one to two meals per day (4%) than in any other governorate in the country. Laheji households also eat below average amounts of every food group (other than bread). Compared with the country as a whole, Laheji households eat half the amount of dairy, pulses, and fruit and vegetables as other households. Finally, households have the least diverse diet in the country in terms of the number of food groups consumed. Over a quarter of households reported eating only one food group on a regular basis, strikingly above the national average of only 4.2%. Furthermore, over half of all households stated that they regularly ate only one to two food groups, and less than one quarter reported that they ate four to five food groups. Nationwide, 62.8% of Yemeni households eat four to five food groups. At this point, it is difficult to account for these discrepancies. However, it may be possible that the nature of the questions themselves have skewed the responses slightly. As a final note, given Lahej's relatively negative statistics, a surprising number of households rely on salaries from regular employment as their primary source of bulk food. UNICEF (2003) measured child malnutrition in three districts and found that 18.3% and 13.1% of children were severely stunted and underweight, respectively. Lahej is worse than average for sanitation, but much better than average for girls education, child mortality, child immunization, and fertility.

### *Major Challenges and Strategic Outlook*

Shortages in basic infrastructures and public utilities coupled with lack of skilled to semi-skilled manpower in Lahej represent major set backs to invest in its promising agriculture, fisher and industrial sectors. As with Abyan, Lahej represents a natural geographical extension of Aden governorate. And since Aden free zone is becoming alarmingly short of lands and surfaces for substantial large investments, the free zone should expand in law and spirit its boundaries to inched economic and industrial zones within Lahej and Abyan. This trio should be able to play a strategic role in exchanging goods and services with the African Horn in particular.

## WFP Yemen – Secondary Data Analysis on Food Security and Vulnerability



**17. Al-Gawf Governorate**

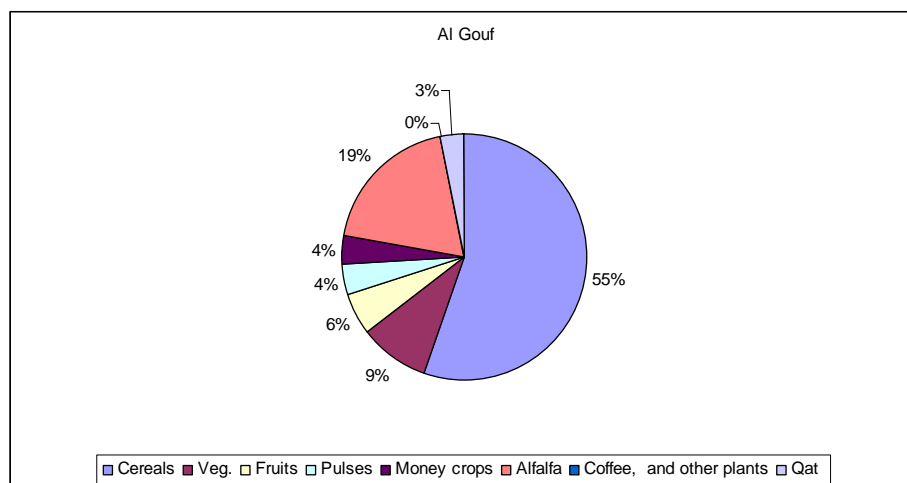
| Governorate | Indicators  | Value                            | National Average        |
|-------------|---|----------------------------------|-------------------------|
| Al-Gawf     | Agro-ecological zone  | Zones 5                          |                         |
|             | Area  | 39,503 km <sup>2</sup>           | 527,970 km <sup>2</sup> |
|             | Number of Districts   | 12                               | 333                     |
|             | Population (Urban) 2007   | 62,794                           | 6,256,462               |
|             | Population (Rural) 2007   | 417,170                          | 15,282,533              |
|             | Population (Total) 2007   | 479,964                          | 21,538,995              |
|             | % rural - total population  | 86.90%                           | 71%                     |
|             | Food Security Situation 2003  |                                  |                         |
|             | % food insecure households  | 23.90%                           | 21.70%                  |
|             | % households with moderate hunger                                       | 8.90%                            | 13.80%                  |
|             | % households with severe hunger   | 15%                              | 7.90%                   |
|             | % households vulnerable to food insecurity                              | 21.20%                           | 20.80%                  |
|             | Rank of Governorate with food insecure households (out of 20, 1: worst) | 8                                |                         |
|             | Poverty Situation 2005/06   |                                  |                         |
|             | Total poverty rate (%)  | 49.58%                           | 34.78%                  |
|             | National poverty rank (out of 21, 1: best)                              | 18                               |                         |
|             | Urban poverty rate (%)  | 32.57%                           | 20.70%                  |
|             | Rural poverty rate (%)  | 52.63%                           | 40.10%                  |
|             | Change in urban poverty rate 1998-2006 (%)                              | 1.22%                            | -11.58%                 |
|             | Change in rural poverty rate 1998-2006 (%)                              | 8.32%                            | -2.40%                  |
|             | Number of food poor (HBS) in 1998                                       | 2%                               |                         |
|             | Number of food poor (HBS) in 2006                                       | 2.50%                            |                         |
|             | Per capita poverty line: urban (YR/month)                               | 5032                             | 5.667                   |
|             | Per capita poverty line: rural (YR/month)                               | 5428                             | 5.377                   |
|             | Net primary enrolment rate: girls                                       | 58%                              | 54%                     |
|             | Net primary enrolment rate: boys  | 82%                              | 73%                     |
|             | Net primary enrolment: total  | 70%                              | 64%                     |
|             | Access to potable water   | 12.20%                           | 38.70%                  |
|             | Access to sanitation  | 7.10%                            | 39.20%                  |
|             | Doctors per 10,000 population (2004)                                    | 0.6                              | 2.7                     |
|             | Unemployment as % of population > 15                                    | 8.40%                            | 7.10%                   |
|             | Employed in agriculture, % of total employed                            | 60%                              | 34.10%                  |
|             | First rural income source   | Wages & salaries, 38%            | 42.70%                  |
|             | Second rural income source  | Agriculture & livestock, 27.40%  | 15.60%                  |
|             | Third rural income source   | Self consumption & gifts, 11.10% | 9.10%                   |
|             | Cultivated area (% of total area)                                       | 2.30%                            | 2.90%                   |
|             | Farmland/livestock ownership  | 49%                              | 43.70%                  |
|             | Female land ownership   | 10.60%                           | 3.60%                   |
|             | Qat production (% of cultivated area)                                   | 3%                               | 10%                     |

Al- Gawf occupies the northeastern valley of Yemen that reaches Saudi Arabia to the north. It stretches over a surface of 39,503km<sup>2</sup>, with a total population of 417,000 (2007), scattered over 12 districts. Around 87% of its residents live in rural and remote areas.

