

Food Insecurity and Vulnerability Information and Mapping System in the West Bank and Gaza Strip

FIVIMS PHASE 2

Working Paper III ***30 September, 2006***

THE SOCIO-ECONOMIC IMPACTS OF THE AVIAN INFLUENZA OUTBREAK IN THE WEST BANK AND GAZA STRIP

(*) This Working Paper presents the information collected by the FIVIMS Task Force on the above subject. It is addressed to a technical audience.

A summary of this information is presented in the FIVIMS Brief #1.

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1 Sector Background (based on official statistics)

1.1 The poultry sector in the West Bank and Gaza Strip

In 2004, the agricultural sector contributed for 18 percent in the Palestinian national domestic product, while the livestock sector alone contributed for 8 percent - mainly constituted of meat (55.4 percent), dairy products (29 percent) and eggs (9.2 percent)¹. The total value of the poultry sector production reached US\$126 million in the West Bank and Gaza Strip (WBGS), of which US\$89 million from egg production and US\$37 million from broiler production.

In recent years and as a coping mechanism against shrinking income and decreasing job opportunities, poultry production has gained more importance for many Palestinian households: an increasing number of backyard and small family poultry farms have been established. According to farm structure survey statistics by the Palestinian Central Bureau of Statistics (PCBS), animal holdings are held mainly as a source of livelihood or income and for household consumption, as illustrated in the table 1 below.

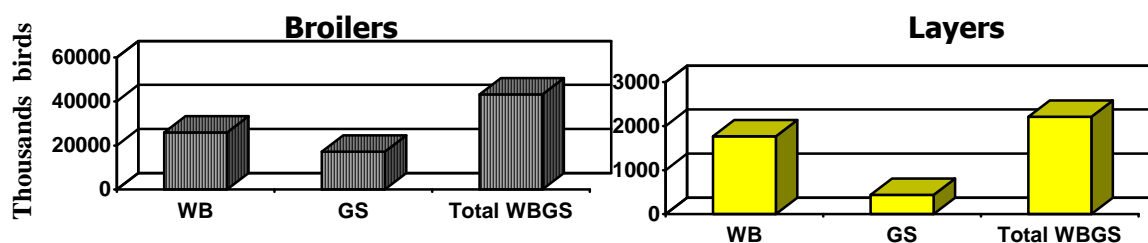
Table 1: Distribution of animal holdings in the WBGS by reason for rearing (Source: PCBS, Farm Structure Survey, 2004)

Area	Rationale for holding a farm in the WBGS			
	Sale	Household consumption	Sale after consumption	Total
WBGS	22.7	42.6	34.7	100

Simultaneously, households shifted their consumption behaviour towards poultry meat instead of expensive red meat or fish. Hence, poultry became the main source of protein intake in the WBGS, with an average of 14 kg of poultry/month consumed by family, as compared to 6kg of meat, 4 kg of eggs and 2 kg of fish².

Figures 1 and 2 below summarize the total number of broilers and layers reared annually in the WBGS, as well as the size range of poultry farms: 43 131 900 broilers and 2 204 143 layers are being reared in a total of 3 347 farms across the WBGS. Small-scale poultry farms (less than 3 000 birds/farm) prevail in the West Bank (WB), which reflects the family nature of the business.

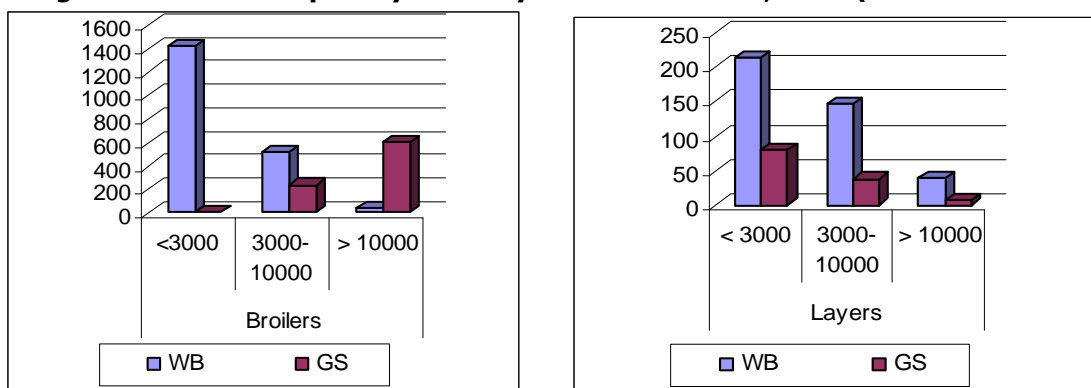
Figure 1: Annual production of broilers and layers in WBGS, 2006 (Source: Ministry of Agriculture [MoA] database, 2006)



¹ Ministry of Agriculture (MoA) estimates 2005.

² PCBS, 2005, Quantities of Households' Consumption of Food products in the Palestinian Territories 2004.

Figure 2: Number of poultry farms by size in the WBGS, 2006 (Source: MoA database)



The poultry industry is one of the most vibrant rural industries in the WBGS. However, besides the Avian Influenza (AI)-related shocks, the current fiscal crisis and the consumers' dwindling purchasing power are expected to affect the effective demand for poultry products - albeit cheaper than red meats and fish.

1.2 The Avian Influenza outbreak

As in other parts of the world, AI represents a major threat to the entire Palestinian poultry industry. In March/April 2006, seven AI cases were confirmed in poultry farms in the Gaza Strip (GS) and one in an Israeli settlement (Beqaot) in the WB. Subsequently, the veterinary services of the Ministry of Agriculture (MoA) culled almost 346 000 birds in 49 commercial farms in the GS, while in the WB culling was undertaken in backyard poultry holdings in Tubas district (5 193 birds) and in Northwest Jerusalem (668 birds).

