

# Palestinian Public Perceptions

Palestine Research Unit at the IUED

(Graduate Institute of Development Studies University of Geneva)

in cooperation with Palestinian Central Bureau of  
Statistics (PCBS)

And UN Agencies

11<sup>th</sup> Survey

Food Security Chapter  
(FAO)

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# FOOD SECURITY

By Tareq Abu El Haj and Erminio Sacco

This section presents the findings of the food security chapter of the PPP 11 survey<sup>1</sup> and is the result of a close cooperation between the Graduate Institute of International and Development Studies and the UN Food and Agriculture Organization (FAO). The FAO participation to the PPP enabled the piloting of a food security monitoring tool developed from the standard FAO Food Deprivation (FD)<sup>2</sup> methodology and other complementary monitoring instruments, namely the Household Food Insecurity Access Scale (HFIAS) and the Dietary Diversity (DD). FAO, through EC-funded projects, has been working with United Nations (UN) agencies and the Palestinian Authority (PA) counterparts to (i) update food insecurity assessments, (ii) define a robust monitoring methodology, and (iii) institutionalize the capacity to operate a monitoring system. The datasets, models and resulting estimates from the present pilot experience proved robust and are expected to lay the ground for an institutionalized monitoring system providing regular updates.

Food deprivation estimates complement the FAO/WFP Comprehensive Food Security and Vulnerability Analyses (CFSVA) - calculated on the 2<sup>nd</sup> quarter of 2006 datasets of the 'Impact of Israeli Measures on Socio-Economic Conditions of Palestinian Households' and published in March 2007<sup>3</sup>. Besides reviewing food availability (production and trade), the CFSVA provides estimates of prevalence of household food insecurity based on overall consumption, income trends and poverty. The present report provides an estimate of the prevalence of food deprivation, i.e. the condition affecting a sub-set of food insecure Palestinians households who in April/May were considered unable to acquire enough food to meet the Minimum Dietary Energy Requirements

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<sup>1</sup> *N.B. As for other PPP 11 chapters, Gaza Strip estimates are to be considered a baseline –as the field data were collected in April/May 2007. Gazans' food insecurity indicators are systematically higher. Recent economic collapse is assumed to have massively impacted food insecurity. Significant increase in food insecurity indicators is anticipated since June 2007. However, enhanced food assistance may partially offset such trend. A food security update is an urgent priority.*

<sup>2</sup> The FAO Food Deprivation methodology includes indicators for the Millennium Development Goal number 1, i.e. the proportion and number of population below minimum level of dietary energy consumption (prevalence of food deprivation or under-nourishment). FAO is responsible for monitoring this MDG indicator at global level.

<sup>3</sup> Unfortunately the quarterly 'Impact of Israeli Measures' survey conducted by the Palestinian Central Bureau of Statistics (PCBS) was discontinued in the 3<sup>rd</sup> quarter of 2006. As a consequence, at the moment PCBS doesn't have broad-spectrum socio-economic monitoring tool, and only provides socio-economic statistics on an annual basis through the Palestinian Expenditure and Consumption Survey (PECS). The PPP structure does not allow for comparison with 'Impact of Israeli Measures' income and consumption poverty estimates –that provided the data sets for the CFSVA.

(1,680Kcal per person per day). This corresponds to the notion of under-nourished and most likely captures the chronic food poor.

The statistic module adopted in the present PPP survey is based on the FAO Food Deprivation (FD) methodology and measures the difference between household food acquisition and Dietary Energy Requirements. In the PPP 11 field test (the field data collection was performed by PCBS), the FD methodology proved (i) light, manageable and significantly more accurate compared to previous assessments; and (ii) reliably linked through an econometric model to the fundamental (and only) socio-economic PCBS Palestinian Expenditure and Consumption Survey.

The rationale is the need to link the annual PECS (which monitors the poverty structure and trends) with a lighter survey to be run on a larger sample 2 or 4 times a year. This would enhance the geographical and socio-economic breakdown while providing regular, timely and comparable updates. The complementarities will be enhanced by minor improvements in the PECS methodology and a few rounds of the lighter survey to fine-tune the correction factor that accounts for the differences in methodology.

*Organization of the chapter:*

After a short Methodology section, the chapter consists of a number of sub sections treating each considered indicator separately – i.e., food insecurity in general, food deprivation and dietary diversity. The individual sections describe the variation of the specific indicator across a number of identified sub national groups. Where possible the food acquisition from purchased, in kind sources and from own production is displayed.

Following the three sections treating each indicator individually, a synthesis section provides an analysis of the relationships between the indicators and how they jointly reflect the wider issue of food insecurity in the oPt. Then, in order to facilitate proper targeting of assistance to the food deprived, a brief section profiling households most likely to be food deprived is included followed by a section containing discussion and outlining some policy implications.



## **Executive Summary (to be put in the overall EXECSUM of PPP11)**

Almost half of Palestinian (45 percent) households declared to have experienced food insecurity to some degree (approximately 1,750,000 Palestinians), 8 percent are undernourished (324,000 Palestinians) and only 6 percent of Palestinian households have a low dietary diversity (243,000 Palestinians). The three different methodologies employed provide estimates of different facets of food insecurity.

At the national level, the actual prevalence of food deprivation among Palestinian households is of 8 percent. Such a prevalence would be 2 percent higher had Palestinian households not received in kind and produced their own food. The highest prevalence of food deprivation was found among residents of the Gaza Strip, residents of refugee camp dwellers, members of mixed refugee/non-refugee households and members of large households including more than 8 individuals.

Food deprivation and other food insecurity indicators are linked to household size. This is important as the prevalence of food insecurity is measured at household level and all estimates in this report refer to households. Since large households are more likely to be food insecure, the actual food insecurity in the overall population is likely to be higher than the prevalence of household food insecurity as described in this report.

As in previous assessments, the prevalence of food deprivation is highest for Palestinians within the lowest expenditure quintile (i.e., the 20 percent of households with the lowest overall expenditure volume) at 74 percent. It sharply decreases to 8 percent of Palestinians within the second to lowest expenditure quintile, down to 1 percent in the 3<sup>rd</sup> quintile, and is not found in the two highest quintiles.

In the same way as general food insecurity, the prevalence of food deprivation is negatively associated with household age structure. On average, the younger the household, the more likely it is for its members to be undernourished. This finding is worrying in terms of long term projected food insecurity as demographic trends imply a growing number of households with a low average age.

A regression model revealed that the significant household characteristics that most facilitate the identification of the undernourished are (1) low prevalence of male members in the household, (2) high percentage of unemployed within the household “labor force”, (3) low average household age and (4) low per capita years of education.

In households with the highest prevalence of males (i.e. where at least 65 percent of the household members are male) the prevalence of food deprivation is lowest at 3 percent. The prevalence of food deprivation peaks for the population living within households where roughly a third of the members or less is male. However, members of female headed households are less likely to be food deprived (3 percent prevalence) than members of male headed household (7 percent prevalence).

Finally, the prevalence of food deprivation for those members of households with low human capital (less than 5.7 average years of education) is highest, reaching 26 percent and considered to be non-existent among members of households with over 10.5 average years of education.