*Livelihood Characteristics, Food Security and Poverty*

Poverty rate in Al-Gawf attains half of its population against a national average of 34.8%. With that rate, it is ranked 18 out of Yemen 21 governorates. More alarmingly, its

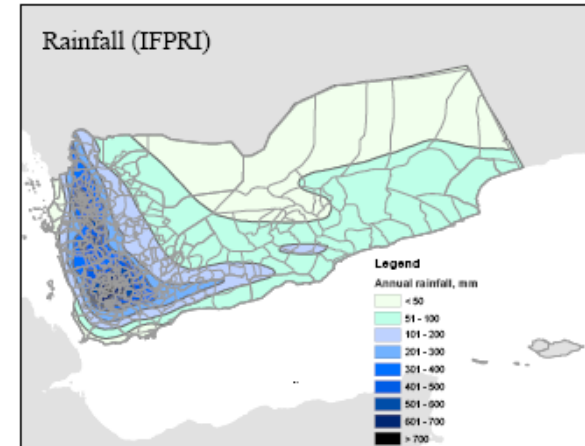
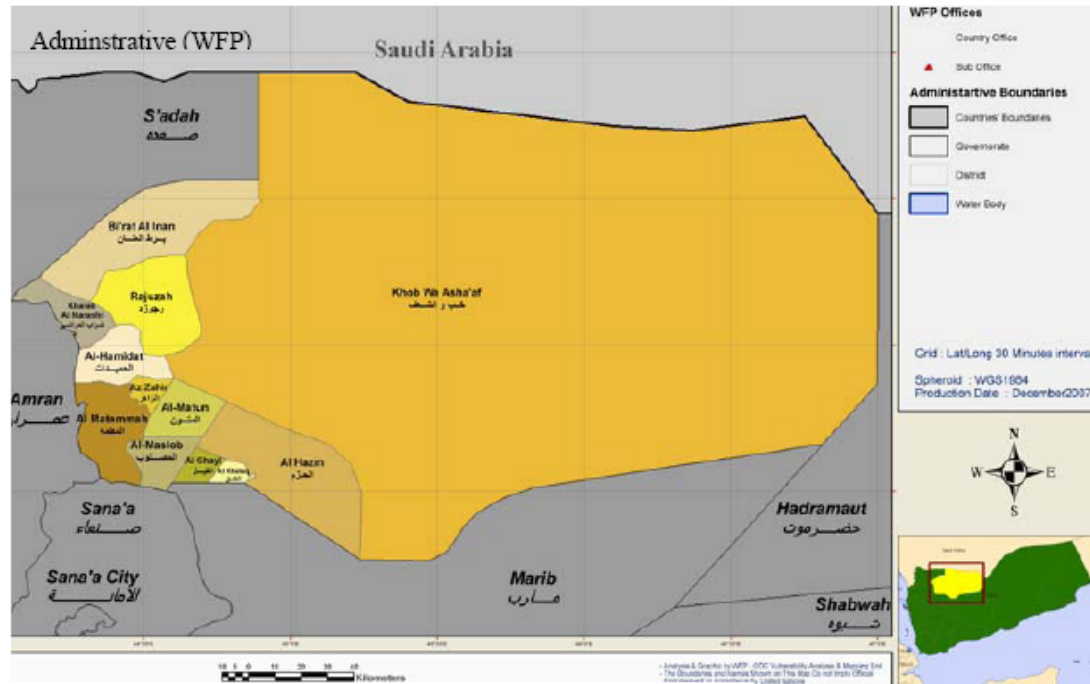
rural poverty rate has increased by 8% in between 1998 and 2006 to record a high 52.6% (national average 40%). While it does not have large share of cultivable land, only 30,317 hectares out of 90,972 hectares of cultivable land are currently cultivated – mainly with cereals (55%) and alfalfa (19%). Access to drinking water is available to only 12.2% of Al-Gawf population as compared to the national average of 38.7%.



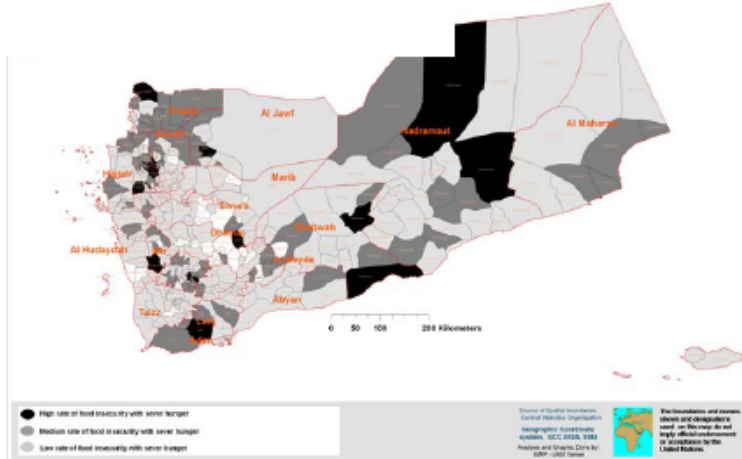
Household average annual income in Al-Gawf amounts to nearly 527,000 YR (national average: 884,000 YR). The main source of income is derived from wages and salaries followed by self-consumption and gifts and private business activities. Al-Gawf has close to average rates of general food insecurity and vulnerability. 49.4% of Gawafi households reported that at some point in the past year they could not afford to eat what they normally eat, and 22% stated that at some point in the past year they were afraid that they were not going to be able to have enough to eat. Al-Gawf, however, does register very high rates of food insecurity with severe hunger. Around 15% of Gawafi households, twice the national average, had one or more household member who went an entire day without eating at some point in the past year. Households also appear to consume a less varied diet. Al-Gawf has the second lowest percent of households who regularly eat four to five food groups a day (behind Lahej), and more than one quarter eat only one to two food groups per day. Given Al-Gawf's relatively negative food security statistics, it is somewhat surprising that the most significant source of bulk food for is from more than one source. About 29.5% of households reported relying on more than one source to meet their food needs, twice the national average. In spite of this, Al-Gawfi households rank average to below average on most measures.

### *Major Challenges and Strategic Outlook*

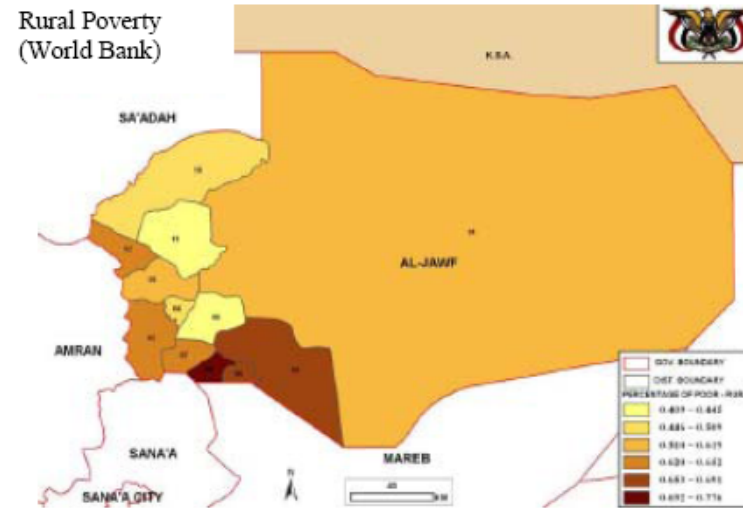
Al-Gawf is an isolated governorate and to large extent lacks basic infrastructures, public services and rural roads. It has the reputation of being socially instable for tribal customs still being practiced and still perceived as references in various social and security issues. This governorate is well known for its large fertile but unexploited valleys. Rainfall, floods and water basins are abundant in such a way that it can provide Yemen's needs of cereals, fruits, vegetables, cash crops and livestock products. In addition to its unexploited water, arable lands and valleys, Al-Gawf possesses many important historic archaeological sites and cities that form a major tourism potential, the most important being the historic city of Ma'ein.