The panic reaction that followed, combined with a poor awareness campaigning generated major waves in consumers' behaviour, with a dramatic drop in market price and in consumption of poultry products in the immediate aftermaths of the outbreak. Nutritional concerns over the intake of animal-protein rich foods pushed the World Food Programme to distribute for a short period a limited tonnage of canned fish/meat to 160 000 of the most food insecure non refugee populations in the GS (25 grams of proteins/person/day).

In early June 2006, the Government of Russia disbursed US\$1.7 million to enable the PA to implement its emergency compensation scheme, based on real production costs of the culled poultry. However, backyard poultry holdings were not systematically surveyed and compulsory culling did not occur, which represents an alarming threat, as backyard holdings are potential reservoirs of the virus.

Hence, the risk of new AI outbreaks in the coming fall season requires upgraded surveillance, including laboratory testing capacities in the WBGS. A UN multi-agency framework was developed to facilitate fundraising and address immediate and medium-term needs in the fields of animal health/production, human health and other related interventions³.

³ UN Interagency Framework for Avian Influenza and Pandemic Response, Jerusalem, April 2006.

1.3 The poultry industry

The poultry industry in the WBGS is strongly dependent on the Israeli market for all inputs: feed, baby chicks, young layers and breeders, as well as vaccines and drugs are either legally imported or smuggled from Israel. As illustrated in the Table 2 below, the poultry imports in WBGS drastically shifted from high import of chicks in 1999 to high import of finished poultry in 2004, indicating a significant loss of added value and market share for the Palestinian producers.

Prices of poultry products in the local markets are highly variable, subject to the pressure of cheap Israeli produce. Furthermore, inputs from non-Israeli suppliers often encounter serious customs restrictions, engendering sharp economic losses for Palestinian traders and farmers.

Table 2: Value of life poultry imports to WBGS (Source: PCBS, Foreign Trade Statistics, 2004)

Poultry imports	Value (US\$1 000)		
	1999	2000	2004
Life poultry weighing less than 185 grams, <i>i.e.</i> , chicks, ducks, goose, turkeys breaded for poultry production	5 044.20	894.8	1 406.10
Life poultry weighing more than 185 grams	1 956.70	3 467.20	5 535.30

2 FIVIMS survey: updated profiles of backyard and commercial

2.1 Justification and methodology

As a response to the severe impacts of the AI outbreak on the food and nutritional security of the Palestinian producers and consumers as well as on the national economy as a whole, and considering the risk of future outbreaks, the FIVIMS Task Force initiated a study on those socio-economic impacts in April 2006. Between June and July 2006, fresh field data have been collected in order to obtain updated information on the status of the industry before, during and after the outbreak.

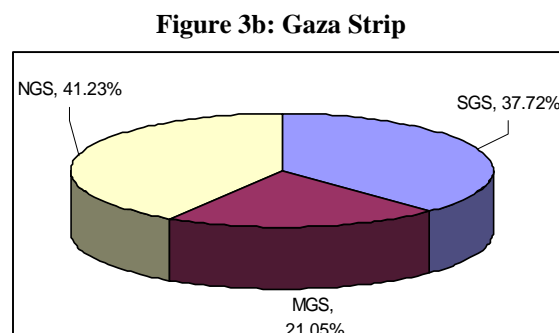
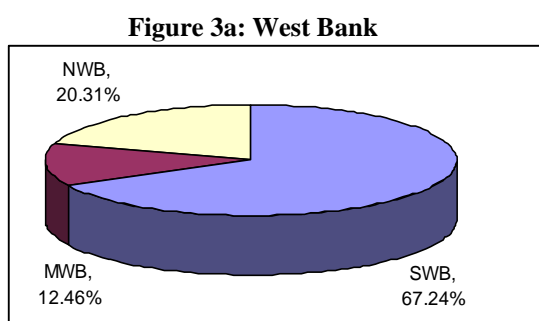
To this end, six different questionnaires were designed, targeting the various stakeholders of the industry: commercial producers, backyard holders, feed producers, hatcheries, traders and wholesalers. The key indicators and the overall methodology have been jointly developed by the Task Force, the MoA and PCBS. Moreover, 20 MoA staff members from the 17 agricultural district departments were trained in Ramallah and Gaza on the methodology. More than 650 actors were interviewed in all districts of the WBGS.

This section presents the analysis of the status of backyard and commercial holdings, as well as the impacts of the AI outbreak on these holdings.

2.2 Backyard holdings: updated profile

a) Size and distribution

The number of backyard holdings (less than 200 birds/farm) in the WBGS has reached 4 933 farms, largely located in the Southern WB (67.2 percent of all WB farms). In the GS, the distribution is more even across the different areas (Fig. 3b.)



Survey results show that 96 percent of the WB backyard holdings are located in rural areas, while in the GS the majority is situated in urban areas (Table 3.)

Table 3: Distribution of backyard holdings by location

Area	Location of backyard holding (%)		
	Urban	Rural	Refugee camp
WB	4.30	95.70	0
GS	71.90	26.90	1.20

b) Type of holdings

In the GS, 64.5 percent of backyard poultry holders in the GS own mixed holdings (animal and plant), as compared to less than 30 percent in the WB.

The majority of backyard farm owners in the WB report that they are/were employed in other activities and established a holding to increase their income. In the GS, 54.8 percent of them reported being unemployed (Table 4.)

Table 4: Distribution of work status of backyard poultry farm owners across the WBGS

Area	Work status of farm owners (%)					
	Employed	Unemployed	Student	Housewife	Disabled	Other
WB	61.4	24.8	0.9	1.2	1.8	9.8
GS	41.7	54.8	0	2.4	0	1.2

The survey also revealed that only 9.6 percent of women in the WB are involved in backyard poultry rearing, as compared to 26 percent in the GS.

