

# Ash Shawawra Village Profile



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## Background

This booklet is part of a series of booklets, which contain compiled information about each city, town, and village in Bethlehem Governorate. These booklets came as a result of a comprehensive study of all localities in Bethlehem Governorate, which aims at depicting the overall living conditions in the governorate and presenting developmental plans to assist in developing the livelihood of the population in the area. It was accomplished through the "Village Profiles and Azahar Needs Assessment;" the project funded by the Spanish Agency for International Cooperation for Development (AECID) and the Azahar Program.

The "Village Profiles and Azahar Needs Assessment" was designed to study, investigate, analyze and document the socio-economic conditions and the needed programs and activities to mitigate the impact of the current unsecure political, economic and social conditions in Bethlehem Governorate with particular focus on the Azahar program objectives and activities concerning water, environment, and agriculture.

The project's objectives are to survey, analyze, and document the available natural, human, socioeconomic and environmental resources, and the existing limitations and needs assessment for the development of the rural and marginalized areas in Bethlehem Governorate. In addition, the project aims at preparing strategic developmental programs and activities to mitigate the impact of the current political, social, and economic instability with the focus on the agricultural sector.

All locality profiles in Arabic and English are available online at <http://proxy.arij.org/vprofile>.

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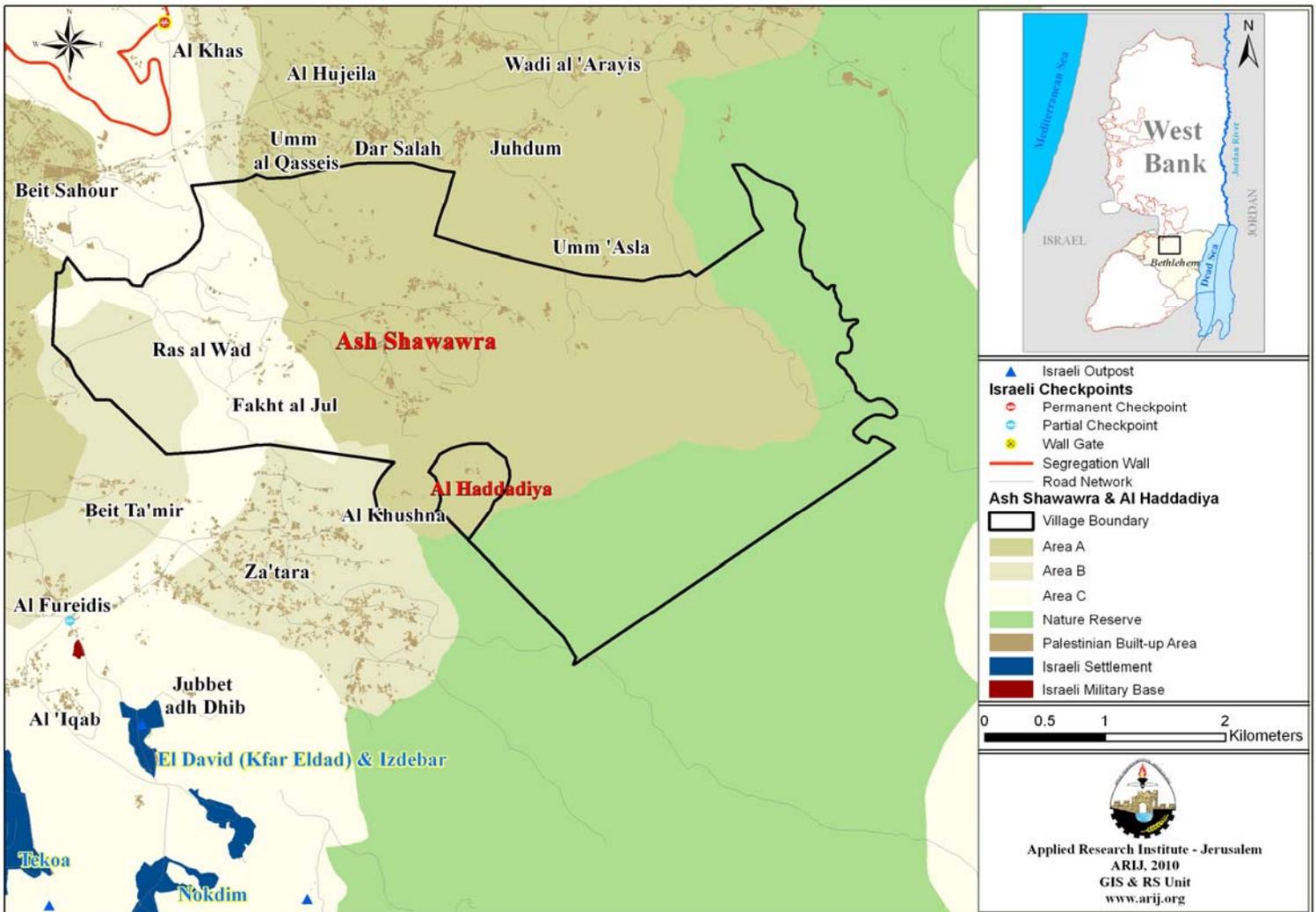
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# Ash Shawawra Village Profile

## Location and Physical Characteristics

Ash Shawawra is a Palestinian village in Bethlehem Governorate located 6.3km (horizontal distance) east of Bethlehem City. Ash Shawawra is bordered by wild lands to the east, Dar Salah village to the north, Beit Sahur city to the west, and Za'tara town to the south (See map 1).