Vulnerability to Food Insecurity (WFP)



Rural Poverty (World Bank)



**18. Shabwa Governorate**

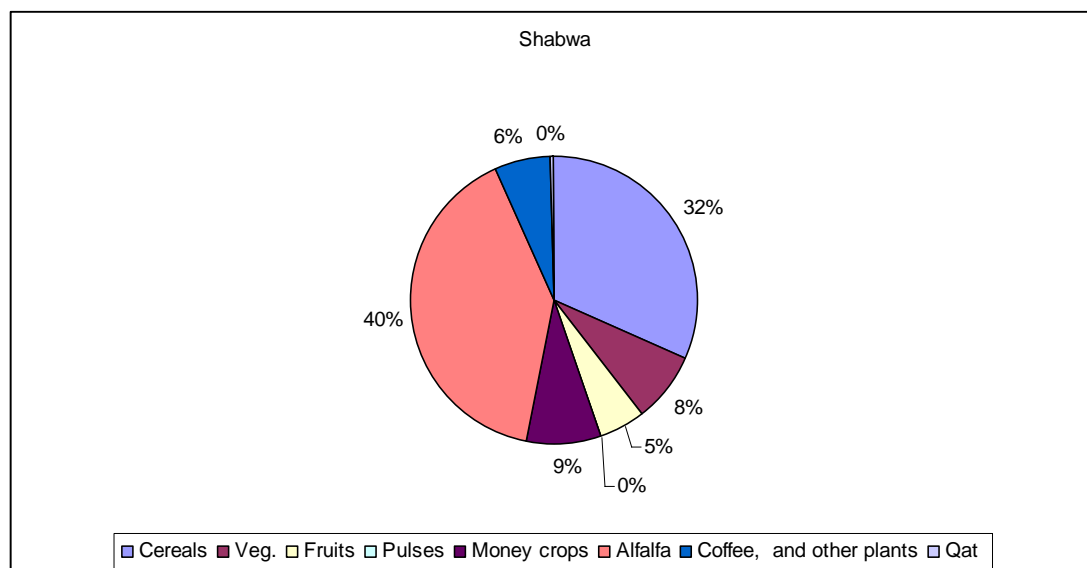
| Governorate | Indicators  | Value                        | National Average        |
|-------------|---|------------------------------|-------------------------|
| Shabwa      | Agro-ecological zone  | Zones 3 & 4                  |                         |
|             | Area  | 38,993 km <sup>2</sup>       | 527,970 km <sup>2</sup> |
|             | Number of Districts   | 17                           | 333                     |
|             | Population (Urban) 2007   | 80,353                       | 6,256,462               |
|             | Population (Rural) 2007   | 429,395                      | 15,282,533              |
|             | Population (Total) 2007   | 509,748                      | 21,538,995              |
|             | % rural - total population  | 84.20%                       | 71%                     |
|             | Food Security Situation 2003  |                              |                         |
|             | % food insecure households  | 43.50%                       | 21.70%                  |
|             | % households with moderate hunger                                       | 33.40%                       | 13.80%                  |
|             | % households with severe hunger   | 10.10%                       | 7.90%                   |
|             | % households vulnerable to food insecurity                              | 39.40%                       | 20.80%                  |
|             | Rank of Governorate with food insecure households (out of 20, 1: worst) | 1                            |                         |
|             | Poverty Situation 2005/06   |                              |                         |
|             | Total poverty rate (%)  | 54.13%                       | 34.78%                  |
|             | National poverty rank (out of 21, 1: best)                              | 20                           |                         |
|             | Urban poverty rate (%)  | 39.44%                       | 20.70%                  |
|             | Rural poverty rate (%)  | 56.80%                       | 40.10%                  |
|             | Change in urban poverty rate 1998-2006 (%)                              | -6.11%                       | -11.58%                 |
|             | Change in rural poverty rate 1998-2006 (%)                              | 9.51%                        | -2.40%                  |
|             | Number of food poor (HBS) in 1998                                       | 3%                           |                         |
|             | Number of food poor (HBS) in 2006                                       | 4%                           |                         |
|             | Per capita poverty line: urban (YR/month)                               | 5.745                        | 5.667                   |
|             | Per capita poverty line: rural (YR/month)                               | 6.372                        | 5.377                   |
|             | Net primary enrolment rate: girls                                       | 47%                          | 54%                     |
|             | Net primary enrolment rate: boys  | 77%                          | 73%                     |
|             | Net primary enrolment: total  | 63%                          | 64%                     |
|             | Access to potable water   | 52.70%                       | 38.70%                  |
|             | Access to sanitation  | 32.90%                       | 39.20%                  |
|             | Doctors per 10,000 population (2004)                                    | 2.9                          | 2.7                     |
|             | Unemployment as % of population > 15                                    | 13.60%                       | 7.10%                   |
|             | Employed in agriculture, % of total employed                            | 17%                          | 34.10%                  |
|             | First rural income source   | Wages & salaries, 65.00%     | 42.70%                  |
|             | Second rural income source  | Private business, 16.20%     | 15.60%                  |
|             | Third rural income source   | Cash & in-kind income, 6.40% | 9.10%                   |
|             | Cultivated area (% of total area)                                       | 1.20%                        | 2.90%                   |
|             | Farmland/livestock ownership  | 41.20%                       | 43.70%                  |
|             | Female land ownership   | 1.30%                        | 3.60%                   |
|             | Qat production (% of cultivated area)                                   | 0%                           | 10%                     |

Shabwa, with the main town of Atak, is located in the central southern coastline of Yemen and bordering Abyan, Hadramout, Al-Baida and Ma'areb, with a coastal line of 230km on the Gulf of Aden. Shabwa occupies an area of 38,993 km<sup>2</sup> with a total population of 510,000 (2007) of which 84% live in rural areas.

*Livelihood Characteristics, Food Security and Poverty*

Shabwa main economic activities evolve around agriculture, animals breeding, fisheries and honey. The oil sector is one of Shabwa promising sectors that can lead and form a basis

for petrochemical heavy industries. Antiquities, ancient ruins and monuments that have been discovered in over 300 sites can form a major tourism attraction. Shabwa fish production increased from 1.9 tons in 2000 to 14.3 tons in 2005. It has a relatively small proportion of cultivable land out of total land area (49,373 hectares), out of which only 16,839 hectares are currently cultivated, with alfalfa and cereal providing most acreage. Access to drinking water is available to 52.7% of Shabwa population as compared to the national average of 38.7%.