While the start-up capital mostly comes from family savings and other sources of family income (97 percent in the WB, 91 percent in the GS), a negligible percentage of backyard

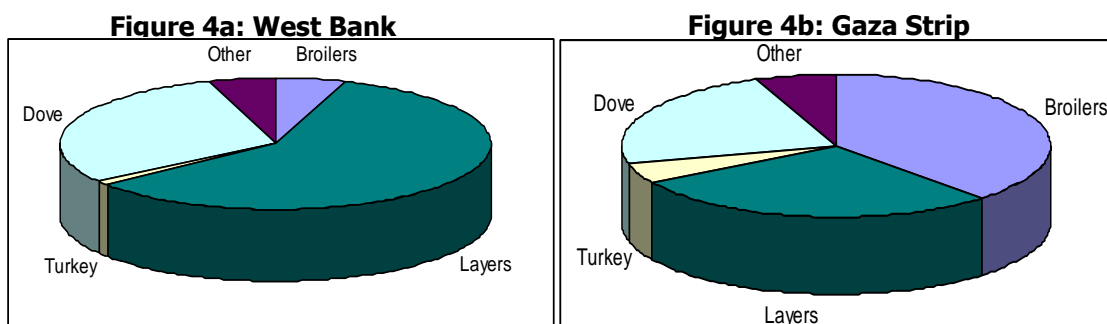
poultry activities is financed through micro-credit schemes or bank loans (4.3 percent of farmers in the GS, 0.8 in the WB).

c) **Contribution to farmers' income**

While the majority of backyard poultry holders report that they generate a big portion of their income from this activity, the study found that it constitutes the main source of income for only 19 percent of the holders in the WB and 20 percent in the GS.

d) **Farm by type of poultry reared**

Broiler rearing concerns 38 percent of the backyard holdings in the GS and only 5.2 percent in the WB. Dove rearing however occupies the same rank in both the GS (23 percent) and the WB (30 percent) (Fig.4.)



e) **Location of the farm**

Both in the WB and GS, most of the backyard poultry farms are located within the residence of the holder. However, this proportion is larger in the GS, due to the high density of population and the lack of available land. This issue requires further attention due to high risks involved in case of new AI outbreaks.

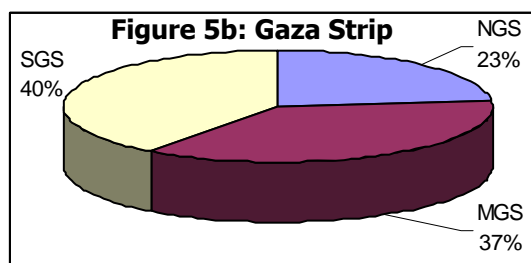
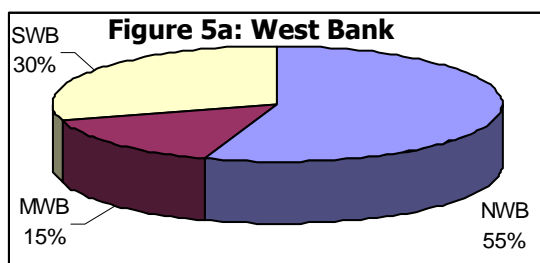
Table 5: Distribution of farms by location and type of bird

Type of bird	Location of the farm			
	WB		GS	
	Room in the house (%)	Separated farm (%)	Room in the house (%)	Separated farm (%)
Broilers	32.3	67.7	59.3	40.7
Layers	77.8	22.2	84	16
Local Birds	36.4	63.6	54.1	45.9
Turkey	37.2	62.8	78.2	21.8
Goose	39.6	60.4	58	42
Dove	53.4	46.6	80.4	19.6
Other	35.9	64.1	67.4	32.6

2.3 Commercial holdings: updated profile

a) Geographical distribution

The FIVIMS Task Force survey clearly showed that, concerning the WB, a majority of the 3 299 commercial farms is concentrated in the North, while most of the backyard holdings are located in the South. In the GS however, the 796 commercial farms are more evenly distributed across the different areas (Figure 5.)



The trend observed above for the backyard holdings applies also for the commercial farms: in the WB, most of the holdings are animal-only, while in the GS the majority is practicing both animal and plant agriculture (Fig.6).

Figure 6: Distribution of backyard holdings by type

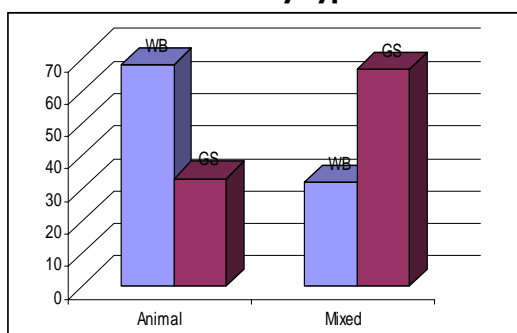
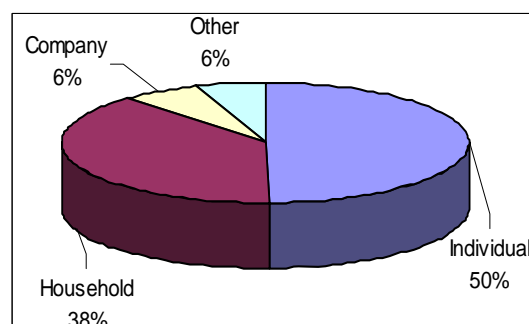


Figure 7: Commercial holdings by ownership



A small portion of the commercial farms is registered as companies (Fig.7.), as most commercial poultry farms are family or individually owned (47 and 51 percent respectively in the WB and 36 and 50 percent in the Gaza Strip).

b) Type of bird reared

The distribution of farms by type of bird reared is illustrated in the table 6 below. Most of the holdings rear poultry for meat, both in the GS and in the WB. Only 1 percent of the farms in the WB rear turkey, which is an activity that involves higher risks.

Table 6: Distribution of commercial farms by type of poultry

Location	Commercial farms by type of poultry (%)				
	Broiler	Layer	Turkey	Pigeon	Dove
WB	74.3	20.7	0.1	0.8	4.1
GS	86.2	12.1	0	1.2	0.5

c) **Employment**

Work in commercial poultry farms remains dependant on male family labour, as 93 percent of the farms report employing a full-time male family labour (*i.e.*, unpaid) with an average of 1.9 workers/farm. Only 10 percent report employing a full-time female family labour, with an average of 1.2 workers per farm.