Map 1: Ash Shawawra location and borders



Ash Shawawra is located at an altitude of 557m above sea level with a mean annual rainfall of 292mm. The average annual temperature is 18° C, and the average annual humidity is about 59 percent (ARIJ GIS, 2009).

Since 1996, Ash Shawawra has been governed by a village council which is currently administrated by nine members appointed by the Palestinian Authority. There are four employees working in the council. The village council owns a permanent headquarters.

It is the responsibility of the village council to provide a number of services to the residents of Ash Shawawra, including:

1. Infrastructure services such as water and electricity.
2. Solid waste collection, road construction and restoration, street cleaning, and social development services.
3. Protection of religious and archaeological sites.
4. Implementation of projects and case studies for the Village.

## History

The village was called ash shawawra after the village residents' grandfather whose name was Shower, which later was changed into Ash Shawawra.

Ash Shawawra village residents are indigenous. Moreover, Ash Shawawra village includes three other localities, which are: Al Haddadiya, Al Khishna, and Fakht el Jul.

**Photo of Ash Shawawra/Al Haddadiya**

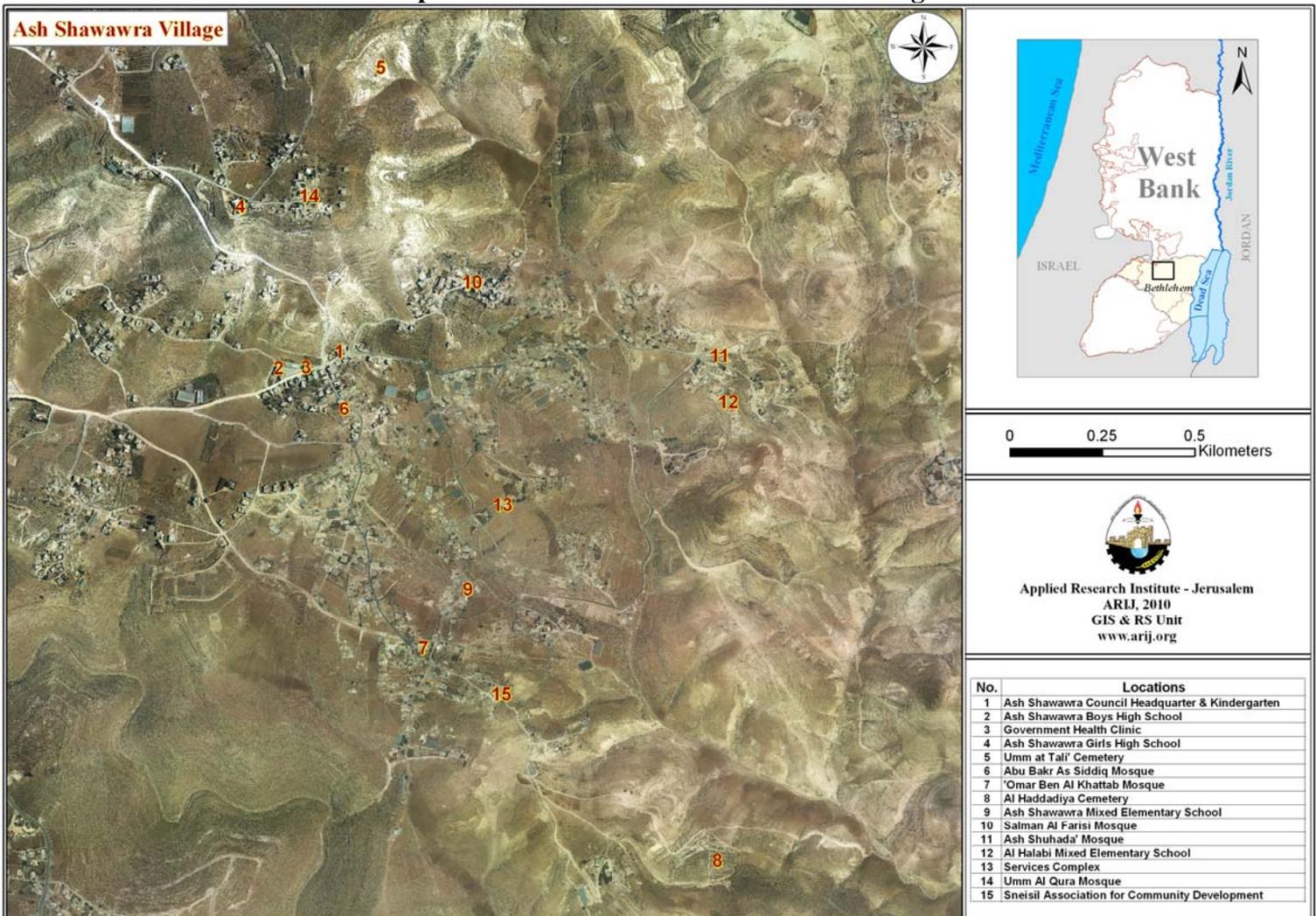


## Religious and Archaeological Sites

In terms of religious establishments, there are five mosques in Ash Shawawra: ‘Omar Ben Al Khattab Mosque, Umm El Qura Mosque, Salman Al Farisi Mosque, Ash Shuhada’ Mosque, and Abu Bakr As Siddik Mosque.

There are no archaeological sites in the village (See map 2).

**Map 2: Main locations in Ash Shawawra village**



## Population

According to the Palestinian Central Bureau of Statistics (PCBS), the total population of Ash Shawawra in 2007 was 3,791; of whom 1,945 are males and 1,846 are females. There are 704 households living in 784 housing units.

### Age Groups and Gender

The General Census of Population and Housing carried out by PCBS in 2007 showed the distribution of age groups in Ash Shawawra is as follows: 38.8 percent are less than 15 years, 57 percent are between 15 - 64 years, and 4.2 percent are 65 years and older. Data also showed that the sex ratio of males to females in the village is 105.4:100, meaning that males constitute 51.3 percent of the population, and females constitute 48.7 percent of the population.

### Families

The inhabitants of Ash Shawawra village are composed of several families, mainly: Salem, Dar'awi, Abu El Hoor, Hamdan, Hammad, Matloob, Abu Ermeis, Abu Kamal, and Karshan.

### Immigration

The field survey showed that about 10 people have left the village.