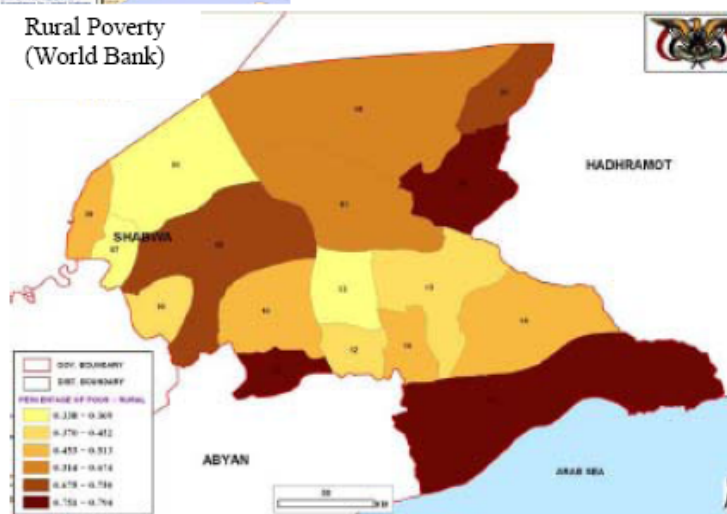
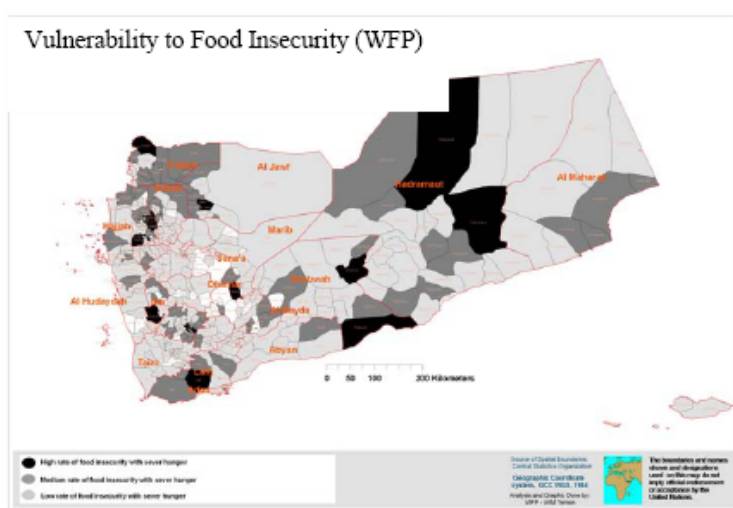
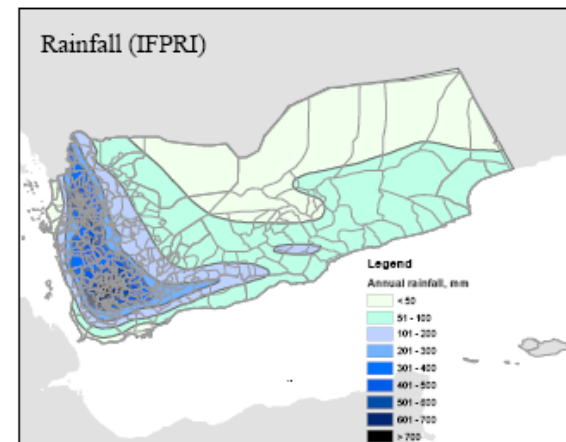
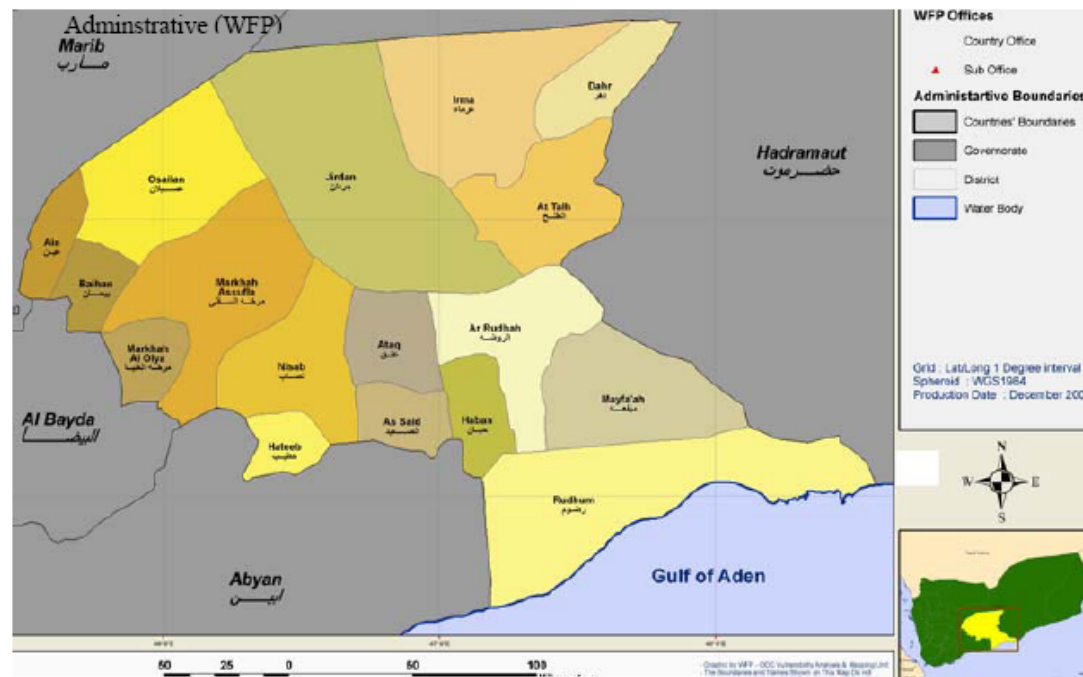


Household average annual income in Shabwa amounts to nearly 720,000 YR (national average: 884,000 YR). The main source of income is derived from wages and salaries followed by other cash and in-kind income and private business activities. Shabwa recorded the highest rates across the country of those who stated that, at some point during the past year, they could not afford to eat what they normally eat (85.6%). Shabwa also had twice the average rate of households considered vulnerable to food insecurity (40%) and those judged to be food insecure (33.4%). However, the large majority of those who are food insecure have moderate, rather than severe, hunger. Shabwa households also consume a less varied diet compared to most other governorates. More than a quarter eat only one to two food groups on a regular basis, and only 37.3% eat from four to five food groups. In terms of the types of food consumed, Shabwah households eat close to average rates of dairy and animal protein, and slightly less than average rates of fruits and vegetables. Only one quarter of households consume pulses regularly, compared with national averages of 58.4%. Shabwa belongs to the group of six governorates that have recorded the highest proportion of generally food insecure households. In moderate and severe food insecure household terms, Shabwa is placed first at the national level with a high percentage of 43.5% (21.7% national level). In moderate hunger terms, Shabwa is also placed first with 33.4% (13.8% national level). In severe hunger term, Shabwa is placed beyond the most six vulnerable governorates with 10.1% (7.9% national level).

### *Major Challenges and Strategic Outlook*

Shabwa residents are the least successful with coping strategies and rural Shabwa counts the largest proportion of extreme poverty, as well as the highest level of poverty gap and severity index. An Ukrainian oil company was hit by a terrorism act in 2007. At the same time tribal conflicts are very common in Shabwa which have direct negative impact on all current economic activities and limit heavy investments in its promising and leading sectors, such as oil, gas and petrochemical industries. Oil, fisheries, agriculture and tourism sectors if properly secured, managed and exploited can certainly transform Shabwa into a heavy industrial zone, a one of its kind in Yemen.