On average, the food-deprived population acquired the equivalent of 1434 kilocalories per person per day (Dietary Energy Consumption (DEC)), including in kind food received. This represents 85 percent of the 1680 kilocalories minimum daily requirements (Minimum Dietary Energy requirement (MDER)) necessary to maintain a healthy body weight and perform a light activity typical of a sedentary life style. In order to achieve this, a further 246 kilocalories per food deprived person per day is required, or another 637 kilocalories per day in order to achieve the average dietary energy requirements necessary to perform moderate activity levels.

A consideration of the severity of food deprivation (or depth of consumption gap) adds qualitative differences to the prevalence of undernourishment among different sub national groups. For instance, 14 percent of the urban dwelling population is undernourished compared to 16 percent of the refugee camp dwelling population. Despite undernourishment being more widespread among the camp dwelling population, the depth of the food deprivation gap is greater for the urban dwelling population. Food deprivation is most severe among: (i) Gazans, followed by oPt urban and camp residents; (ii) Mixed refugee/non-refugee households, followed by refugees; and, (iii) Large households.

This is relevant to organizations seeking to support the undernourished population , underlining the need to consider both the prevalence of food deprivation across the various possible sub-national groupings as well as their consumption gap.

Although 33 percent of the population reportedly benefited from in kind food received and 30 percent from self-produced food, these proportions vary greatly according to income levels. The description of the absolute and relative impact of in kind and self-produced food highlights important points to be considered when attempting to gauge the impact of humanitarian intervention. For example, the impact of in kind food in terms of absolute reduction of the prevalence of food deprivation in the Gaza Strip population is of three percentage points compared to a reduction of only 1 percentage point in the West Bank population. However, this seemingly smaller impact in the West Bank translates into a higher proportion of the food deprived Palestinian population. Considering the overall demography, it represents the alleviation of 1 in every 6 undernourished people from their deprivation in the West Bank and 1 in every 8 undernourished in the Gaza Strip.

## ***Methodology***

Given the complex and multidimensional nature of food security, an accurate and reliable measurement of this concept becomes in itself a complex and multidimensional exercise. Although there is no consensus on a singular, comprehensive indicator of food insecurity, a number of indicators of the various dimensions of food insecurity exist such as adequacy of food consumption in terms of quantity and diversity.

In this report we will present the results of three indicators relating to different dimensions of food insecurity. Starting with a general food insecurity scale, the first indicator – the Household Food Insecurity Access Scale (HFIAS) – provides an overall view of the prevalence of food insecurity and extreme food insecurity in the oPt as experienced by the interviewees.

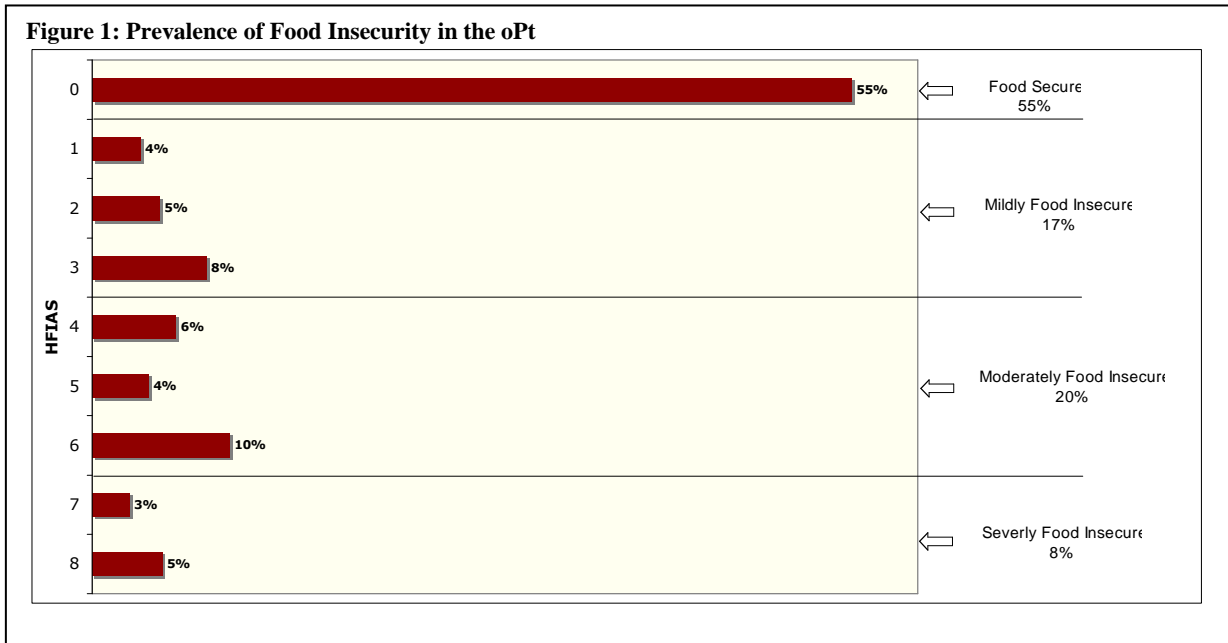
The adequacy of food consumption is segregated into two unique aspects: quality and quantity. The quality of food consumption will be measured using the Dietary Diversity Scale (DDS) to a certain extent. The quantity of kilocalorie consumption will be measured through the FAO methodology used in their Food Security Statistics Module (FAO-FSSM)<sup>4</sup>. Using records of household level consumption expenditure, the FSSM measures Dietary Energy Consumption (DEC) comparing it to the Minimum Dietary Energy Requirements (MDER) to provide national and sub national level estimates of food deprivation (undernourishment).

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<sup>4</sup> For more information please visit <http://www.fao.org/faostat/foodsecurity/files/wp005e.pdf>

## 1. General food insecurity

As measured by the Household Food Insecurity Access Scale (HFIAS), the table below displays the overall prevalence of Palestinian households who have experienced food insecurity and extreme food insecurity in the oPt. Although these figures have been obtained with different methodologies, they are in the same range as previous estimates of food security in the oPt, in particular the Comprehensive Food Security and Vulnerability Analysis (FAO/WFP 2007).



The prevalence of general food insecurity in the oPt is very high. Nearly 45 percent of Palestinian households in the oPt experienced food insecurity. Food insecure households are categorized according to the *degree* of severity of food insecurity. Accordingly, 17 percent are considered mildly food insecure, 20 percent moderately food insecure and 8 percent severely food insecure.<sup>5</sup>

While the prevalence of food insecurity outlined in Figure 1 above represents the status of the whole of Palestinian households during the time of the survey, these proportions vary according to sub national geographic, legal and socio economic groups.

Overall, the prevalence of general food insecurity is highest for households of the lowest expenditure quintile<sup>6</sup> (71 percent), households residing in refugee camps (66 percent),

<sup>5</sup> Extreme food insecure households are those that have reported to have gone a whole day without eating, have run out of food or have gone to bed hungry. Moderate food insecure households would be those stating that they have reduced the quality and variety of diet and have on occasions decreased the size or number of meals.