## Education

According to the results of the PCBS Population, Housing and Establishment Census-2007<sup>1</sup>, the illiteracy rate among Ash Shawawra population is about 9.7 percent, of whom 67 percent are females. Of the literate population, 15.4 percent can read and write, 24.4 percent had elementary education, 30.3 percent had preparatory education, 19.7 percent had secondary education, and 10.2 percent completed higher education. Table 1, shows the educational level in the village of Ash Shawawra, by sex, and educational attainment in 2007.

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<sup>1</sup> These data include the data of Ash Shawawra and Al Haddadiya localities

Sex	Illiterate	Can read & write	Elementary	Preparatory	Secondary	Associate Diploma	Bachelor	Higher Diploma	Master	PhD	Total
M	85	183	310	408	257	24	88	3	8	1	<b>1367</b>
F	173	189	278	321	218	32	85	—	4	—	<b>1300</b>
<b>T</b>	<b>258</b>	<b>372</b>	<b>588</b>	<b>729</b>	<b>475</b>	<b>56</b>	<b>173</b>	<b>3</b>	<b>12</b>	<b>1</b>	<b>2667</b>

Source: PCBS, 2009. Population, Housing and Establishment Census-2007, Final Results

In regards to the basic and secondary education institutions and schools in Ash Shawawra in the academic year 2008/2009, there are four public schools in the village, run by the Palestinian Ministry of Higher Education, and no private schools. See Table 2.

In the village there are 780 students; 45 teachers, and 33 classes (Directorate of Education in Bethlehem, 2009). It should be noted here that the average number of students per teacher in the school is nearly 17, while the average number of students per class is approximately 24 (Directorate of Education in Bethlehem, 2009).

School Name	Supervising Authority	Sex
Ash Shawawra Girls High School	Government	Female
Ash Shawawra Boys High School	Government	Male
Al Halabi Mixed Elementary School	Government	Mixed
Ash Shawawra Mixed Elementary School		

**Source:** Directorate of Education in Bethlehem, 2009

Furthermore, there is one kindergarten in Ash Shawawra, which is run by a charitable society in the village and has a total number of 70 children.

## Health Status

There are some health facilities available in Ash Shawawra village; there is a governmental physician clinic, and a motherhood and childhood center run by the government, in addition to a private dental clinic, but there is no ambulance. In emergency cases, residents of Ash Shawawra use Beit Sahur and Dar Salah hospitals and health centers, such as: Beit Sahur health center (Mustawsaf), which is about 6km from the village, and Aknaf Beit Al Maqdis center in Dar Salah, which is about 3km from the village.

Despite the existence of a health center in the village, the health sector in Ash Shawawra faces several obstacles, mainly:

1. The absence of a pharmacy.
2. The absence of an ambulance.
3. The existing clinic is small and does not meet the needs of the citizens.