Only 30 and 15 percent of the commercial farms employ male wage employees on full and part-time basis respectively, with an average of 3.9 and 4.5 workers/farm, and only 1 percent report employing female workers on a full and part-time basis with an average of 1 worker/farm.

d) **Financing**

Family savings and other existing source of income constitute the major financing sources for commercial farms. Micro-credit and bank loans have limited contribution in financing commercial farming activities (Table 7.)

Table 7: Distribution of financing sources of commercial poultry farms

Location	Source of financing (%)				
	Family savings	Other income	Micro-credit	Bank loan	Other
WB	75.0	13.7	0.5	3.9	6.9
GS	80.2	4.6	3.2	0.0	11.9

e) **Contribution to farmers' income**

Poultry farming represents the main source of income for most of the commercial farmers practicing this activity. However, a small number also work for wages in the public and private sector.

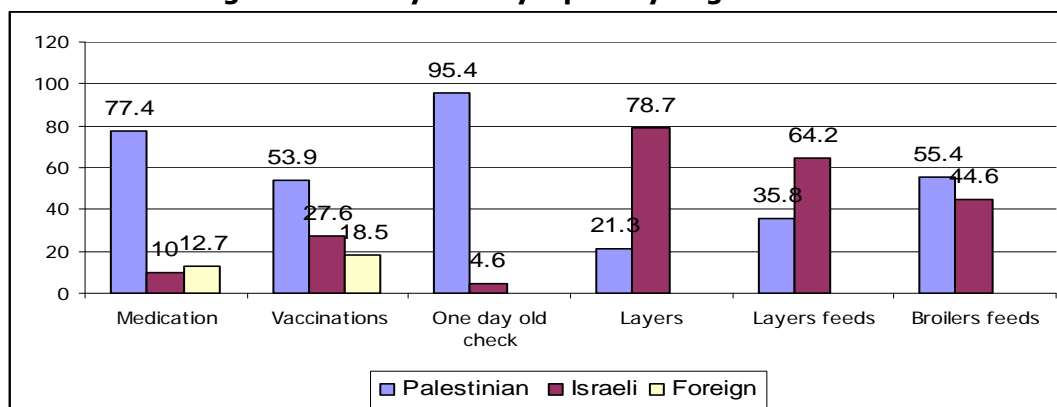
Table 8: Distribution of source of income of commercial poultry farmers

Location	Main source of income (%)				
	Private business (farm)	Paid work in private sector	Paid work in public sector	Assistance	Other sources
WB	68	8	9	4	11
GS	71	5	11	0	13
WBGS	69	8	9	3	11

f) **Origins of inputs**

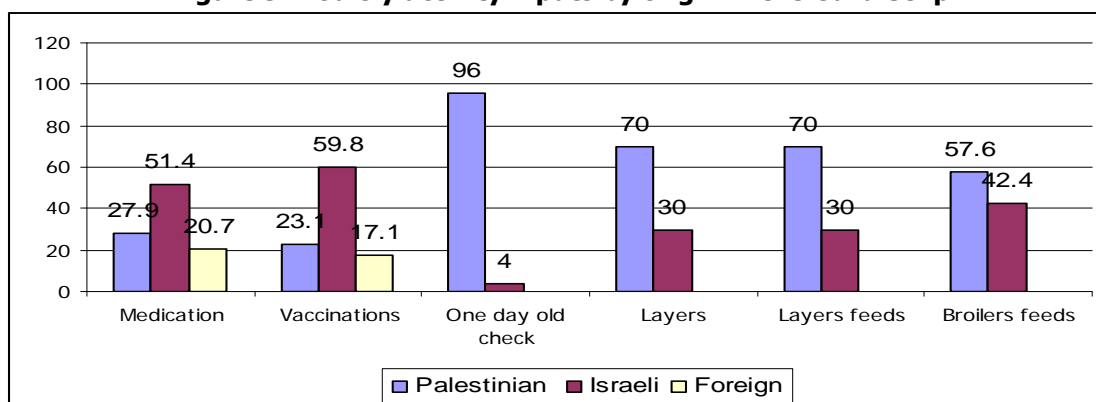
Survey results show that the WB farmers depend on local production of broiler feed, one-day old chicks, medications and vaccination, and on Israel for layers and layer feeds. Imports from foreign countries are restricted to vaccinations and medication that are not manufactured locally (Fig.8.)

Figure 8: Poultry activity inputs by origin in the WB



In the GS, layers and layer feeds are produced locally, while vaccination and medications are imported from Israel. The closure regime probably prevents products produced in the WB from reaching the GS (Fig.9.)

Figure 9: Poultry activity inputs by origin in the Gaza Strip



g) Destination of outputs

As illustrated in the table 9 below, the main market for poultry farmers both in the WB and the GS are located within the same governorate as their farm. It is to note that eggs from the WB are the only poultry product sold to the Israeli market.

Table 9: Distribution of poultry markets by area

Area	Produce	Poultry markets (%)					
		Same community	Same governorate	Other governorates	Israel	Own consumption	Other
WB	Broiler	30.3	56.5	11.3	0	1.8	0
	Egg	29.3	31.5	18.2	20.5	0.5	0
GS	Broiler	11.8	52	35.1	0	1	0.1
	Egg	15.1	60.2	23.6	0	0.8	0.2
WBGS	Broiler	26.1	55.5	16.7	0	1.6	0
	Egg	27.3	35.5	19	17.7	0.5	0

3

Impact of the Avian Influenza outbreak: quantitative trends

3.1 Backyard holdings

a) Loss of critical cash income

Preliminary results of the FIVIMS Task Force survey indicate that the March-April AI outbreak has resulted in considerable reduction in the total cash income for backyard poultry farmers.

The table 10 below illustrates that in the GS, 11 percent of the backyard poultry farmers indicated losing more than 80 percent of their income, while 35 percent lost 20 percent of their income. In the WB however, the majority of the farmers reported a loss of 20 percent of their income.