<sup>6</sup> Quintiles describe the statistical distribution of an indicator (e.g., household expenditure) across a population. A quintile corresponds to 1/5 or 20 percent of the total population.

large households including more than 8 members (63 percent) and households residing in the Gaza Strip (62 percent).

Moderate food insecurity<sup>7</sup> is highest for residents of the Gaza Strip (36 percent of households) and represents 12 percent of households in the West Bank (16 percent in southern West Bank, 12 percent in the northern West Bank, 10 percent in the middle West Bank and 4 percent in East Jerusalem).

For households in refugee camps, the prevalence of moderate food insecurity (36 percent) is double that recorded for households in urban and rural communities (18 and 17 percent of the households respectively).

Household size is positively associated with the prevalence of moderate food insecurity (32 percent of 9+ household size are moderately food insecure, 23 percent for 7-8 household size, and 16 percent for 4-6 members). This association between food insecurity and household size is important as it indicates that the actual prevalence of food insecurity in the overall population is likely to be higher than the prevalence of household food insecurity as described in this report.

Generally, the prevalence of both overall and moderate food insecurity is higher for male-headed household than female-headed households (although the number of cases may not be enough for this to be significant).

However, considering the prevalence of severe food insecurity, a totally different pattern is observed. Surprisingly, the prevalence of severe food insecurity – which is arguably synonymous with hunger – is lowest in the Gaza Strip and East Jerusalem with 6 percent of the households in both areas categorized as severely food insecure. In the northern and middle West Bank governorates, the prevalence is slightly higher at 8 percent of the households and even higher in the southern West Bank governorate where 12 percent of the households are severely food insecure.

The prevalence of severe food insecurity across locality types reveals an opposing trend: the lowest prevalence (6 percent) has been recorded for households in refugee camps, followed by 7 percent of urban households and 11 percent of rural households.

The results of this survey further corroborate the common understanding of a strong and clear link between the prevalence of food insecurity and household economic status as measured by total household expenditures. Furthermore, similar links are observed when considering the different levels of food insecurity, indicating that the lack of economic access can be considered the cause of mild, moderate and severe food insecurity alike.

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<sup>7</sup> Members of households are reported to have consumed less than their perceived need.

## **2. Food Deprivation or Under-nourishment**

This set of estimates points to the ability of Palestinian households to acquire enough food (from purchase, in kind receipt and own production) to cover their Dietary Energy Requirements (DEC) in April/May 2007. The food deprived (or undernourished) are those unable to reach the Minimum Dietary Energy Requirements (MDER) to maintain a healthy life carrying out light activity.

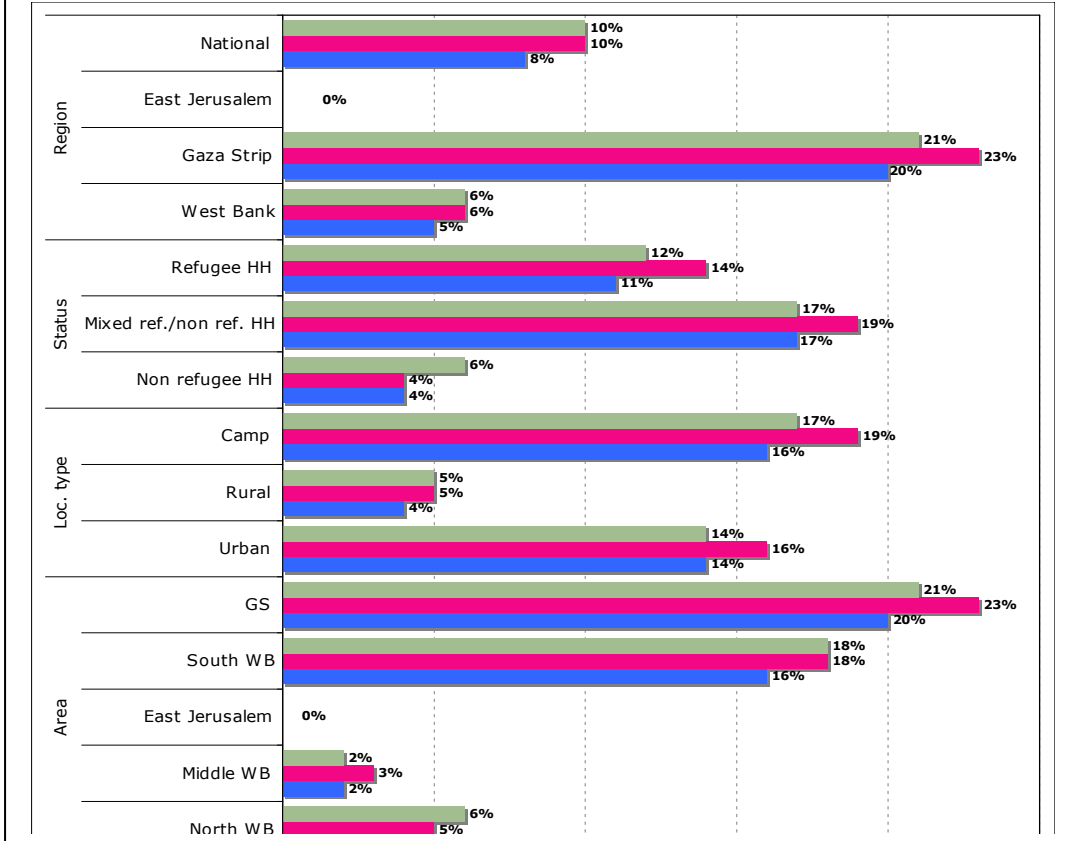
At the national level, the actual prevalence of food deprivation is of 8 percent. The receipt of in kind food and own production contributed to alleviating food deprivation – i.e., food deprivation would be higher without in kind or self-produced food. The highest prevalence of food deprivation was found among residents of the Gaza Strip, refugee camp dwellers, members of mixed refugee/non-refugee households and members of large households including more than 8 individuals.

### *Prevalence of Food Deprivation by Region, Area, Location Type and Legal Status*

Figure 3 illustrates the variations in the prevalence of food deprivation across sub national groups. The highest prevalence of food deprivation was found among residents of the Gaza Strip (20 percent), refugee camp residents (16 percent), members of mixed refugee/non-refugee households (17 percent) and members of large households including more than 8 individuals (18 percent).

Within the different areas of the West Bank, a great deal of variation in the prevalence of food deprivation is observed. In East Jerusalem, it is estimated that none of the Palestinian residents suffer from undernourishment. In the remaining West Bank, a different picture is painted where the prevalence of food deprivation varies from 2 percent of the Palestinian population in the middle governorates, followed by 4 percent in the northern governorates and steeply increasing to 16 percent among the population of the southern West Bank governorates.