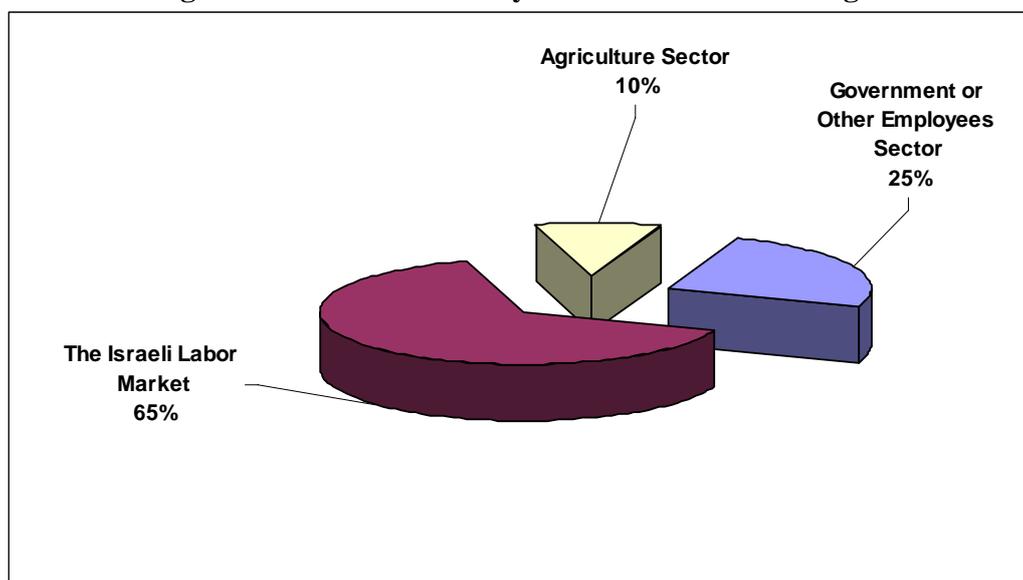
## Economic Activities

The economy in Ash Shawawra is dependent on several economic sectors, mainly: the Israeli labor market, which absorbs 65 percent of the village workforce (See Figure1).

The results of a field survey for the distribution of labor by economic activity in Ash Shawawra are the following:

- Israeli Labor Market (65%)
- Government or Other Employees Sector (25%)
- Agriculture Sector (10%)

**Figure 1: Economic Activity in Ash Shawawra Village**



Ash Shawawra village lacks economic and industrial activities; there is only one butcher and 10 grocery stores.

As a result of the Israeli occupation and restrictions, the economic status of the population has severely declined, as many citizens have lost their jobs and have become unemployed, thus forcing them to work in the service sector and agricultural activities, as a last resort for obtaining a minimum income.

The unemployment rate in Ash Shawawra has reached about 60 percent. It was found that the most vulnerable social groups in the town, as a result of Israeli actions, are:

1. Former workers in Israel.
2. Workers in agricultural sector.

### Labor Force

According to the PCBS Population, Housing and Establishment Census-2007<sup>2</sup>, 32.7 percent of Ash Shawawra population was economically active, of whom 85.3 percent were employed, 67.3 percent were not economically active, 51.3 percent were students, and 36 percent were housekeepers (See table 3).

S E X	Economically Active				Not Economically Active						Total
	Employed	Currently Unemployed	Unemployed (Never worked)	Total	Students	House-keeping	Unable to work	Not working & Not looking for work	Other	Total	
M	657	77	30	<b>764</b>	467	1	109	6	19	<b>602</b>	<b>1367</b>
F	86	6	15	<b>107</b>	453	646	91	1	2	<b>1193</b>	<b>1300</b>
T	743	83	45	<b>871</b>	920	647	200	7	21	<b>1795</b>	<b>2667</b>

Source: PCBS, March 2009. Population, Housing and Establishment Census-2007, Final Results

## Agricultural Sector

Ash Shawawra lies on a total area of about 15,644 dunums of which 15,163 dunums are considered arable land, and 153 dunums are residential land (See table 4 and map 3).