Table 10: Loss in backyard poultry farmers' family income due to the AI outbreak

Location	Range of income loss (%)					Not stated
	<20%	20-40%	41-60%	61-80%	>80%	
North WB	82	8	3	2	0	5
Middle WB	90	4	0	5	0	0
South WB	79	7	9	0	2	3
Average WB	83	7	4	2	0	4
North GS	0	10	8	48	12	23
Middle GS	36	6	23	20	16	0
South GS	67	21	2	2	8	0
Average GS	35	14	9	23	11	9
Average WBGS	75	8	4	6	2	5

The table 11 below shows a shift in the contribution of the farming activities to the household income. In the WB, those whose farm contributed by more than 40 percent of their income decreased, while those whose farm contributed by less than 40 percent of their revenue increased by 22 percent. The same trend is observed in the GS.

Table 11: Distribution of backyard poultry farmers by contribution of farm income to total income

Location	Time-frame	Contribution of farming activities revenue to total income (%)		
		<40%	≥40%	Not stated
WB	Pre-AI	30	70	0
	Post-AI	52	48	0
GS	Pre-AI	20	72	8
	Post-AI	49	43	8

b) Anticipated long-term impacts

Following the AI outbreak and its consequences, farmers were asked about their future plans in terms of practicing the activity versus switching to other activities. Forty-four percent of the WB backyard poultry farmers reported that they will switch to another activity within the agriculture sector, 14 percent showed their intention to move to an entirely different sector and 24 percent reported that they can cope without this income.

In the GS however, none of the farmers reported having an intention to switching to other activities or sectors.

c) Assistance requested versus assistance obtained

The results reveal that 28 and 26 percent of WB and GS farmers respectively asked for assistance with regards to the threats posed by the AI - they all reported addressing the MoA for this purpose. The requested assistance was mostly of a technical nature and a request for extension services in the GS, while in the WB 12 percent of the farmers also asked for financial assistance.

Furthermore, 82 and 92 percent of those who asked for help in the WB and the GS respectively reported receiving technical and extension help.

When asked about the AI outbreak impact on their activities, 28 percent of the farmers in the WB reported feeling no change, while 25 stopped consuming poultry products, 20 percent got rid of their poultry and 14 percent reported a negative impact on their living standards. In the GS however, a majority of farmers reported that the AI outbreak has negatively affected their living standards, and 26 percent reported getting rid of the poultry (Table 12.)

Table 12: Impact of AI from backyard poultry farmers' perspective

AI impact	Percentage of farmers affected (%)		
	WB	GS	WBGS
No change	27.7	10.4	24.9
No consumption of poultry products	24.7	0	20.7
Getting rid of the poultry	20	25.7	20.9
Negative impacts on the family living standard	13.5	51.4	19.7
Difficulties in marketing	4	11.5	5.3
Financial loss	3.9	5.3	4.1
Start the practice of other activities	3.4	5.3	3.7
Fears of dealing with poultry	2.5	13.3	4.2
Social impact on household	1.9	0	1.6
Request of assistance	1.5	1.2	1.5
Isolation of the birds	1.3	11.5	3

3.2 Commercial holdings

a) Farmers' income

The AI outbreak in the GS and in few areas in the WB has costed the farmers' substantial indirect income loss, resulting from a decreasing demand and/or prices of their outputs (broiler meat and eggs).

The following table shows how farmers were pushed down to lower income levels. Before the AI outbreak, only 28 percent of the farmers were earning less than 40 percent of their income from rearing poultry. However, this proportion increased to 45 percent. The proportion of higher income earners (those who gain above 80 percent of their income from poultry rearing) has decreased from 28 percent to 16 percent (Table 13.)

Table 13: Distribution of farmers by percent of farm income contribution to total income, pre and post-AI

Location	Farm income contribution to total income					
	Pre-AI (%)			Post AI (%)		
	< 40%	41%-80%	> 80%	< 40%	41%-80%	> 80%
WB	29.8	42.7	27	46.4	29	14
GS	20.4	39.5	32.3	39.2	11.5	22.2
WBGS	27.9	42	28.1	44.8	25.3	15.7

Income losses were substantial and more severe in the GS than in the WB: 40 percent of the farmers in the GS reported losing more than 80 percent of their income, as compared to 9 percent in the WB.

Statistics from different areas reveal that the Southern GS was the most severely impacted area, with 62 percent of farmers losing more than 80 percent of their income (Table 14.)

Table 14: Loss of income of commercial farmers

Location	Loss of income due to AI outbreak (% range)					
	<20%	20-40%	41-60%	61-80%	>80%	No answer
North WB	13.5	21.6	23.0	23.0	10.8	8.1
Middle WB	35.0	10.0	25.0	20.0	5.0	5.0
South WB	17.9	35.9	25.6	10.3	7.7	2.6
Average WB	18.0	24.1	24.1	18.8	9.0	6.0
North GS	0.0	21.4	21.4	35.7	21.4	.0
Middle GS	4.5	4.5	27.3	22.7	27.3	13.6
South GS	4.2	12.5	4.2	12.5	62.5	4.2
Average GS	3.3	11.7	16.7	21.7	40.0	6.7
Average WBGS	13.5	20.2	21.8	19.7	18.7	6.2

b) Prices

The AI generated severe changes in poultry products prices during the outbreak period: the price of broilers decreased by 31 percent in the WB and by 22 percent in the GS.

The Southern GS faced the most severe decrease (34 percent). Prices bounced back in June to reach higher levels than those pre-AI, which is explained by the lack of poultry products in the market. In the WB, broiler prices increased to reach levels 11 percent higher than those pre-AI. Yet, the increase was much sharper in the GS (64 percent), mainly resulting from the resumed demand combined with lack of supply in the market.