**Figure 3: Food Deprivation at national and sub national levels with and excluding in kind food & own production**

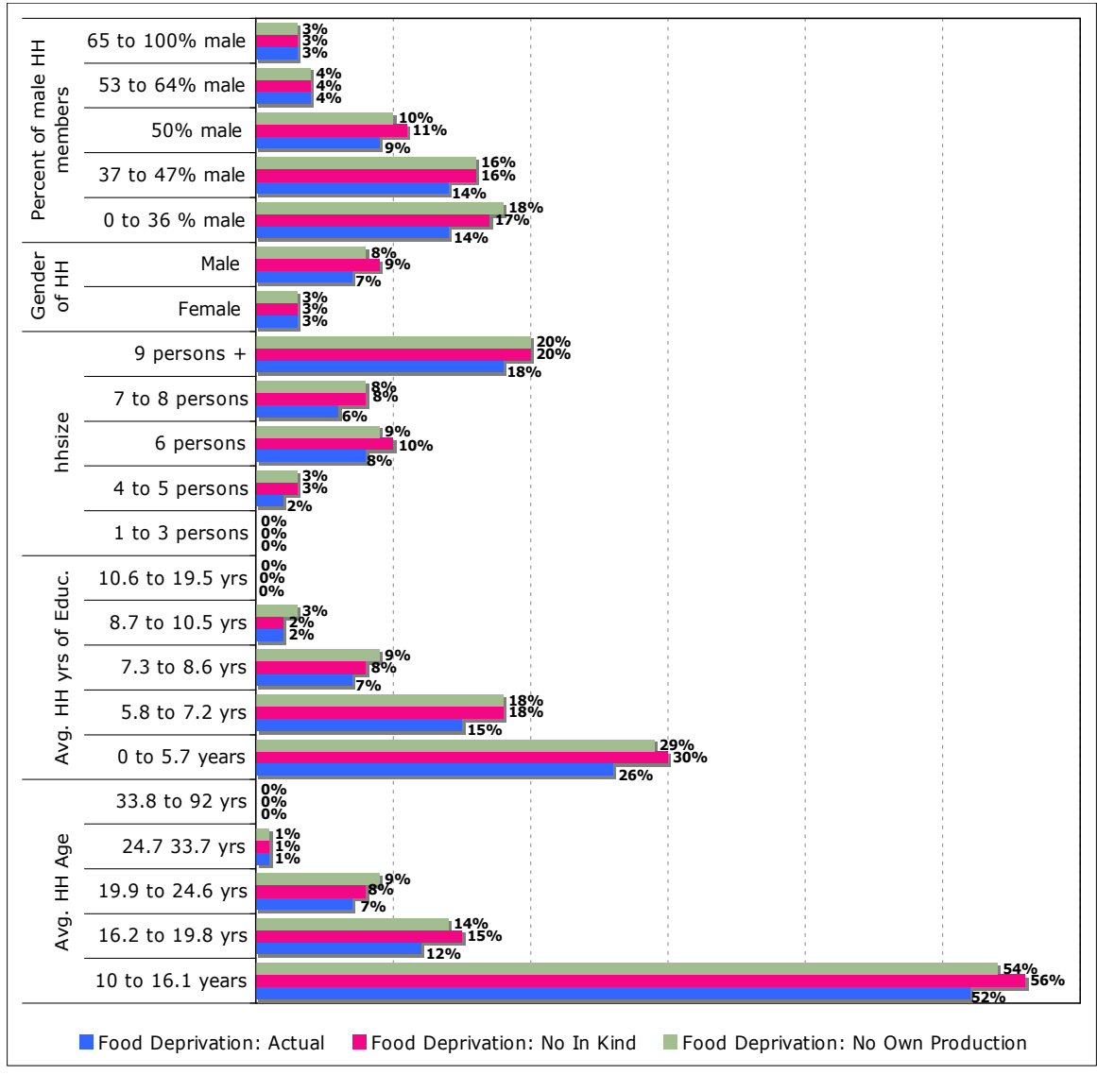


Across locality types, the lowest prevalence of food deprivation is found in rural communities where only 4 percent of the population is considered undernourished. The prevalence of food deprivation in urban population is of 14 percent, and close to 16 percent for the total population residing in refugee camps.

Prevalence of Food Deprivation across select socio demographic and socio economic indicators

At the household characteristics level, the prevalence of food deprivation is found to vary greatly across households of different legal status. Roughly 17 percent of mixed refugee/non refugee households (which represent 11.9 percent of all households) are estimated undernourished. The prevalence of food deprivation is estimated at 11 percent for members of refugee households and at 4 percent for members of non-refugee households.

**Figure 4: Food Deprivation across select socio demographic indicators with and excluding in kind food & own production**



In the same way as the general food insecurity, the prevalence of food deprivation is negatively associated with household age structure. On average, the younger the household, the more likely it is that its members will be undernourished. This finding is

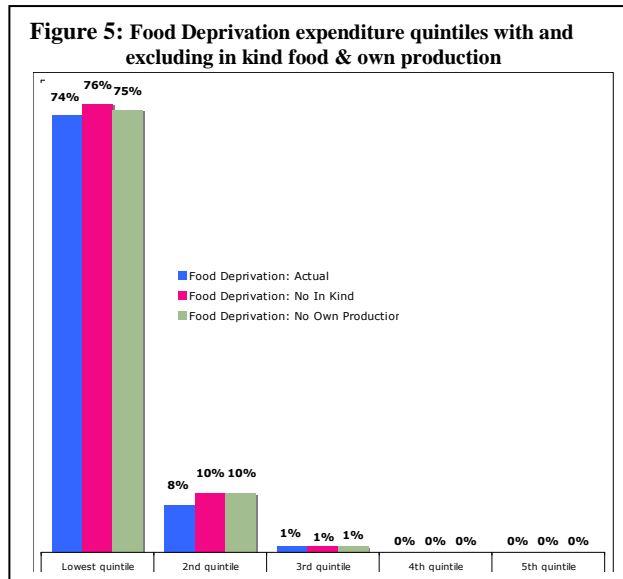
worrying in terms of long term projected food insecurity as demographic trends imply a growing number of households with low average age.

In households with the highest prevalence of males (i.e. where 65 percent of the members or above are male) the rate of food deprivation is lowest at 3 percent. The prevalence of food deprivation peaks for the population living within households where roughly a third of the members or less are male.

Conversely, residents of female-headed households are less likely to be food deprived (3 percent prevalence) than residents of male headed household (7 percent prevalence).

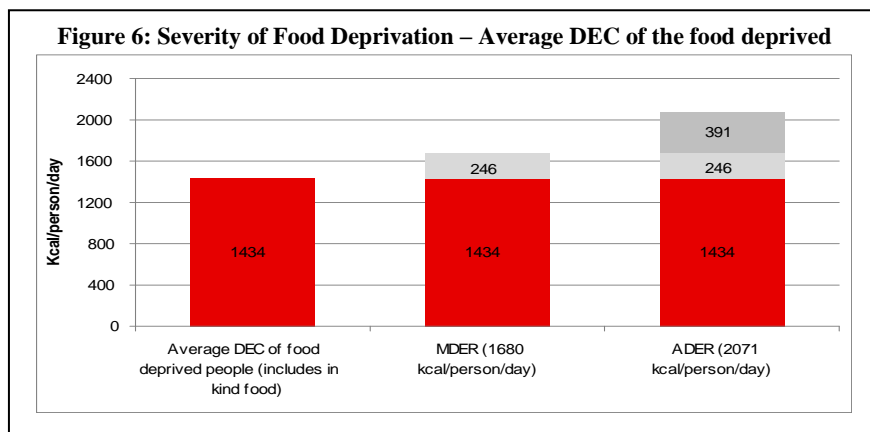
Finally, the prevalence of food deprivation for members of households with low human capital (less than 5.7 average years of education) is highest, reaching 26 percent, and is considered to be non-existent among members of households with over 10.5 average years of education.