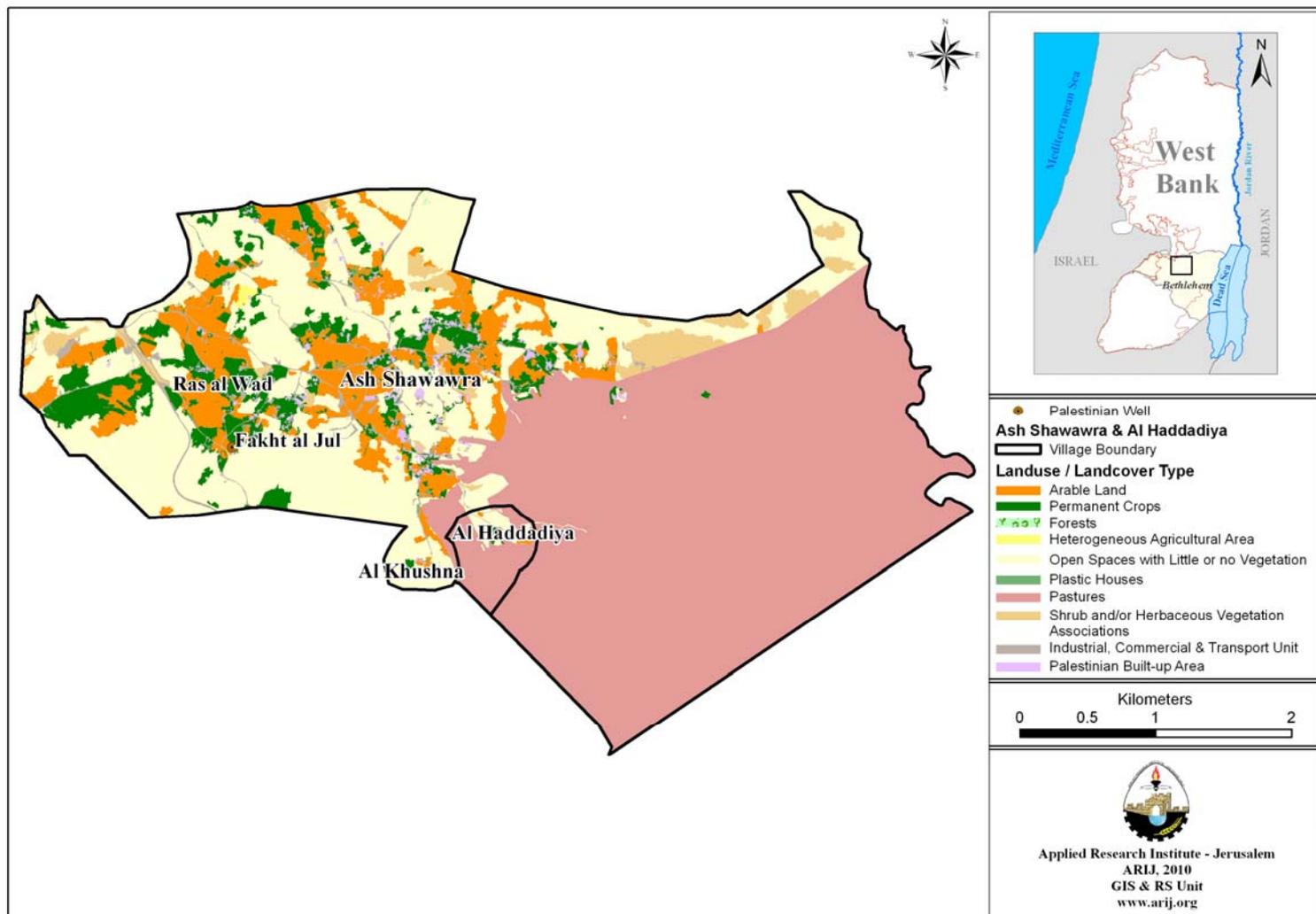
Total Area	Built up Area	Arable Land (15,163)					Area of Industrial, Commercial & Transport Unit	Area of Settlements and Military Bases
		Seasonal Crops	Permanent Crops	Greenhouses	Forests	Open Spaces and Rangelands		
15,644	153	1669	998	16	3	12,477	328	0

Source: GIS unit – ARIJ, 2008

<sup>2</sup> These data include the data of Ash Shawawra and Al Haddadiya localities

<sup>3</sup> These data include the data of Ash Shawawra and Al Haddadiya localities

Map 3: Land use/land cover and Segregation Wall in Ash Shawawra Village



Agricultural production in Ash Shawawra depends mostly on rainwater. As for irrigated fields, they depend on the public water network.

Table 5 shows the different types of rain-fed and irrigated open-cultivated vegetables in Ash Shawawra. The most common crop cultivated within this area is tomato.

Fruity vegetables		Leafy vegetable		Green legumes		Bulbs		Other vegetables		Total area	
RF	Irr.	RF	Irr.	RF	Irr.	RF	Irr.	RF	Irr.	RF	Irr.
23	21.5	0	10	1	4.5	0	0	0	7	24	43

Rf: Rain-fed, Irr: Irrigated

Source: Palestinian Ministry of Agriculture, 2007

There are also 16 dunums of land on which there are greenhouses planted with different vegetables, mainly: cucumber.

Table 6 shows the different types of fruit trees planted in the area.

Olives		Citrus		Stone-fruits		Pome fruits		Nuts		Other fruits		Total area	
Rf	Irr.	Rf	Irr.	Rf	Irr.	Rf	Irr.	Rf	Irr.	Rf	Irr.	Rf	Irr.
950	0	0	0	0	0	0	0	115	0	0	0	1,065	0

*Rf: Rain-fed, Irr: Irrigated*

*Source: Palestinian Ministry of Agriculture, 2007*

As for the field crops and forage in Ash Shawawra, cereals, in particular wheat and barley are the most cultivated covering an area of about 930 dunums, while dry legumes, such as chickpeas and lentils are the next most cultivated crops (See table 7).