Table 15: Comparison of broiler prices before, during and after the AI outbreak

Location	Broiler prices (NIS/kg)		
	Pre-AI	During AI	At time of visit (June 06)
North WB	7	4.7	8
Middle WB	7.2	5.7	7.8
South WB	7.8	5.5	7.9
Average WB	7.2	5	8
North GS	6.4	6.1	13.5
Middle GS	7.8	5.5	11
South GS	7.1	4.7	11.5
Average GS	7.2	5.2	11.8
WBGS	7.2	5	8.6

The price of a carton of eggs has decreased on average by 58 percent in the WB (from NIS 1.4 to NIS 4.8), and by 65 percent in the GS. They recovered during June, however to lower levels than the prices pre-AI: by only 64 percent of their values Table 16).

Table 16: Comparison of eggs prices before, during and after the AI outbreak

Location	Egg prices (NIS/box)		
	Pre-AI	During AI	At time of visit (June 2006)
WB	11.4	4.8	7.4
GS	8	2.8	5.1
WBGS	11	4.4	7.1

Prices of one day old chicks were also impacted, although in opposed trends. In the WB the prices decreased by 27 percent during the AI outbreak, and bounced back by 19 percent in June, possibly resulting from the producers' willingness the chicks available in the open market of the WB. In the GS on the other hand, prices increased during the AI crisis, possibly due to lack of chicks on the local market. In June, the prices had decreased by 13 percent, a level a little higher than that during the AI period.

Table 17: Comparison of one day old chicks price before, during and after the AI outbreak

Location	Egg prices (NIS)		
	Pre-AI	During AI	At time of visit (June 2006)
WB	3.13	2.3	2.74
GS	3.16	4.44	3.88
WBGS	3.13	2.48	2.99

c) **Marketing and sales**

During the AI outbreak, most of the commercial farmers faced difficulties in marketing their products (81.7 percent in the WB and 85 percent in the GS) following the sharp reduction of the poultry products demand resulting from consumer's fear.

An average of 1 794 egg cartons in the WB and 985 egg cartons in the GS were marketed weekly prior to the AI outbreak. This level substantially dropped during the AI outbreak period by 38 percent in the WB, and even more severely in the GS (51 percent). The pre-AI levels were partially recovered in June, reaching a level of 26 and 16 percent lower than in March for the WB and the GS respectively, due to the time needed to recover from the impact on the stock of layers.

Upon the end of the cycle, the marketing of broilers usually takes an average of 6 days in the WB and 3.2 days in the GS. However, it took farmers more than 13.3 and 14.3 days in the WB and GS respectively to market their broiler outputs during the outbreak. The number of marketing days decreased in the WB, but remained slightly higher in the GS, leading to an increase of the average weight of marketed broilers by 16 percent.

Customary agreements between farmers and input suppliers - whereby the supplier provided inputs, marketed the produce to recover the advanced inputs and gained a commission - were hardly still in place at the time of the survey. Suppliers are no longer willing or able to hold this responsibility; hence farmers now are obliged to take the responsibility of marketing and inputs are now paid for cash upfront.

d) **Cash losses**

Of the surveyed commercial farmers, 71 (26 percent of the sample) have reported incurring cash losses as a result of the AI outbreak. In some cases (26 percent), farmers had to get rid of their output (broilers or eggs) during March-April 2006⁴.

Table 18: Percentage of commercial poultry farmers who incurred cash losses

Location	Farmers incurring cash losses (%)		
	Yes	No	Not stated
WB	21	69.3	9.7
GS	44.6	38.8	16.6
WBGS	25.9	62.9	11.2

⁴ All cases reported during April were in the GS only.

The total losses incurred have reached almost NIS 3 million (an average of NIS 41 000/farmer). The FIVIMS survey also revealed that the average per farm losses was much higher in layer farms than in broiler farms (Table 19.)

Table 19: Average losses per commercial poultry farm

Location	Cash losses incurred per farm (NIS)		
	Broilers	Layers	Mixed
WB	24 693	76 396	35 253
GS	26 036	68 960	26 954
WBGS	25 479	75 086	32 105

e) Assistance requested versus assistance obtained

Upon the AI outbreak, 56.2 and 40.8 percent of the commercial farmers reported asking for assistance in the WB and GA respectively, mostly from the MoA (Table 20.)

Table 20: Percentage of commercial poultry farmers who asked for assistance from different sources

Location	Farmers requesting assistance (%)		Source of assistance requested (%)			
	Yes	No	MoA	UN	NGOs	Other
WB	56	40	95	1.3	1.3	2.5
GS	41	56	92.2	0	0	7.8

Moreover, the data collected point out that 62 and 48 percent of WB and GS farmers respectively asked for technical and extension services, while 22.1 percent and 15.6 respectively asked for financial assistance. The remaining asked for both types of assistance.

The survey also reveals that 70.1 of the WB farmers and 76.6 of Gazan farmers who requested assistance have actually received it, in the form of technical and extension services. At the time of the survey, no farmers reported having received financial assistance.

f) Anticipated long term impact

As illustrated in the table 21 below, when asked about the future plans, 78.5 percent of the commercial poultry farmers reported their willingness to continue their activities due to unavailability of other alternatives and the lack of land, water resources and capital, while 12.2 percent reported that they will stop - of which 41 percent showed their interest in switching to another agricultural activity, and 15 percent to an entirely different economic activity. Finally, 29 percent reported that they can live without this income. These results indicate possible significant loss of Palestinian productive capacity and locally originated supply of poultry products.

Table 21: Willingness of commercial poultry farmers to resume practicing poultry rearing after the AI outbreaks

Location	Farmers willing to resume poultry rearing (%)		
	Yes	No	Indecisive
WB	78.7	14.9	6.4
GS	77.9	1.7	20.4
WBGS	78.5	12.2	9.3

A large portion of farmers was left indebted as a result of the losses incurred during the AI crisis. Unpaid debts accumulated at a time when farmers couldn't pay it back. At the time of the FIVIMS survey, 66 and 76 percent of WB and GS farmers respectively reported being indebted - the highest proportion of whom are located in the Southern GS (Table 22.)