As in previous assessments, the prevalence of food deprivation is highest for Palestinians within the lowest expenditure quintile at 74 percent. It sharply decreases to 8 percent of Palestinians within the second to lowest expenditure quintile, down to 1 percent in the 3<sup>rd</sup> quintile, and none estimated in the two highest quintiles.



Severity of Food Deprivation

On average, the food-deprived population acquires the equivalent of 1,434 kilocalories per person per day (Dietary Energy Consumption (DEC)), which represents 85 percent of the 1,680 kilocalories



of minimum daily requirements (Minimum Dietary Energy requirement (MDER)) necessary to maintain a healthy body weight and perform a light activity typical of a sedentary life style. In order to achieve this, a further 246 kilocalories per food deprived

person per day is required, or another 637 kilocalories per day in order to achieve the average dietary energy requirements necessary to perform moderate activity levels<sup>8</sup>.

The minimum dietary energy requirement deficit per-person described above, however, pertains to the average food deprived population at national level and is considered as the overall severity of food deprivation. At the sub national level, the severity of food deprivation varies across the various population groups. The analysis below (Figure 7, 8 and 9) displays the severity of FD without in-kind food received, in order to highlight the underlying ‘core’ undernourishment –i.e., based on the quantity of dietary energy requirements that the households are able to acquire by their own means, whereas including in-kind would disguise the households’ ability and artificially reduce the gap.

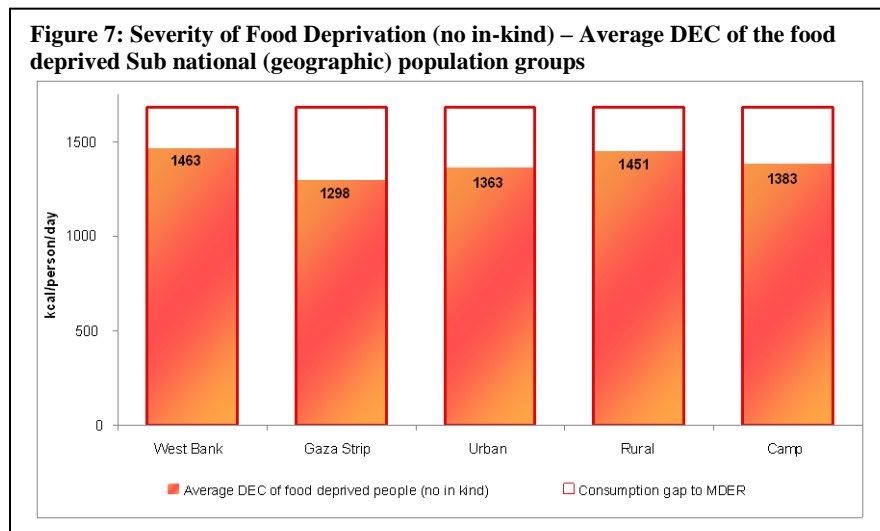
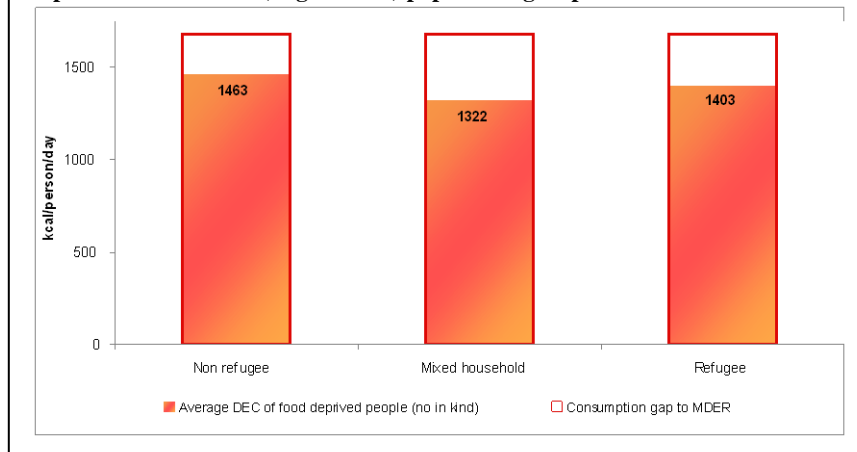


Figure 7 illustrates the variations in the severity of food deprivation across a selection of sub national population groups. It is evident that, when considering the average DEC of the food deprived – excluding the DEC from in kind food – the severity of food deprivation is greatest for the Gaza Strip population and within urban centers.

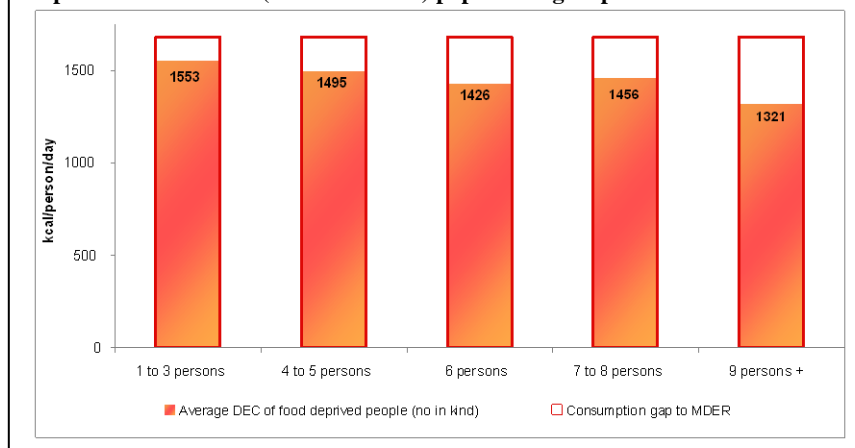
<sup>8</sup> While the MDER is estimated at 1680 kilocalories per person per day and represents the minimum threshold beyond which an individual is deficient in kilocalories even as they perform basic tasks, the average dietary energy requirements – the ADER is estimated at 2071 kilocalories per person per day and represents the average requirements for the population conducting moderate activity levels requiring increased energy consumption. For the further clarification on the MDER and ADER respectively, refer to the Human Energy Requirement, Report of Joint FAO/WHO/UNU Expert Consultation, Rome, 17-24 October 2001.