Cereals		Bulbs		Dry legumes		Oil crops		Forage crops		Stimulating crops		Other crops		Total area	
Rf	Irr	Rf	Irr	Rf	Irr	Rf	Irr	Rf	Irr	Rf	Irr	Rf	Irr	Rf	Irr
930	0	0	0	47	0	0	0	32	0	0	0	0	0	1,009	0

*Rf: Rain-fed, Irr: Irrigated*

*Source: Palestinian Ministry of Agriculture, 2007*

The field survey shows that most of the residents in Ash Shawawra are rearing and keeping domestic animals such as sheep, goats, broiler and layer chickens, and bees (See Table 8).

Cows*	Sheep	Goats	Camels	Horses	Donkeys	Mules	Broilers	Layers	Bee Hives
0	1,774	1,082	0	12	82	17	47,000	7,000	20

\*Including cows, bull calves, heifer calves and bulls

*Source: Palestinian Ministry of Agriculture, 2007*

There are about 90 kilometers of agricultural roads in the village; 5km of which are suitable for tractors and agricultural machinery, and 85 are suitable for animals only.

## Institutions and Services

Ash Shawawra has a number of local institutions and associations that provide services to various segments of society: children, youth, and women. The services are in the areas of culture, sports, and others, including: (Ash Shawawra Village Council, 2010)

- **Ash Shawawra Women Center:** Founded in 2000 by the Interior Ministry, with the interest of all women issues in the village.
- **Ash Shawawra Women Club.**
- **Noor Ash Sharq Cultural Center:** Founded in 2001 by the Interior Ministry and is interested in all youth activities in the village.
- **Snisel Society for Community Development:** Founded in 2008 by the Ministry of Agriculture in order to provide services to the village residents.

## Infrastructure and Natural Resources

### Electricity and Telecommunication Services:

Ash Shawawra village has been connected to a public electricity network since 1989; served by Jerusalem Electricity Company, which is the main source of electricity in the villages. Approximately 99.3 percent of the housing units in Ash Shawawra village are connected to the network, while the remaining units are either dependent on private generators for electricity (0.1%) or have no source for electricity (0.6%) (Central Bureau of Statistics, 2007).

Furthermore, Ash Shawawra is connected to a telecommunication network and approximately 80 percent of the housing units within the village boundaries are connected to phone lines.

### Transportation Services:

Buses and taxis are the two main means of transportation in Ash Shawawra. As for the road network in the village; there are a total of 14km of paved and in good condition roads, of which 6km are main roads and 8km are secondary roads, and a total of 16km paved but in bad condition roads, of which 8km are main roads and 8 km are secondary roads. As for the unpaved roads in the village, there are a total of 19km, of which 9km are main roads (Ash Shawawra village council, 2010).

**Water Resources:**

Ash Shawawra is provided with water by the West Bank Water Department, through the public water network, and about 98.7 percent of Ash Shawawra housing units are connected to the water network, 0.9 percent are dependent on rainwater harvesting cisterns, 0.3 percent are dependent on tanks, and 0.1 percent are dependent on other water resources. The quantity of water supplied to Ash Shawawra in 2008 was about 0.115 million cubic meters/year, therefore the estimated rate of water supply per capita is about 140 liters/day (PWA, 2008).

Here it should be noted that no Ash Shawawra citizen in fact consumes this amount of water due to water losses, which are about 25 percent. The losses happen at the main source, major transport lines, distribution network, and at the household level (Ash Shawawra village council, 2010), thus the rate of water consumption per capita in Ash Shawawra is 105 liters per day.

**Sanitation:**

Ash Shawawra village lacks a public sewage network; most of the population uses cesspits as means for wastewater disposal. According to PCBS's Population and Housing Census in 2007 and PWA data, the majority of Ash Shawawra 's housing units (98.5%) use cesspits for wastewater disposal, while the rest of Ash Shawawra 's housing units (1.5%) don't have any means for wastewater collection and disposal.

Based on the estimated daily per capita water consumption, the estimated amount of wastewater generated per day, in both villages, is approximately 318 cubic meters, or 116 thousands cubic meters annually. At the individual level in both villages, it is estimated that the per capita wastewater generation is approximately 84 liters per day. The wastewater collected by cesspits is discharged by wastewater tankers directly to open areas or nearby valleys without any regard for the environment. Here it should be noted that there is no wastewater treatment either at the source or at the disposal sites and this poses a serious threat to the environment and the public health.