## WFP Yemen – Secondary Data Analysis on Food Security and Vulnerability



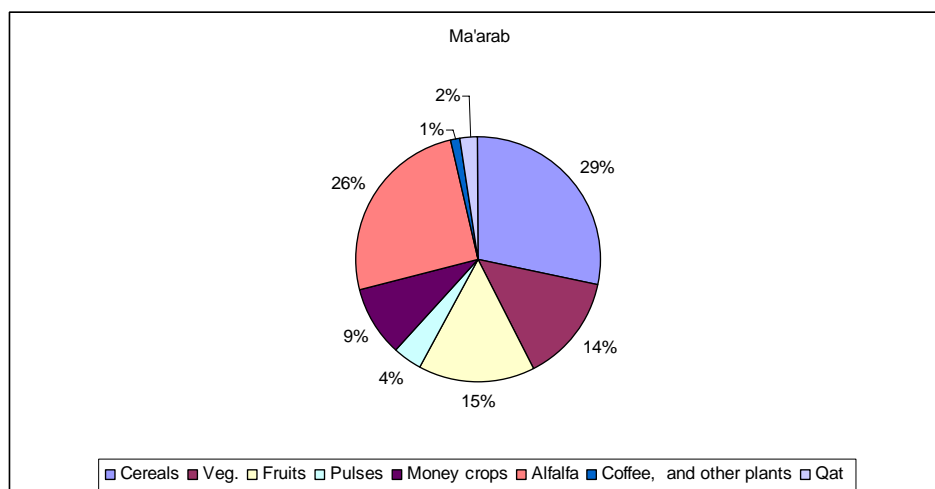
**19. Mareb Governorate**

| Governorate | Indicators  | Value                           | National Average        |
|-------------|---|---------------------------------|-------------------------|
| Mareb       | Agro-ecological zone  | Zones 1 & 5                     |                         |
|             | Area  | 17,433 km <sup>2</sup>          | 527,970 km <sup>2</sup> |
|             | Number of Districts   | 17                              | 333                     |
|             | Population (Urban) 2007   | 34,640                          | 6,256,462               |
|             | Population (Rural) 2007   | 224,716                         | 15,282,533              |
|             | Population (Total) 2007   | 259,356                         | 21,538,995              |
|             | % rural - total population  | 86.60%                          | 71%                     |
|             | Food Security Situation 2003  |                                 |                         |
|             | % food insecure households  | 16.20%                          | 21.70%                  |
|             | % households with moderate hunger                                       | 9%                              | 13.80%                  |
|             | % households with severe hunger   | 7.20%                           | 7.90%                   |
|             | % households vulnerable to food insecurity                              | 20.40%                          | 20.80%                  |
|             | Rank of Governorate with food insecure households (out of 20, 1: worst) | 13                              |                         |
|             | Poverty Situation 2005/06   |                                 |                         |
|             | Total poverty rate (%)  | 45.88%                          | 34.78%                  |
|             | National poverty rank (out of 21, 1: best)                              | 15                              |                         |
|             | Urban poverty rate (%)  | 17.95%                          | 20.70%                  |
|             | Rural poverty rate (%)  | 50.05%                          | 40.10%                  |
|             | Change in urban poverty rate 1998-2006 (%)                              | 1.22%                           | -11.58%                 |
|             | Change in rural poverty rate 1998-2006 (%)                              | 8.32%                           | -2.40%                  |
|             | Number of food poor (HBS) in 1998                                       | 1%                              |                         |
|             | Number of food poor (HBS) in 2006                                       | 2.50%                           |                         |
|             | Per capita poverty line: urban (YR/month)                               | 5.462                           | 5.667                   |
|             | Per capita poverty line: rural (YR/month)                               | 5.836                           | 5.377                   |
|             | Net primary enrolment rate: girls                                       | 47%                             | 54%                     |
|             | Net primary enrolment rate: boys  | 71%                             | 73%                     |
|             | Net primary enrolment: total  | 59%                             | 64%                     |
|             | Access to potable water   | 24.70%                          | 38.70%                  |
|             | Access to sanitation  | 33.60%                          | 39.20%                  |
|             | Doctors per 10,000 population (2004)                                    | 2.2                             | 2.7                     |
|             | Unemployment as % of population > 15                                    | 6.60%                           | 7.10%                   |
|             | Employed in agriculture, % of total employed                            | 27%                             | 34.10%                  |
|             | First rural income source   | Wages & salaries, 52.90%        | 42.70%                  |
|             | Second rural income source  | Self-consumption & gifts 15.30% | 15.60%                  |
|             | Third rural income source   | Agriculture & livestock, 12.20% | 9.10%                   |
|             | Cultivated area (% of total area)                                       | 5.10%                           | 2.90%                   |
|             | Farmland/livestock ownership  | 48.60%                          | 43.70%                  |
|             | Female land ownership   | 3.30%                           | 3.60%                   |
|             | Qat production (% of cultivated area)                                   | 2%                              | 10%                     |

Mareb is bordering Sana'a Governorate to the east. With its 17 districts it occupies a surface of mostly desert of 17,433 km<sup>2</sup>. It has a population of 260,000 residents, of which 86.6 % live in rural and remote areas. Mareb is well known for its ancient history that goes back to 3,000 B.C at the time of 'Balquis', and 'Sheba', not to mention the remains of the stone age in 'Ramlat Sab'etine' desert and the ruins of two other weirs that have been recently discovered.

*Livelihood Characteristics, Food Security and Poverty*

Mareb residents depend mostly in their livelihood on agriculture and livestock breeding activities. However, oil and gas have been lately exploited and a first stage of 340 megawatt of turbine gas electric plant is being completed in Mareb to feed the surrounding governorates but mainly the Capital Sana'a. While 88,900 hectares are potential agricultural land, only 27,743 hectares are currently cultivated. Cereal (29%), alfalfa (26%) and fruits (15%) form the major crops cultivated. Access to drinking water is available to 24.7% of Mareb population as compared to the national average of 38.7%.

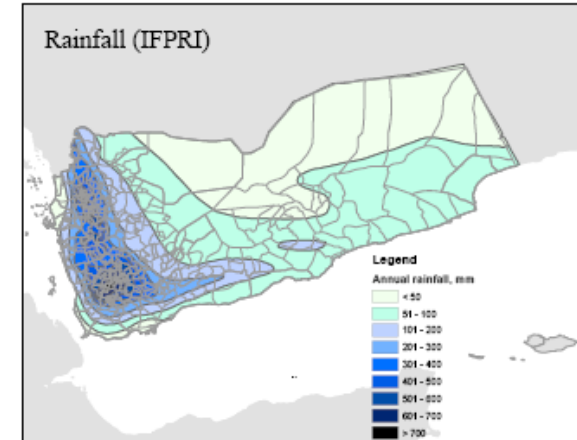
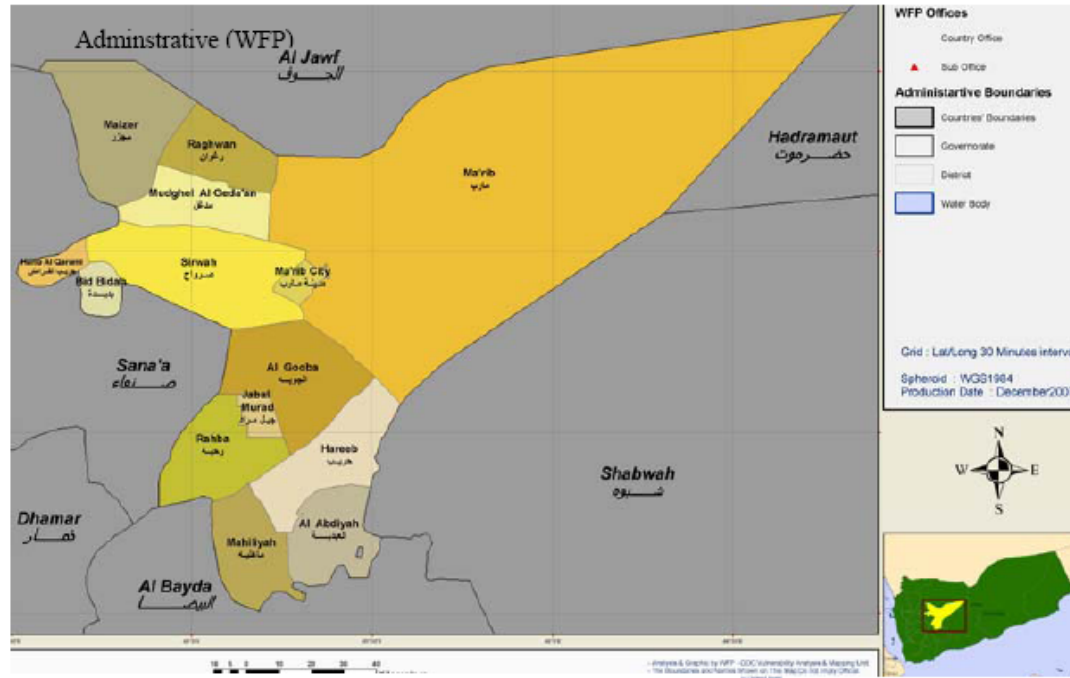


Household average annual income in Mareb amounts to nearly 876,000 YR, comparable to the national average. The main source of income is derived from wages and salaries followed by returns from private businesses and self-consumption and gifts. Households in Mareb have slightly below average rates of general food insecurity (42%). Close to nationwide results, 20.4% indicated that at some point during the past year they had feared not having enough to eat. Nine% were found to be food insecure with moderate hunger, and 7% were food insecure with severe hunger. Marebi households consume slightly more dairy and pulses than the average (89.2% and 60.5% respectively), and slightly less fruits and vegetables and animal protein compared to the country as a whole (50.6% and 65.6% respectively), whereas 58.8% of households regularly eat four to five food groups daily.