**Figure 8: Severity of Food Deprivation (no in-kind): Average DEC of the food deprived Sub national (Legal status) population groups**



Similarly, figure 8 details the severity of food deprivation in refugee households compared to mixed households and non-refugee households. It is evident that, before receiving in kind food, the consumption gap for the three types of households are different with a daily estimated average DEC of 1322 kilocalories per person per day for the population from mixed households, 1403 kilocalories per person per day for the refugee population, and 1463 kilocalories per person per day for the non refugee population.

**Figure 9: Severity of Food Deprivation (no in-kind): Average DEC of the food deprived Sub national (Household size) population groups**



The consumption gap varies widely according to household size as can be observed in Figure 9. In terms of undernourished population, the larger the household size, the bigger the consumption gap. The average undernourished individual from a small household (3 persons and less) consumes 1'553 kilocalories a day. In comparison, an average undernourished individual from a large household (9 persons and above) consumes 1'321 kilocalories a day.

A consideration of the severity of food deprivation (or depth of consumption gap) adds qualitative differences to the prevalence of undernourishment among different sub national groups. For instance, 14 percent of the urban dwelling population is undernourished compared to 16 percent of the refugee camp dwelling population. Despite undernourishment being more widespread among the camp dwelling population,

the depth of food deprivation is greater for the urban dwelling population. Food deprivation is most severe among: (i) Gazans, followed by oPt urban and camp residents; (ii) Mixed refugee/non-refugee households, followed by refugees; and, (iii) Large households.

This is relevant to organizations seeking to support the undernourished population, highlighting the need to consider both the prevalence of food deprivation across the various possible sub-national groupings as well as their consumption gap.

#### *Contribution to dietary energy requirements from in kind and own produced food*

Given that the data collected separates household consumption expenditure between direct purchase, cash value of food received in kind, and food produced by the household for household consumption, it is possible to roughly estimate the impact of both in kind food received and food from own production in terms of covering the consumption gaps of the Palestinian people and alleviating undernourishment at the time of data collection.

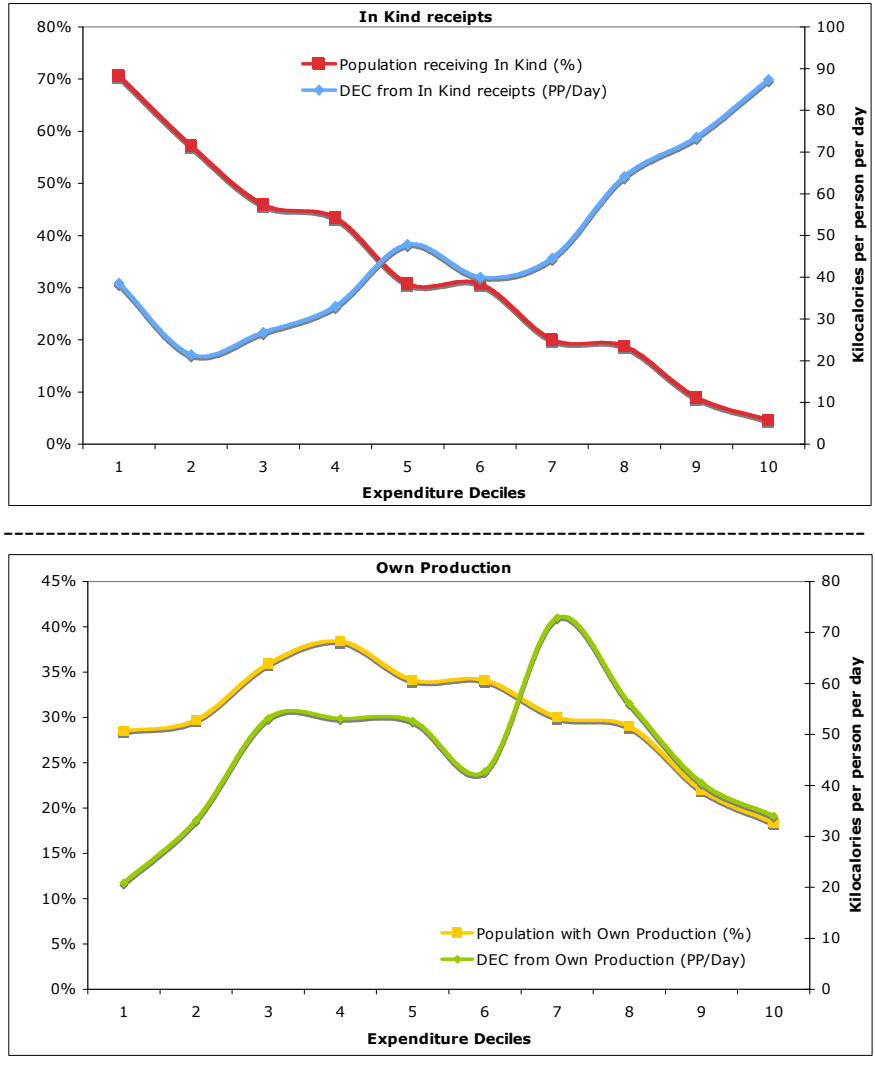
At the national level, 33 percent of the population reportedly benefited from in-kind food received and 30 percent from self-produced food. Food received in kind includes food assistance and food received from family or friends. Food received in kind is estimated to decrease the prevalence of food deprivation by 2 percentage points. Self-produced food is estimated to have the same impact, although it is clear that the two sources of food have impacted differently on each group. Food received in kind has had a greater impact in reducing the prevalence of food deprivation in the Gaza Strip, for both camp dwellers and refugees. Within the West Bank, the greatest reduction in food deprivation was found in the southern governorates where in kind food has reduced the prevalence of food deprivation by 2 percentage points.

Food from own production is estimated to have impacted the most in the northern and southern West Bank where it reduced the prevalence of food deprivation by 2 percentage points. Own production food did seemingly not impact the prevalence of food deprivation in the middle governorates.

Although 33 percent of the population reportedly benefited from in-kind food receipts and 30 percent from self-produced food, these proportions vary greatly according to income levels.

As income decreases, greater proportions of the population reported to have received in kind food, while food received in kind by the better off is richer in kilocalorie content, the trends for food from own production show that the proportion of the those benefiting from self-produced food is lower for the population at the extremes of the income spectrum than for the population in the middle of the spectrum. This trend reveals that although the poorest Palestinians are not the least probable to benefit from self-produced food, the estimated kilocalorie value that they receive from their self-produced food is the lowest of the income spectrum. These findings require further research to be confirmed and explained.

**Figure 10: Comparing average daily kilocalories and proportion of population benefiting from In Kind receipts and Own Production**



Two main points can be drawn from these trends. Firstly, if it is accepted that to receive food in kind is an indicator of efficiency in food aid targeting, then it is clear that there is a strong pro-poor bias in food aid allocation – i.e., more of the poor are included. Secondly, compared to the rest of the population, the poorest Palestinians seem less able to extract equal dietary energy value from their self-produced food compared to the remaining population.