**Solid Waste Management:**

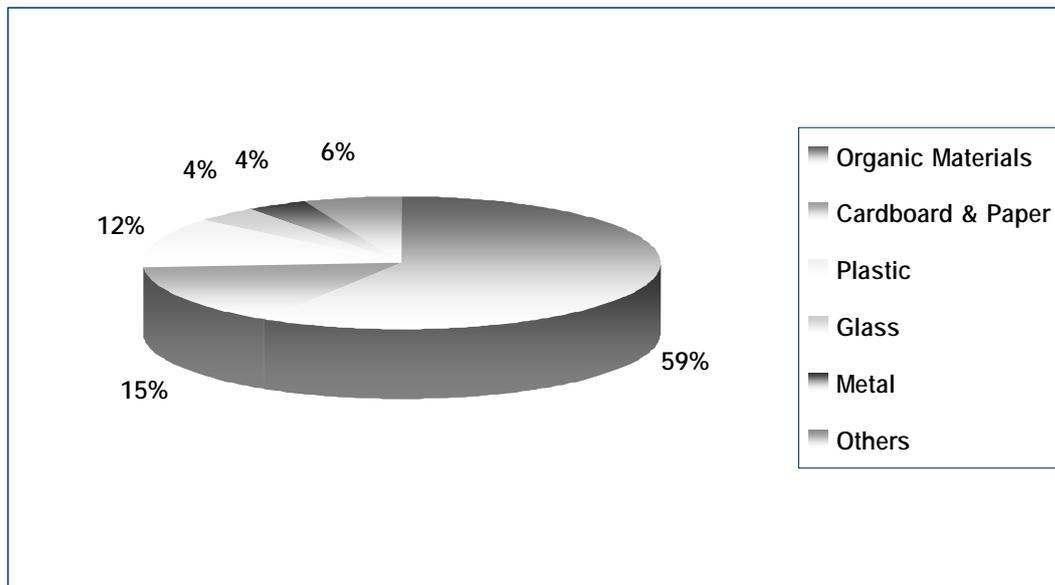
Joint Services Council for the Eastern Countryside in Bethlehem Governorate is considered the official body responsible for managing solid waste, i.e. solid waste collection and disposal generated from the citizens and establishments in Ash Shawawra village, which is currently represented by solid waste collection and disposal. Due to the fact that the process of solid waste management is costly, a monthly fee has been charged on the population, serviced by domestic solid waste collection and transportation services, which is about 15 NIS/month.

Most of the population in both villages benefit from the solid waste services, where waste is collected from households, institutions, shops, and public squares in plastic bags and then transferred to 30 containers, with a capacity of 1.2 cubic meters each, spread

throughout the neighborhoods. The joint services council collects the solid waste from the containers two days a week and transports it to Dar Salah dumping site, 25km from Ash Shawawra. The common method for solid waste treatment in the dumping site is setting waste on fire or sometimes burying it. It should be mentioned here that household waste, industrial, and medical solid waste are collected together and dumped into the same landfill, with the absence of any special system for separation and/or collection. The largest volume of solid waste is household waste which makes up around 45-50 percent of total capacity of solid waste.

The daily per capita rate of solid waste production in Ash Shawawra is 0.7kg. Thus the estimated amount of solid waste produced per day from the Ash Shawawra residents is nearly 3.7 tons, or 1364 tons per year. The main component of household solid waste is composed of organic materials, followed by paper and cardboard, and then by plastic, as shown in Figure 2 below.

**Figure 2: The components of the household solid waste produced**



## Environmental Conditions

Like other villages in the governorate, Ash Shawawra experiences several environmental problems which must be addressed and solved. These problems can be identified as follows:

**Wastewater Management:**

The absence of a public sewage network, thus the use of cesspits for the disposal of wastewater, and the discharge of wastewater in the streets, especially in winter, because the citizens can not afford the high cost of sewage tankers, causes environmental and health problems, and the spread of epidemics and diseases in the village. The use of cesspits pollutes the groundwater and water collected in domestic cisterns (rainwater harvesting cisterns) as wastewater mixes with water, making it contaminated for human consumption. This is due to the fact that most cesspits are built without lining, which allows wastewater to enter into the ground and avoids the need to use sewage tankers from time to time. Moreover, the untreated wastewater collected from cesspits by sewage tankers is disposed of in open areas without taking into account the damage it causes to the environment and the resident's health.

**Solid Waste Management:**

The lack of a central sanitary landfill to serve Ash Shawawra and the other communities in the governorate is due mainly to the obstacles created by the Israeli authorities for local and national institutions, such as the difficulty to obtain licenses to establish such a landfill, because the appropriate land is within Area C, under Israeli full control. In addition, the implementation of such projects depends on funding from donor countries. Thus, the lack of a sanitary landfill is a hazard risk for the health, a source of pollution to the groundwater and soil through the leachate produced from the solid waste, and it also produces bad odors and distorts the landscape. It should be noted here that a sanitary landfill is currently under construction in Al Maniya area, south of Bethlehem governorate, to serve Bethlehem and Hebron governorates.

There is an absence of a system in the village and the governorate in general that separates hazardous waste from non-hazardous waste, consequently hazardous solid waste is collected with non-hazardous waste and transported to Dar Salah landfill for disposal by burning.

**Impact of the Israeli Occupation**

According to Oslo Interim Agreement, signed in September 1995, between the Palestinian National Authority and the Israeli government, 7983 dunums of Ash Shawawra lands (52.2 percent of the total area of the village) were classified as area A, 911 dunums (6%) were classified as area B, 2236 dunums (14.6%) were classified as area C, while the rest of the village area was classified as nature reserves (Table 9).