Table 22: Commercial poultry farmers indebted at the time of the survey (June 2006)

Location	Farmers indebted		
	Yes	No	Not stated
North WB	69	31	0
Middle WB	61.9	38.1	0
South WB	60	36.9	3.1
Average WB	66.2	33.2	0.6
North GS	70.3	29.7	0
Middle GS	62.6	37.4	0
South GS	91.5	8.5	0
Average GS	76	24	0
WBGS	68.2	31.3	0.5

As clearly illustrated in the table 23 below, this indebteding negatively impacts the ability of the commercial farmers to purchase supplies, as most of them usually obtain those supplies on credit paid upon selling the output.

Table 23: Commercial poultry farmers expecting to face troubles in accessing input supplies

Location	Farmers expecting to face troubles to access input supplies	
	Yes	No
WB	91.6	8.4
GS	71.5	28.5
WBGS	86.9	13.1

g) Difficulties faced by commercial poultry farmers

Commercial poultry farmers were asked to score the general difficulties they face in the fulfilment of their poultry activities (see Annex1.)

In the WB, the most severe issue faced by farmers is clearly the AI outbreak (84 percent of farmers), followed by the decrease in the demand for poultry meat by consumers (66.3 percent of farmers) and the movement restrictions (62.5 percent of the farmers), smuggled poultry from Israel, marketing difficulties and lack of consumer awareness.

In the GS, in addition to AI outbreak and the lack in demand of poultry meat, farmers report that the lack of one-day old chicks and the quality of available chicks represents a challenge for the activity - which can be one of the factors explaining the increase in the chick prices, in conjunction with the movement restrictions.

4 Impact of the Avian Influenza outbreak: traders perspective

In April/May 2006, 21 traders (input, feed and poultry) were interviewed (16 in the WB and 6 in the GS). This paper presents the summary of the changes that occurred since the AI outbreak, as reported by the interviewees.

4.1 Trader-farmer relations: cash and formal guarantees now required

Owing that most poultry farmers seem unable to repay their debts, input traders are now very cautious on supplying their customers. Traders, who in turn are under pressure from their own suppliers, are no longer able to extend credit and to inject inputs into the production cycle. Hence, they now request indebted farmers to pay for supplies in advance. This vicious debt circle jeopardizes the capacity of the industry to recover from the shocks: *e.g.*, most poultry flocks currently reared are smaller than before, to reduce the risk of losses and as a consequence of the shrinking capital along the whole chain.

It was reported that input traders have started introducing guarantees - such as banking cheques, bills of exchange ('Combiale' or promissory notes) or bond of trust (Sanad Amaneh) - instead of the former verbal guarantees.

After the AI crisis, which *per se* only lasted for two months, traders agreed that all players in the sector will need two to three years to overcome the negative impacts of accumulated debts and to rebuild the trust.

4.2 Input traders: cash shortage depressing the business

Traders' losses were threefold: (i) inactive capital in the form of credit extended to farmers that cannot be paid back; (ii) decreasing prices of chicks, meat and eggs; and (iii) smaller turnover.

Trade of poultry feed has substantially shrunk since the AI outbreak: interviewed feed traders reported a 20 to 90 percent decrease in the amount of poultry feed trade during the outbreak and in the downtime thereafter. Due to cash issues, input traders have not been able to obtain feed and other inputs from producers/suppliers, who in turn experienced financial crisis. Although the business now slightly recovered, it remains well below the pre-AI crisis levels.

The 16 traders interviewed in the WB reported extremely high loss of customers (farmers), especially among large and medium commercial farmers.

Table 24: Distribution of customers of interviewed traders by type in the WB

Type of farm	Customers of interviewed traders (number of customers)		
	Pre-AI	During Ai	Variation
Large-scale	319	77	-75.86%
Medium-scale	391	102	-73.91%
Backyard holding	640	317	-50.47%

4.3 Feed producers: drastic decline in the demand and cash crisis

Producers report a decrease in the use of their factories' capacity generated by the decline in demand during the outbreak. In the surveyed factories, production of poultry feed decreased on average by 38 percent in the WB and by 90 percent in the GS. While production levels remained this low in the WB, they partially recovered in the GS in May and have now reached a level 53 percent lower than the pre-outbreak period.

4.4 Changes in prices: a short-lived dip affecting the whole industry

Prices have drastically decreased during the AI outbreak: prices of eggs faced the sharpest decline (by 64 percent in both WB and GS), followed by broiler meat (decrease of 56 percent in the WB and 37 percent in the GS) and turkey meat (by 26 percent in the WB and 57 percent in the GS). Although temporary, this sharp decline of prices has not only eroded farmers' profits but also shrunk the turnover of traders and suppliers, therefore hindering the whole industry.

During the AI crisis, consumers lost confidence in poultry products. The reaction of panic that followed had negative consequences on the demand for chicken meat and eggs. Consequently, market price of alternative animal produce (red meat and fish) sharply increased. During that period, only consumers with enough disposable income to buy such foods have been able to cover their protein intake requirements.

5 Changes in the consumption behaviour of farmer households

The components of the surveyed households' diet were altered during the AI outbreak, with a clear decrease in the consumption of poultry products: 70 percent of households have reported a decrease in their daily consumption of white meat and 60 percent reported a decrease in their egg consumption (Table 24).

On the other hand, and to substitute for this loss in protein intake, 46 percent of households reported an increase in red meat consumption, 42 percent in fish consumption, 20 percent in lentils and chickpeas consumption and 16 percent in milk and dairy products.