The above description of the absolute and relative impact of in kind and self-produced food underlines important points to be considered when attempting to gauge the impact of humanitarian intervention. In essence, it illustrates the different potential impact of any given intervention depending on perspective and motive. Concentrating on reduction of food deprivation in absolute terms where a reduction in the prevalence of deprivation is sought on the basis of percentage points is helpful when setting national level goals as

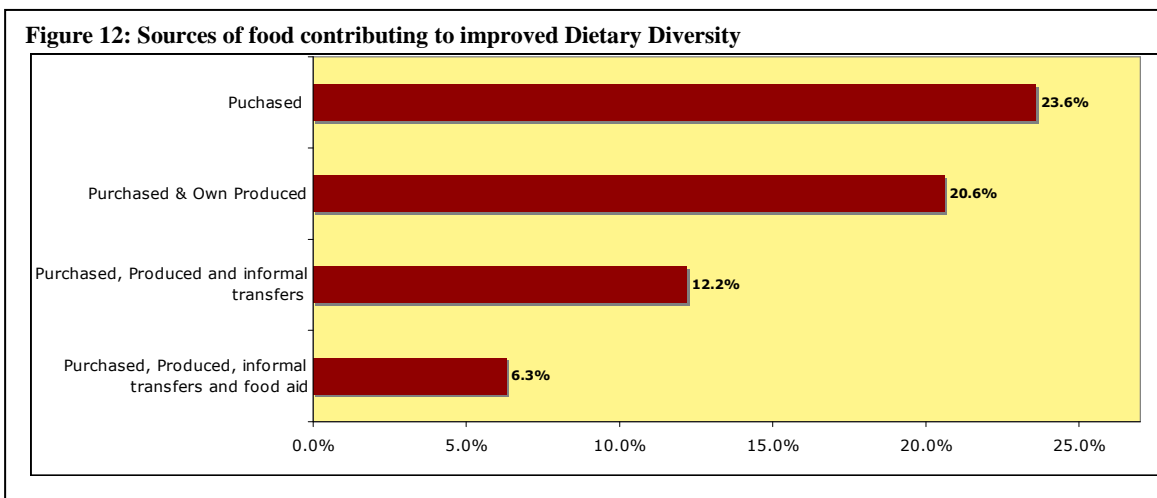
it provides a macro level perspective. Whereas, when looking at the impact on sub national groups, even though it is useful to consider reduction in prevalence of deprivation in absolute terms, considering relative impact makes more sense when the aim is to determine the value of intervention for the deprived population. For example, despite the fact that absolute food deprivation in the Gaza Strip population has decreased by three percentage points compared to only 1 percentage point within the West Bank population, this seemingly smaller impact in the West Bank translates into a higher impact on the food deprived population, alleviating 1 of every 6 undernourished people from their deprivation in the West Bank and 1 of every 8 undernourished people in the Gaza Strip.

It is important to note that the reported impact of both in kind food receipts and household production on alleviating undernourishment is limited to food acquired during the recall period. The programmed distribution of food aid to the Palestinian population as reported in the 2007 UN Consolidated Appeal is planned to target over 2 million Palestinians, which is well over 50 percent of the population. The fact that WFP normally distributes food packages to the beneficiaries every two months and UNRWA distributes them quarterly impairs the ability to measure the full impact of all distributed food aid using monthly recall data. This is evidenced by the fact that 33 percent of the respondents indicated receiving in kind food during the recall period when over 50 percent of the population was targeted.

This has a bearing on the estimated alleviation in undernourishment due to in kind food as reported here. Clearly, the estimated impact of in kind food is understated in this report. A recent FAO report (FAO, 2007) indicates that, when considering data on food acquisition including total reported food aid distribution throughout 2006, the prevalence of undernourishment may be reduced from 9 percent to as low as 2 percent.

### 3. Dietary Diversity

For the vast majority of Palestinian households, the diversity of their dietary intake ranges from medium (60 percent) to high (33 percent). Only 6 percent of the Palestinian households are considered to have a low dietary diversity.



The sparse occurrence of low dietary diversity among Palestinian households can be largely attributed to informal transfers amongst the Palestinians (i.e., trading, bartering, gifts and credit) and secondly to food aid (Figure 12). However, food aid significantly contributes to improving dietary diversity of Gazans, refugees and camp dwellers. This confirms their dependency on food aid for both dietary energy consumption and dietary diversity.

It is interesting to note that, aside from direct purchases, food acquired through informal transfers plays a major role in improving dietary diversity for Palestinian households. Approximately 8 percent of Palestinian households rely on informal transfers to improve their dietary diversity, from low to medium and above. After informal food transfers, food aid is the next significant factor in improving dietary diversity. This is estimated to have alleviated 6 percent of Palestinian households from low dietary diversity. In other words, if it were not for the Palestinian households' informal sources of food such as informal credit, bartering and gifts as well as food aid, it is estimated that 20 percent of Palestinian households would have a low dietary diversity.

At the sub national level, the percentage of households with low dietary diversity varies greatly. The highest ratio of households with low dietary diversity is found in the Gaza Strip where 15 percent of the households were considered to have low dietary diversity at the time of the survey. After the Gaza Strip we find urban households and refugee households where 9 percent of the households of both groups show low diversity in dietary consumption.

Excluding food received as food aid, the proportion of Gaza Strip households with low dietary diversity nearly doubles to reach 29 percent. The same applies to refugee households where the proportion of those households reaches 20 percent, it is observed that food aid has a smaller impact on urban households. In urban areas, food aid accounts for the reduction in the ratio of households with low dietary diversity by 4 percentage points.

The impact of food aid on improving household dietary diversity is most visible in households dwelling in refugee camps where it is responsible for a reduction of 22 percentage points.

Figure 13 underlines the difference in reliance on food aid versus own food production across sub national groups<sup>9</sup>. Generally, it is observed that food aid plays a bigger role in the Gaza Strip, for refugee households and especially those residing in refugee camps. Whereas for West Bank households, for rural households and for non-refugee households, self-produced food plays a bigger role in improving dietary diversity than food aid.

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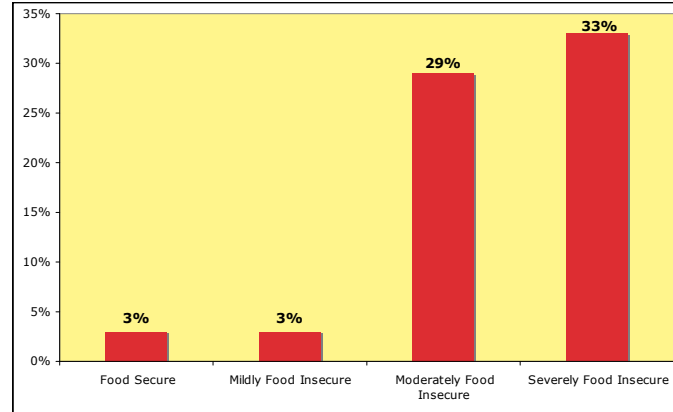
<sup>9</sup> For a comprehensive view of the prevalence of low dietary diversity across the whole range of sub national groups considered in this report both including and excluding food from food aid and own production, refer to Table 3 in Annex 3.