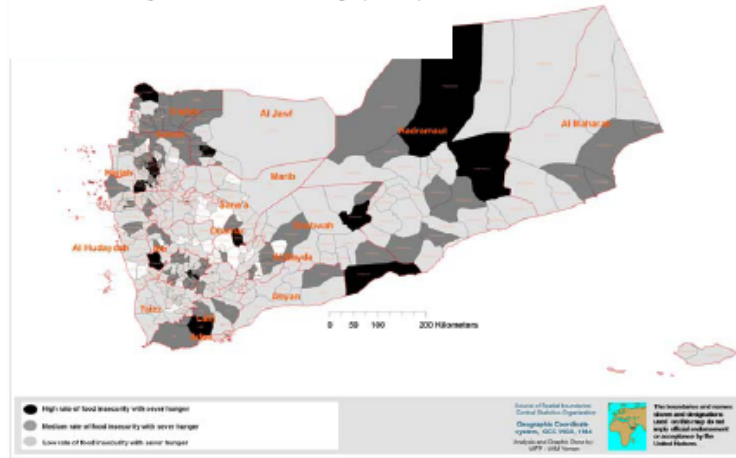
### *Major Challenges and Strategic Outlook*

Mareb continues to lack in basic infrastructure and major public services and utilities. Many social and cultural factors are still hindering its socio-economic development. Tribal clashes, revenge and kidnapping incidents to a large extent undermine its economic growth and diversification. Mareb was hit by two major terrorism acts. Once in 2003 over an oil company and the other was over a tourist convoy in 2007. Vulnerability is also associated and witnessed by the negative environmental impact of oil extraction and refining, notwithstanding the rapid factors of desertification that are diminishing Mareb arable lands. Renouncing all types of terrorism, inflicting dramatic changes into the cultural behaviours of its society, stabilizing the overall security situation in parallel of ameliorating the society basic needs of infrastructures and public utilities and services, Mareb will rapidly regain its reputation of being one of the first civilizations on earth.

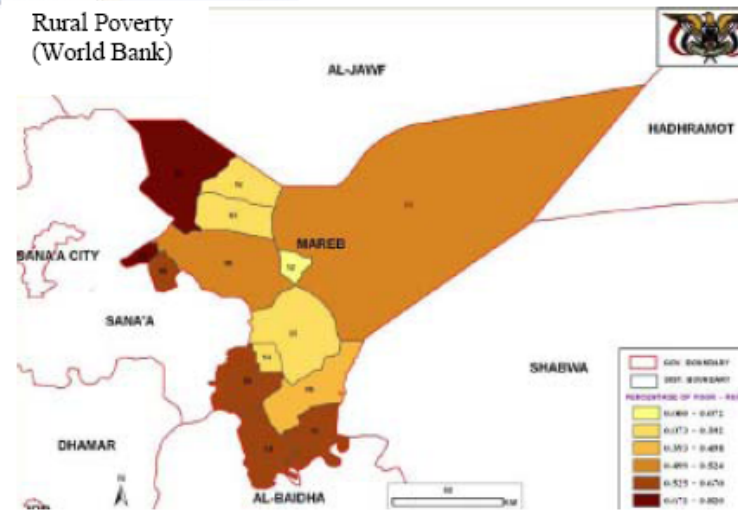
# WFP Yemen – Secondary Data Analysis on Food Security and Vulnerability



## Vulnerability to Food Insecurity (WFP)



## Rural Poverty (World Bank)



**20. Al-Mahra Governorate**

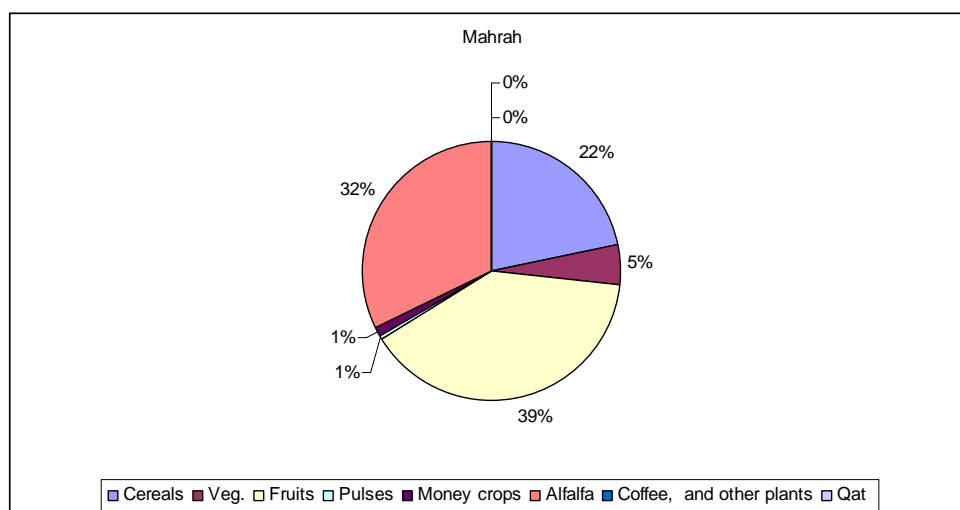
| Governorate | Indicators  | Value                           | National Average        |
|-------------|---|---------------------------------|-------------------------|
| Al-Mahra    | Agro-ecological zone  | Zones 3, 4 & 5                  |                         |
|             | Area  | 67,300 km <sup>2</sup>          | 527,970 km <sup>2</sup> |
|             | Number of Districts   | 9                               | 333                     |
|             | Population (Urban) 2007   | 41,926                          | 6,256,462               |
|             | Population (Rural) 2007   | 57,798                          | 15,282,533              |
|             | Population (Total) 2007   | 99,724                          | 21,538,995              |
|             | % rural - total population  | 58%                             | 71%                     |
|             | Food Security Situation 2003  |                                 |                         |
|             | % food insecure households  | 29.30%                          | 21.70%                  |
|             | % households with moderate hunger                                       | 18.60%                          | 13.80%                  |
|             | % households with severe hunger   | 10.70%                          | 7.90%                   |
|             | % households vulnerable to food insecurity                              | 13.20%                          | 20.80%                  |
|             | Rank of Governorate with food insecure households (out of 20, 1: worst) | 5                               |                         |
|             | Poverty Situation 2005/06   |                                 |                         |
|             | Total poverty rate (%)  | 8.85%                           | 34.78%                  |
|             | National poverty rank (out of 21, 1: best)                              | 1                               |                         |
|             | Urban poverty rate (%)  | 11.40%                          | 20.70%                  |
|             | Rural poverty rate (%)  | 6.29%                           | 40.10%                  |
|             | Change in urban poverty rate 1998-2006 (%)                              | -6.11%                          | -11.58%                 |
|             | Change in rural poverty rate 1998-2006 (%)                              | 9.51%                           | -2.40%                  |
|             | Number of food poor (HBS) in 1998                                       | less than 0.5%                  |                         |
|             | Number of food poor (HBS) in 2006                                       | Far less than 0.5%              |                         |
|             | Per capita poverty line: urban (YR/month)                               | 5.417                           | 5.667                   |
|             | Per capita poverty line: rural (YR/month)                               | 6.302                           | 5.377                   |
|             | Net primary enrolment rate: girls                                       | 76%                             | 54%                     |
|             | Net primary enrolment rate: boys  | 81%                             | 73%                     |
|             | Net primary enrolment: total  | 79%                             | 64%                     |
|             | Access to potable water   | 49.40%                          | 38.70%                  |
|             | Access to sanitation  | 36.10%                          | 39.20%                  |
|             | Doctors per 10,000 population (2004)                                    | 5.3                             | 2.7                     |
|             | Unemployment as % of population > 15                                    | 11.70%                          | 7.10%                   |
|             | Employed in agriculture, % of total employed                            | 33%                             | 34.10%                  |
|             | First rural income source   | Wages & salaries, 61.80%        | 42.70%                  |
|             | Second rural income source  | Cash & in-kind income, 8.60%    | 15.60%                  |
|             | Third rural income source   | Self consumption & gifts, 7.50% | 9.10%                   |
|             | Cultivated area (% of total area)                                       | 0.10%                           | 2.90%                   |
|             | Farmland/livestock ownership  | 6.20%                           | 43.70%                  |
|             | Female land ownership   | 11.40%                          | 3.60%                   |
|             | Qat production (% of cultivated area)                                   | 0%                              | 10%                     |

Al-Mahra occupies the eastern corner of Yemen and is surrounded by Oman to the east, the Empty Quarter of Saudi Arabia to the north, Hadramout governorate to the west and the Arabian Sea to the south. Its agro-ecological zone is classified as desert and coastal zones. Al-Mahra is the least inhabited governorate of Yemen. Its population density does not exceed 1.5 resident/km<sup>2</sup>. It occupies a large surface of 67,300km<sup>2</sup>, with a total population of 100,000 (2007) of which 58% live in rural and remote areas. The remaining population of only 42,000 are scattered over the urban coastal towns of its capital Al-Ghaida, Sayhout, Kachen and

Damkout that are in turn stretched over a coastline of 500km. Al-Mahra governorate was affected by the widespread flooding that swept it in October 2008 (see SECTION).