Table 25: Changes in the components of the households' daily diet during the AI outbreak

Diet component	Variation during the AI crisis (%)		
	None	Increase	Decrease
Herbs and wild plants	95.3	4.2	0.5
Poultry meat	30.4	0.6	69.1
Red meat	45.3	46.1	8.6
Wild animals meat	96.5	0.0	3.5
Rice	77.2	16.4	6.4
Maftoul	85.9	6.5	7.7
Eggs	36.4	1.3	62.3
Sugar	92.2	4.8	3.1
Milk and dairy products	79.8	16.3	4.0
Bread	89.9	9.6	0.5
Vegetables	82.9	15.6	1.5
Fish	53.6	44.2	2.2
Olive oil	93.3	5.6	1.1
Pickled olives	92.6	5.7	1.7
Wheat and porghol	83.7	14.7	1.6
Lentils and chickpeas	79.3	19.9	0.8
Fruits	90.6	4.5	4.8
Dried vegetables and fruits	97.8	1.2	1.0

6 Conclusion and recommendations

The results of the FIVIMS Task Force investigations and field surveys strongly indicate that the Palestinian poultry sector is very fragile and highly vulnerable to production and marketing hazards. The largest portion of the Palestinian poultry production is undertaken in small to medium sized farms, hence those producers are not capable to absorb additional shocks.

Due to the political, financial and technical difficulties, the surveillance and awareness services provided by the MoA and other institutions are below the desirable standards.

Owing that the general situation is not expected to improve in the WBGS in the near future, and the current potential risks of new AI outbreaks, FAO and other UN and international organizations are involved with the PA to implement a coordinated response framework in order to contain future outbreaks through close surveillance and rapid response, and to rehabilitate a more resilient poultry sector.

Moreover, FAO has identified several options for the rehabilitation and improvement of the Palestinian poultry sector:

1. Create a guarantee or collateral fund needed for kick-starting the microfinance schemes;
2. Provide technical assistance in quality management schemes to microfinance bank project managers, in order to ensure the implementation of adequate practices in the poultry sector;

3. Facilitate the creation of farmer groups or associations so as to enable the micro-credit scheme to be implemented;
4. Associate credit to insurance schemes subject to adherence to quality management plans in small poultry producers who borrow funds to banks;
5. Collaborate in the creation of an agricultural marketing company which would support marketing infrastructures (*e.g.*, slaughter-houses and cold rooms), enable sustainable trade partnerships between Israeli and Palestinian agricultural industries (hence, poultry) and secure marketing through Israel;
6. Improve and support PA relevant organizations to provide extension and technical assistance to farmers; and
7. Target farmers with training sessions and awareness campaigns with regards to possible threats, in order to help farmers be ready to respond to possible emergencies.

Annex 1 Difficulties faced by commercial poultry farmers in the WB and GS

Table 1: Scoring (from 0 to 5) by the commercial poultry farmers of the difficulties they face in their activities, WB (from 0 to 5)

Difficulties	Scoring by the farmers (%)					
	0	1	2	3	4	5
AI outbreak	7.1	0.8	0.5	2.8	4.8	83.9
Lack of demand on poultry produce	3.6	4.1	1.6	9.4	15	66.3
Movement restrictions	12	2	3.6	8.6	11.3	62.5
Broilers smuggled from Israel	13.2	0	0.8	9.8	17.9	58.3
Marketing difficulties	6.6	2	7.5	11.1	19.2	53.5
Lack of consumers awareness	4.2	0.8	3.4	16.3	28.2	47
Media rule regarding AI outbreak	21.9	5.9	6.4	14.5	14.1	37.2
Quality of available chicks	11.4	4.2	11.2	28.2	10.9	34
High checks prices	8.2	0	10.7	24.2	23.2	33.8
Workers fear to work close to poultry	20.9	12.8	6.9	9.9	18.4	31.1
Egg smuggling	52.3	3.1	2.6	6.3	6.7	29
Volatility of production costs	4	3.6	16	25.4	22.3	28.8
Lack of one day old chicks	25.9	10.8	10	19.5	5.3	28.5
Lack of extension services	41.3	14.2	9.7	9.8	1.6	23.4
high process of vaccinations and medications	13.1	15.6	15.7	27.2	6.1	22.2
Unwillingness of suppliers to sell on credit	28.7	7.8	9.8	17.3	15.3	21.1
Quality of feeds	34	9.2	21.1	15.8	5.3	14.6
Lack of feeds	50.6	13.4	7.7	11	3.7	13.6
Quality of vaccinations and medications	36.4	14.1	14.9	17.1	4	13.6
Lack of vaccinations and medications	66.2	9.5	6.6	3.3	2.4	11.9
Other	0	0	0	0	0	0

Table 2: Scoring (from 0 to 5) by the commercial poultry farmers of the difficulties they face in their activities, GS

Difficulties	Scoring by the farmers (%)					
	0	1	2	3	4	5
AI outbreak	0	0	0	8.5	7	84.5
Lack of demand on poultry produce	1.8	0	3.3	22	15.7	57.3
Lack of one day old checks	3.5	10.3	5.3	15.6	10.4	54.8
Movement Restrictions	25.4	0	9.9	8.4	6.7	49.6
Quality of available chicks	1.7	10.8	4.8	13.7	22.4	46.6
Lack of Feeds	3.2	8.8	12.9	15	16.9	43.4
High checks prices	8.8	5.4	8.9	15.1	19.1	42.7
Marketing difficulties	3.5	5.1	10.2	15.3	23.9	41.9
Media rule regarding AI outbreak	8.9	1.8	7.1	27.5	14.2	40.5
high process of vaccinations and medications	13.6	0	8.2	17.4	23.9	37
quality of vaccinations and medications	11.9	10	13.5	20.1	8.8	35.7
Broilers smuggled from Israel	53.9	1.8	0	3.5	6.8	34
Workers fear to work close to poultry	10.1	8.7	8.7	17	23.8	31.6

Quality of feeds	8.2	11.9	11.2	18.2	20.8	29.6
Unwillingness of suppliers to sell on credit	4.7	8.4	12.2	24	22.1	28.6
Lack of consumers awareness	6.7	5.2	6.8	28.8	24.3	28.2
lack of vaccinations and medications	13.2	15.1	14.8	15.2	15.1	26.7
Volatility of production costs	0	8.6	13.4	20.4	38.7	19
Egg smuggling	83.4	0	2.2	2.2	2.2	10.1
Lack of extension services	28	32.4	13.7	10.6	11.9	3.4
Other	0	0	0	0	100	0