*Food Insecurity, Food Deprivation and Low Dietary Diversity: Synthesis*

Eight percent of Palestinian households experienced severe food insecurity –i.e., they reported having had to drastically reduce their food consumption (no food all day long) and having a physical sensation of hunger due to a lack of food and lack of resources to acquire it.

Coincidentally, 8 percent of the Palestinian population was also considered to be food deprived, as they did not acquire enough food to cover the Minimum Dietary Energy Requirements (MDER). Figure 14 outlines the co-occurrence of food deprivation and severe food insecurity.

**Figure 14: Co-occurrence of undernourishment (no in kind) across food insecurity groups**



Within the food secure to mildly food insecure population, the prevalence of food deprivation remains low at 3 percent. The prevalence of under-nourishment increases nearly ten fold to reach 29 percent for the moderately food insecure and increases further to 33 percent of the severely food insecure.

In contrast to the trend outlined in Figure 14, dietary diversity does not necessarily increase with increased severity of food insecurity.

From the standpoint that DEC and DD represent two aspects of consumption adequacy, a full Structural Equation (SE) model is fitted to identify the causal influences on adequacy of food consumption and to relate it to the general phenomenon of food insecurity.

Generally, the causal influence of economic wealth on adequacy of consumption provides statistically validated confirmation of the notion that economic access is the main factor behind food insecurity. Moreover, the model shows higher occurrence of inadequate consumption among city and refugee camp dwellers compared to the more remote rural population. The rural population, most probably due to its food production role, is less likely to experience inadequate food consumption (in terms of undernourishment and dietary diversity), but more likely to perceive severe food insecurity –resulting from geographic remoteness.

Aside from the dependency of consumption adequacy on economic wealth, the notion that a feedback loop exists between the two was tested. Indeed it was found that, to a certain extent, economic wealth is also partially dependent upon consumption adequacy. This dependency is interesting since it provides some insight into poverty dynamics and

what is often referred to as the poverty trap. It is a cyclic dynamic where economic wellbeing ensures adequate food consumption, which in turn reinforces economic wellbeing.

### Identifying the undernourished

A regression model was developed to establish profiles of the Palestinian undernourished in order to assist national and international organizations aiming to provide them with aid. The model reveals that the most significant household characteristics that facilitate the identification of the undernourished are (1) low prevalence of male members in the household, (2) high percentage of unemployed within the household “labor force”, (3) low average household age and (4) low years of education per capita.

Based of the above characteristics, four different profiles of undernourished were observed. Two profiles apply across the West Bank and Gaza Strip, which are:

- a. Households who have at least one unemployed member (who is an active labor force member), with an average age of 19.8, an education per capita of 8.7, and of which 65 percent of the members are females.
- b. Households who have at least one unemployed member (who is an active labor force member), with an average age of 19.8, a education per capita of 7.5 and of which 50 percent of the members are females.

To sum up, more years of schooling are required to compensate having more female members in the household.

The other two profiles are region specific, as follows:

- a. Young Households (16.2 average age) with less than 10.5 years of education per capita, and with 50 percent of female household members in rural North and South WB and Urban/ Camp Middle WB.
- b. Young Households (16.2 average age) with less than 7.5 years of education per capita, 50 percent of female household members and at least one unemployed member (active labor force participant) in GS and urban/camp North and South WB.

In other words, given the average age and the percentage of females in the household, residents in North and South WB and Urban/Camp in Middle WB would need three years more of education (than the 7.5 year average per household member) in order not to be more food deprived than residents in GS and urban/camp North and South WB.

### *Discussion and policy implications:*

1. There is a high level of food insecurity in the oPt, in which nearly half of the Palestinian households are found to be suffering from various degrees of food insecurity. In terms of the adequacy of food consumption, it is estimated that 1 in 12 Palestinians is undernourished and 1 in 16 Palestinian households has a low dietary diversity. Considerable variations exist at the sub-national level.
2. Widespread food insecurity is recorded in the PPP 11 survey in Gaza Strip. However, since June 2007 the severely decreased economic opportunities and decreased economic access to food, coupled with the alarming limitations in food imports and increase in food prices is expected to have drastically deepened food insecurity in the Gaza Strip. The importance of open access to commercial food imports and necessary agricultural inputs as well as employment opportunities cannot be emphasized enough.
3. Although food insecurity is a problem across all sub-national groups, it is particularly problematic for large households and residents of the Gaza Strip and refugee camps. Within the West Bank, food insecurity is most prevalent in the southern governorates. High food insecurity indicators are also found among urban dwellers.
4. Focusing specifically on undernourishment, the prevalence of food deprivation is highest in the Gaza Strip. The prevalence is also higher among refugee populations, camp dwellers in particular. It is estimated that received in-kind food alleviates 1 in 5 undernourished people from food deprivation. Food from own production is considered to have the same impact, though mainly on different groups.
5. In kind food received from formal and informal sources appears to have a positive impact in alleviating food deprivation across the range of sub-national groups whereas self-produced food seems to impact more on the rural areas of the West Bank (especially the northern governorates). Considering these figures alongside the fact that production and in kind food are found to have similar impact, it is safe to conclude that an increased focus on improving the dietary intake of the undernourished Palestinian population through promoting small scale food production at the household level is warranted.
6. Currently, food aid not only targets, but also has most impact on, the poorest sector of the Palestinian population. In comparison, own food production is proportionally higher among middle-income groups. Furthermore, the kilocalorie value of food produced by the poorest Palestinians is lower than that of the remaining Palestinian population engaged in own food production. Although the reason for this it is not fully understood, it may suggest a lack of knowledge and/or capacity in the poorest sector to produce enough, if any, high nutrition value foods.
7. The undernourished from various sub-national groups exhibit different degrees of severity of food deprivation. The biggest gap is found among the food-deprived from the Gaza Strip and urban locations. The smallest gap is found among the West Bank

food-deprived, as well as those from rural areas. It is recommended that the consumption gap be taken into consideration in allocating assistance. Stemming from the World Bank initiative and the Social Safety Net Reform Project a Proxy Means Testing Formula (PMTF) is under development for use by the Palestinian Ministry of Social Affairs (World Bank 2005). Within the UNRWA Relief and Social Services department a similar formula is also under development.

Such a development would enable to define not only the profile of the undernourished and where they can be found but also how much assistance they require. Information now exists that identifies who needs food assistance, where they live as well as the appropriate amount of food assistance needed (i.e. gap in dietary energy consumption which should be filled).

8. Informal support networks represent the most influential factor on dietary diversity, factor upon which many Palestinian households depend. This includes trade, barter, gifts and credit. Food aid and own production are also thought to significantly improve dietary diversity.
9. In line with previous assessments on the causes of food insecurity in the oPt, this report provides strong statistical evidence that food consumption adequacy is partially dependent upon economic access. Moreover, there is further evidence of a recursive relationship between consumption adequacy and economic wellbeing. Independently from the impact of economic wellbeing on the adequacy of food consumption, it is estimated that adequate food consumption reinforces economic wellbeing. This recursive relationship is remarkable because despite the traditional argument that, in the oPt, severe food insecurity is due to economic poverty it also suggests that improved food consumption adequacy can contribute to poverty alleviation.

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