#### *Livelihood Characteristics, Food Security and Poverty*

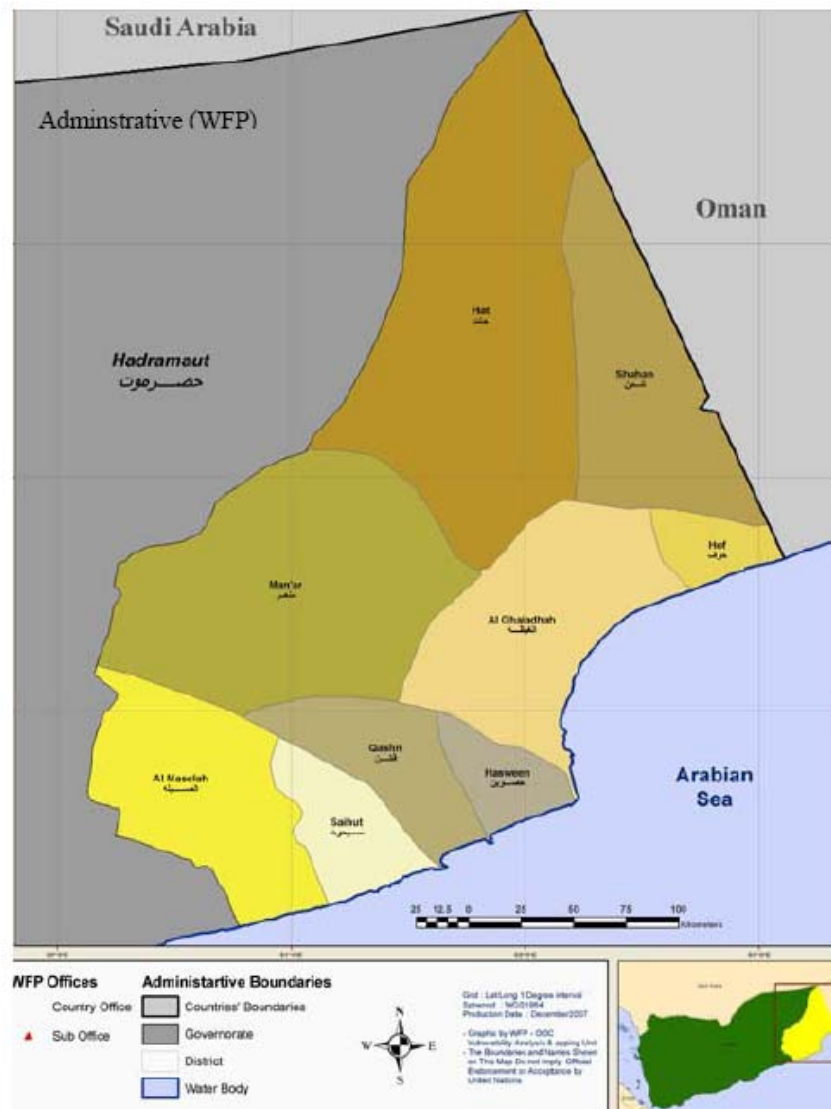
Only a very minor percentage of the governorate is cultivable, most agricultural communities rely on pastoralism. Fish production in Al-Mahra has substantially increased from 14,000 tons in 2000 to 98,000 in 2005 representing alone 41.5% of total national fish production. Access to drinking water is available to 49.4% % of Al-Mahra population as compared to the national average of 38.7%.



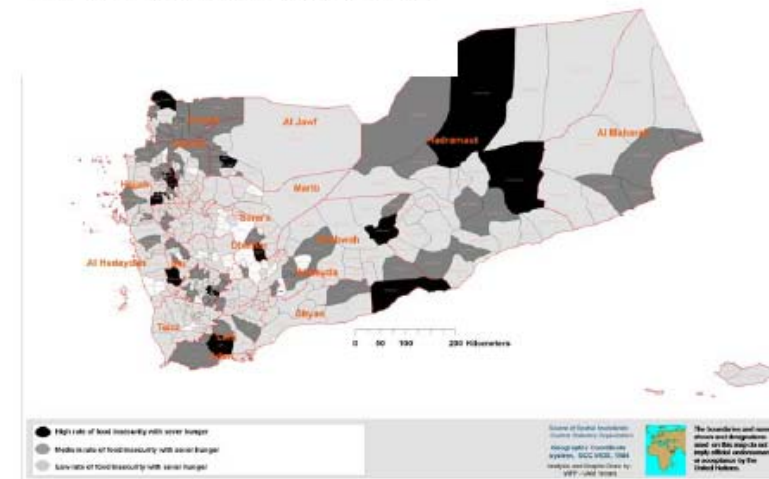
Household average annual income in Al-Mahra is the highest at the national level and amounts to nearly 1,923,000 YR (national average: 884,000 YR). The main source of income is derived from wages and salaries followed by returns from private business activities and other cash and in-kind income resources. Half of all households in Al Mahrah were found to be generally food insecure. And while a comparatively smaller percentage of households reported that they feared not having enough to eat due to lack of food (14%), a comparatively larger percentage was found to be food insecure with hunger (32%, compared to 21.7% nationwide). Al Mahrah has higher percentages of households with moderate hunger (20 percent) and with severe hunger (12 percent). Less than half of all households in Al-Mahra consume four to five food groups on a regular basis, and 41% consume three food groups regularly. A higher than average percentage of households consume dairy and animal protein (92.6% and 85.7%, respectively), and significantly lower percentages of households consume pulses and fruits and vegetables (41.3% and 27.7%, respectively). Al-Mahra belongs to the group of six governorates that have recorded the highest proportion of generally food increase households. In moderate and severe food insecure household terms, Al-Mahra is placed 5<sup>th</sup> at the national level with a percentage of 29.3% (21.7% national level). In moderate hunger household terms, Al-Mahra is also placed 5<sup>th</sup> with 18.6% (13.8% national level). However in severe hunger household terms, Al-Mahra is within the national average of 7.9%. UNICEF (2003) in two districts measured only low rates of child underweight and stunting (3.3% and 8% respectively). The survey findings for governorate Al Mahra suggest that its population has some unique characteristics that set it apart from other population groups covered by this survey. The indicator results for this governorate are remarkably favourable, especially for indicators pertaining to girls and women. A major exception to this is the practice of female genital mutilation, which is nearly universal among the female respondents in this governorate and appears to be firmly rooted.