Land Classification	Area (dunum)	% of the Total Area
Area A	7983	52.2
Area B	911	6
Area C	2236	14.6
Nature Reserves	4167	27.2
<b>Total Area</b>	<b>15297</b>	<b>100</b>

Source: GIS unit –ARIJ 2009

During the years of occupation, the Israeli occupation forces have established a bypass road network in order to create a kind of territorial contiguity between the Israeli settlements, outposts, and military bases in the West Bank. On the other hand these roads have isolated the Palestinian communities from each other, and caused material and agricultural losses. Ash Shawawra was also affected by the establishment of the bypass road network, as it lost part of its territories for the construction of the Israeli bypass road number 356 which extends by 2.2km into its territories.

The Israeli bypass road # 356 serves the Israeli settlements located east of the government, as it extends from (Har Homa) Abu Ghneim settlement, north of Bethlehem city and continues towards the east linking both settlements of Al David and Tekoa and the Israeli military base, which is close to the settlement within the Gush Etzion block, west of Bethlehem, to the Israeli settlements inside the green line.

The Israeli occupation forces have also uprooted 200 olive trees and 100 stone-fruit trees.

## Development Plans and Projects

### Implemented Projects

Ash Shawawra village council has implemented several development projects in Ash Shawawra, during the years 2006 to 2009, as shown in Table 10.

Name of the Project	Donor
Construction and Rehabilitation of Rainwater Harvesting Cisterns with Home Gardens	ARIJ
Sheep Yards	ARIJ
Home Gardens	Juhood Association
Rainwater Harvesting Cisterns	Care International Association & the Ministry of Agriculture
Source: Ash Shawawra Village Council, 2010	

## Proposed Projects

Ash Shawawra village council, in cooperation with the civil society organizations in the village and the village residents looks forward to the implementation of several projects in the coming years. The project ideas were developed during the PRA workshop that was conducted by ARIJ staff in the village. The projects are as follows, in order of priority, from the viewpoint of the participants in the workshop:

1. Establishment of a health center in the village.
2. Providing financial support for higher education and schools.
3. Construction of rainwater harvesting cisterns and water reservoirs
4. Construction of agricultural roads.
5. Supporting farmers through providing them with fertilizers and seeds.
6. Implementation of small projects.
7. Planting trees in the eastern region of the village.
8. Establishment of a sewage network or wastewater treatment plant.
9. Providing a library and a computer center.
10. Establishment of a public park.
11. Providing a local market.

## Locality Development Priorities and Needs

Ash Shawawra suffers from a significant shortage of infrastructure and services. Table 11 shows the development priorities and needs in the village, according to the village council's point of view (Ash Shawawra Village Council, 2010):

No.	Sector	Strongly Needed	Needed	Not a Priority	Notes
<b>Infrastructural Needs</b>					
1	Opening and Pavement of Roads	*			17km*
2	Rehabilitation of Old Water Networks	*			55km
3	Extending the Water Network to Cover New Built up Areas	*			3km
4	Construction of New Water Networks		*		20km
5	Rehabilitation/ Construction of New Wells or Springs			*	
6	Construction of Water Reservoirs		*		
7	Construction of a Sewage Disposal Network	*			
8	Construction of a New Electricity Network		*		
9	Providing Containers for Solid Waste Collection		*		
10	Providing Vehicles for Collecting Solid Waste			*	
11	Providing a Sanitary Landfill			*	
<b>Health Needs</b>					
1	Building of New Clinics or Health Care Centres		*		
2	Rehabilitation of Old Clinics or Health Care Centres	*			
3	Purchasing of Medical Equipment and Tools	*			
<b>Educational Needs</b>					
1	Building of New Schools	*			elementary & secondary
2	Rehabilitation of Old Schools	*			elementary & secondary
3	Purchasing of New Equipment for Schools	*			elementary & secondary schools
<b>Agriculture Needs</b>					
1	Rehabilitation of Agricultural Lands	*			500 dunums
2	Building Rainwater Harvesting Cisterns	*			250 cistern
3	Construction of Barracks for Livestock	*			80 barracks
4	Veterinary Services	*			
5	Seeds and Hay for Animals	*			
6	Construction of New Greenhouses	*			50 greenhouses
7	Rehabilitation of Greenhouses		*		5 greenhouses
8	Field Crops Seeds	*			
9	Plants and Agricultural Supplies	*			

\*2km is a main road, 6km internal road and 9km agricultural road.

## References:

- *Applied Research Institute - Jerusalem (ARIJ)*. (2008 - 2009). Bethlehem, Palestine: Geographic Information Systems and Remote Sensing unit Database, 2009.
- *Ash Shawawra Village Council*. 2010.
- *Directorate of Education - Bethlehem*. 2008/2009. Bethlehem, Palestine: A database of schools.
- *Palestinian Central Bureau of Statistics*. 2009. Ramallah, Palestine: General Census of Population and Housing Censuses, 2007.
- *Palestinian Ministry of Agriculture (MOA)*. 2007/2008. Bethlehem, Palestine: Directorate of Agriculture data.
- *Palestinian Water Authority*. 2009. Ramallah, Palestine: Quantities of Water Supply in the West Bank Governorates, 2008.