#### *Major Challenges and Strategic Outlook*

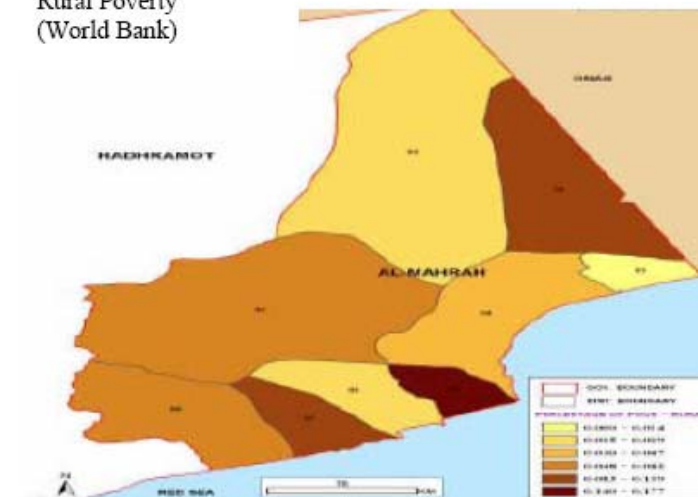
The challenges facing Al-Mahra are complex and structural for being the least inhabited area and for possessing an arable land not exceeding 0.1% of its huge surface. It scattered small population over a huge area renders accessibility to food, public services and utilities rather difficult and expensive for both users and providers. Al-Mahra governorate possesses important but extremely unexploited natural and economic potentials which include massive water basins, spring waters, historic sites, granite and marble and gold mines and queries, abundant stock of highly valued types of fish, shrimps and lobsters. As such, Al-Mahra is considered a 'virgin' governorate.



Vulnerability to Food Insecurity (WFP)



Rural Poverty (World Bank)



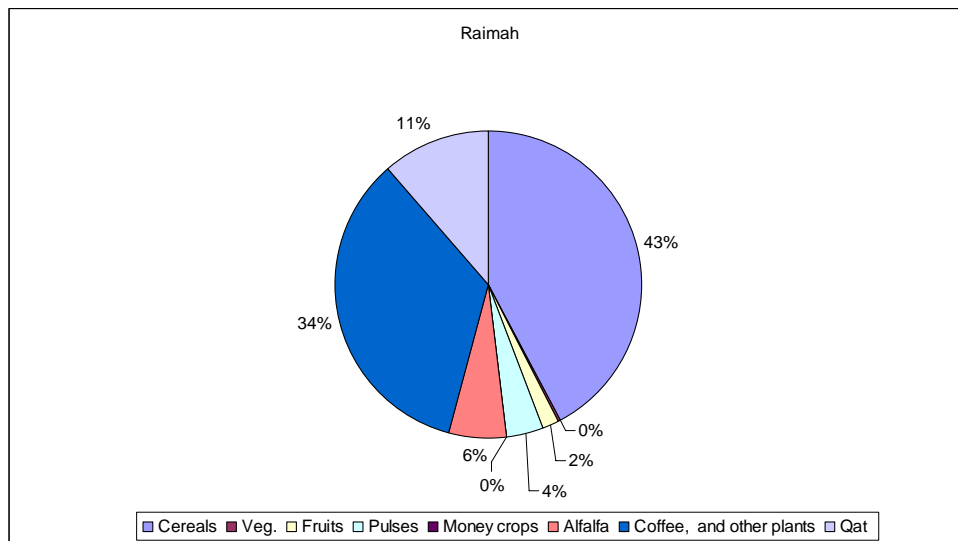
**21. Rayma Governorate**

| Governorate | Indicators  | Value                            | National Average        |
|-------------|---|----------------------------------|-------------------------|
| Rayma       | Agro-ecological zone  | Zone 1                           |                         |
|             | Area  | 2,000 km <sup>2</sup>            | 527,970 km <sup>2</sup> |
|             | Number of Districts   | 6                                | 333                     |
|             | Population (Urban) 2007   | 4,189                            | 6,256,462               |
|             | Population (Rural) 2007   | 427,259                          | 15,282,533              |
|             | Population (Total) 2007   | 431,448                          | 21,538,995              |
|             | % rural - total population  | 99%                              | 71%                     |
|             | Food Security Situation 2003  |                                  |                         |
|             | % food insecure households  | n. a.                            | 21.70%                  |
|             | % households with moderate hunger                                       | n. a.                            | 13.80%                  |
|             | % households with severe hunger   | n. a.                            | 7.90%                   |
|             | % households vulnerable to food insecurity                              | n. a.                            | 20.80%                  |
|             | Rank of Governorate with food insecure households (out of 20, 1: worst) | n.a.                             |                         |
|             | Poverty Situation 2005/06   |                                  |                         |
|             | Total poverty rate (%)  | 34.07%                           | 34.78%                  |
|             | National poverty rank (out of 21, 1: best)                              | 10                               |                         |
|             | Urban poverty rate (%)  | 5.38%                            | 20.70%                  |
|             | Rural poverty rate (%)  | 35.32%                           | 40.10%                  |
|             | Change in urban poverty rate 1998-2006 (%)                              | 1.22%                            | -11.58%                 |
|             | Change in rural poverty rate 1998-2006 (%)                              | 8.32%                            | -2.40%                  |
|             | Number of food poor (HBS) in 1998                                       | 5.50%                            |                         |
|             | Number of food poor (HBS) in 2006                                       | 2%                               |                         |
|             | Per capita poverty line: urban (YR/month)                               | 5.519                            | 5.667                   |
|             | Per capita poverty line: rural (YR/month)                               | 5.389                            | 5.377                   |
|             | Net primary enrolment rate: girls                                       | 44%                              | 54%                     |
|             | Net primary enrolment rate: boys  | 70%                              | 73%                     |
|             | Net primary enrolment: total  | 58%                              | 64%                     |
|             | Access to potable water   | 2.60%                            | 38.70%                  |
|             | Access to sanitation  | 8.40%                            | 39.20%                  |
|             | Doctors per 10,000 population (2004)                                    | 0.2                              | 2.7                     |
|             | Unemployment as % of population > 15                                    | 2.50%                            | 7.10%                   |
|             | Employed in agriculture, % of total employed                            | 22%                              | 34.10%                  |
|             | First rural income source   | Wages & salaries, 48.80%         | 42.70%                  |
|             | Second rural income source  | Self consumption & gifts, 23.60% | 15.60%                  |
|             | Third rural income source   | Private business, 11.90%         | 9.10%                   |
|             | Cultivated area (% of total area)                                       | 6.80%                            | 2.90%                   |
|             | Farmland/livestock ownership  | 58.4                             | 43.70%                  |
|             | Female land ownership   | 3.70%                            | 3.60%                   |
|             | Qat production (% of cultivated area)                                   | 11%                              | 10%                     |

Rayma is located in central western Yemen, southwest of Sana'a, its capital town being Al-Gabin. Rayma is a newly created governorate and was administratively established in 2003. Rayma with its small surface of 2,000km<sup>2</sup> is located in a mountainous area of 3,000 masl, surrounded by the governorates of Sana'a, Dhamar and Hodeida. It has a population estimated at 431,500 (2007) of which only 1% live in urban towns.

*Livelihood Characteristics, Food Security and Poverty*

Rayma includes many valleys and its economy relies on agriculture, livestock and honey productions. Nearly 7% of the total area is cultivable, primarily with cereals (43%), coffee (34%) and qat (11%). Access to drinking water in Rayma is available to only 2.6% of its population as compared to the national average of 38.7%.



Although its rural poverty rate increased by 8.3% between 1998 and 2006, Rayma stands within the national average. Household average annual income amounts to nearly 720,000 YR (national average 884,000 YR). The main source of income is derived from wages and salaries followed by self-consumption and gifts and returns from private business activities. As it has been recently created, Rayma governorate was not covered by FIVIMS 2003. However, one can state that its food security situation is comparable to that of Hodeida context.

#### *Major Challenges and Strategic Outlook*

Along with its rigid topography, basic infrastructures and public services are quasi-absent, only 1.8% of its inhabitants benefit from public electricity, paved roads stand at 0.1km per 10.000 residents and only 0.2% of its population use public sewage system. The above mentioned structural challenges hinder to a large extent the exploitation of Rayma promising economic resources represented in agriculture and tourism sectors.

## WFP Yemen – Secondary Data Analysis on Food Security and Vulnerability

